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The Fairlight Audio Guide to

DAVINCI RESOLVE 20

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DAVINCI RESOLVE 20
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Author: Mary Plummer

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Mary Plummer

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Foreword

Welcome to The Fairlight Audio Guide to DaVinci Resolve 20

DaVinci Resolve 20 is the only post-production solution that combines editing, color correction, visual effects, motion graphics, and audio post-production all in one software tool! Its elegant, modern interface is fast to learn for new users yet powerful enough for the most experienced professionals. DaVinci Resolve lets you work more efficiently because you don't have to learn multiple apps or switch software for different tasks. It's like having your own post-production studio in a single app!

DaVinci Resolve 20 adds editing with transcriptions from audio, film look creator and ColorSlice six vector grading, IntelliTrack AI for panning audio to match vision, broadcast replay for live multicamera broadcast editing, layout and replay with speed control, and so much more!

Best of all, Blackmagic Design offers a version of DaVinci Resolve 20 that is completely free! We've made sure that this version of DaVinci Resolve includes more features than any paid editing system. That's because at Blackmagic Design we believe everybody should have the tools to create professional, Hollywood-caliber content without having to spend thousands of dollars.

I invite you to download your copy of DaVinci Resolve 20 today and look forward to seeing the amazing work you produce!

Grant Petty
Blackmagic Design

Acknowledgments

We would like to thank the following individuals for their contributions of media used throughout this book:

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— Special thanks to Dan Foster, Danielle Foster, and Klark Perez for your tireless efforts and expertise in moving this book series forward and elevating it to the next level.

— To the DaVinci Resolve product manager,dev team, strategists, engineers, and Fairlight team: You are all rock stars!

About the Author

Mary Plummer is a professional video editor, audio artist, sound designer, and composer with over 25 years of experience in video and film production. Mary is based in Los Angeles, California, where she lives with her husband, Klark Perez, and daughter Kathryn. She has worked on a wide range of productions from coast to coast, including shorts, PSAs, trailers, music videos, documentaries, and independent feature films. Between projects, Mary has written more than a dozen industry training books, including *The Fairlight Audio Guide to DaVinci Resolve* (all versions), *Apple Pro Training Series: Soundtrack Pro, Apple Pro Training Series: GarageBand* (multiple versions), *Apple Pro Training Series: Soundtrack*, *Apple Pro Training Series: Getting Started with Final Cut Studio*, and *Media Composer 6: Part 1—Editing Essentials* (Avid Learning). She has also created over 26 hours of online Logic Pro X videos.

Mary currently works for Blackmagic Design's marketing and curriculum development team as a Fairlight audio post workflow specialist, developing and delivering training, documentation, and tutorials.

Who This Book Is For

This hands-on training guide is designed for DaVinci Resolve editors, audio newcomers, and experienced audio professionals who want to create, enhance, and mix soundtracks in the Fairlight page.

Getting Started

Welcome to *The Fairlight Audio Guide to DaVinci Resolve 20*, an official Blackmagic Design-certified training book that teaches professionals and students the art of sound design, recording, editing, sweetening, and mixing, as well as how to get the most out of audio tracks created and edited in DaVinci Resolve. Beginning audio editors and assistants will find clear workflow-driven lessons, while seasoned audio professionals will quickly grasp Fairlight's user-friendly tools for realizing incredible sound. Each lesson takes you step by step through practical, real-world projects such as an exciting podcast intro, scenes from a narrative film, and the soundtrack for a 3D Fusion VFX sequence. You'll start building a basic podcast intro and then move on to editing dialogue, sound effects, and music. Next, you'll record tracks and focus on balancing, panning, and repair. From there, you'll move on to explore sound design secrets to create original sound effects, layer sound, and use Fairlight FX plug-ins to add depth and dimension to your tracks. Finally, you'll step through mixing techniques to balance, sweeten, pan, automate, bounce, and deliver your finished soundtrack.

As you step through the lessons, you'll gain experience with Fairlight's powerful features, including ADR tools; working with the sound library; video and audio scrollers; using the Focus mode multipurpose tool; applying Fairlight FX, Track FX, and AI tools to your clips and tracks to enhance your soundtrack; as well as mixing and automating tracks, processes, effects, and more! Best of all, you no longer need to send projects out to another audio application, because DaVinci Resolve puts professional audio post tools just a click away from your editing tools and timeline.

This guide blends practical, hands-on exercises with the real-world "craft" of audio post-production, such as sound editing, dialogue editing, dialogue repair and replacement, sound design, sound effects editing, and mixing. As you step through Resolve's real-world

audio post-production tools and workflows, you'll discover new techniques for whatever tasks you take on. You'll delve deep into audio editing and mixing in the Resolve's Fairlight page to explore tricks and techniques used by professional audio editors, sound designers, and engineers to enhance the soundtracks in your projects.

After completing this book, you are encouraged to take the 50-question online proficiency exam to receive a Certificate of Completion from Blackmagic Design. The link to the exam is located at the end of this book.

About DaVinci Resolve 20

DaVinci Resolve is the world's fastest-growing and most advanced end-to-end post-production software, with everything you need, from syncing and organizing media to editing, visual effects, color grading, audio post, mixing, and delivery.

What You'll Learn

In these lessons, you'll work with multiple projects and timelines to learn fundamental and advanced practical techniques in several audio production genres. You'll acquire real-world skills that you can apply to real-world productions.

Lesson 1

Plunges you into creating a narrative podcast intro from scratch while you explore the Fairlight page interface and tools to build the soundtrack.

Lesson 2

Focuses on a variety of tools and techniques for editing dialogue.

Lesson 3

Covers sound effects and music editing using powerful tools unique to the Fairlight page.

Lesson 4

Walks you through four practical recording techniques: recording voiceover (VO); setting up and performing automated dialogue replacement (ADR); using Resolve's built-in oscillator to record noise and tones; and exploring the Foley Sampler plug-in to record sampled footsteps in sync with video.

Lessons 5 and 6

Focus on balancing, panning, and repairing audio clips and tracks. In Lesson 5, you'll balance dialogue clip levels within each track. Then, explore panning clips and tracks in the mixer and viewer. In Lesson 6, you'll use advanced Fairlight FX dialogue repair tools such as the De-Hummer, Noise Reduction, and AI-based Track FX plug-ins—as well as the gate dynamics processor in the mixer to remove hum, noise, and enhance tracks.

Lesson 7

Dives into creative tools and plug-ins to manipulate and distort sound to emulate echo and outdoor PA system speakers. Plus, you'll work with modulation, pitch, and speed changes to create original sound effects, including waves and dragon roars.

Lesson 8

Walks you through working with busses, including auxiliary busses for shared effects, submix busses for controlling similar tracks, and output busses for determining the format for monitoring and delivering your soundtrack.

Lesson 9

Demystifies the art of mixing and sweetening your soundtrack and covers the tools and techniques you'll use to polish and complete a mix.

Lesson 10

Steps you through bouncing your mix and delivering a finished soundtrack with and without video.

Lesson 11

Explores the Fairlight page's immersive tools for creating, monitoring, and delivering ambisonics and Dolby Atmos sound.

The Blackmagic Design Training and Certification Program

Blackmagic Design publishes several training books that take your skills further in DaVinci Resolve 20. They include:

— *The Beginner's Guide to DaVinci Resolve 20*

— *The Colorist Guide to DaVinci Resolve 20*

— *The Editor's Guide to DaVinci Resolve 20*

— *The Fairlight Audio Guide to DaVinci Resolve 20*

— *The Visual Effects Guide to DaVinci Resolve 20*

— *Advanced Visual Effects in DaVinci Resolve 20*

Whether you want to learn more advanced editing techniques, color grading, or visual effects, Blackmagic Design certified training offers a learning path for you.

Getting Certified

After completing this book, you are encouraged to take a 1-hour, 50-question online proficiency exam to receive a Certificate of Completion from Blackmagic Design. The link to the online exam can be found on the Blackmagic Design training webpage. The webpage also provides additional information on our official Training and Certification Program. Please visit www.blackmagicdesign.com/products/davinciresolve/training.

System Requirements

This book supports DaVinci Resolve 20 for macOS and Windows. If you have an older version of DaVinci Resolve, you must upgrade to the current version to follow along with the lessons.

> **NOTE** The exercises in this book refer to file and resource locations that will differ if you use the software version from the Apple Mac App Store. For the purposes of this training book, we recommend that macOS users download and use the DaVinci Resolve software from the Blackmagic Design website rather than from the Mac App Store.

Download DaVinci Resolve

To download the free version of DaVinci Resolve 20 or later from the Blackmagic Design website:

1   Open a web browser on your Windows or macOS computer.

2   In the address field of your web browser, type
www.blackmagicdesign.com/products/davinciresolve.

3   On the DaVinci Resolve landing page, click the Download button.

4   On the download page, click the button corresponding to your computer's operating system.

5   Follow the installation instructions to complete the DaVinci Resolve installation.

When you have completed the software installation, follow the instructions in the following sections to launch DaVinci Resolve and download the media files used throughout this book.

DaVinci Resolve 20 Quick Setup

When DaVinci Resolve 20 is successfully installed, you can launch the application for the first time.

macOS users will find the DaVinci Resolve application in their Applications folder. Double-click the DaVinci Resolve folder and then double-click the DaVinci Resolve application icon. Alternatively, you can use Launchpad or Spotlight search to locate and launch DaVinci Resolve.

Windows users will find a shortcut added to their Desktop. Alternatively, click the Start menu, search for "DaVinci Resolve," and press Enter to launch the application.

When DaVinci Resolve 20 opens for the first time, a Welcome splash screen details the new features available in the current version.
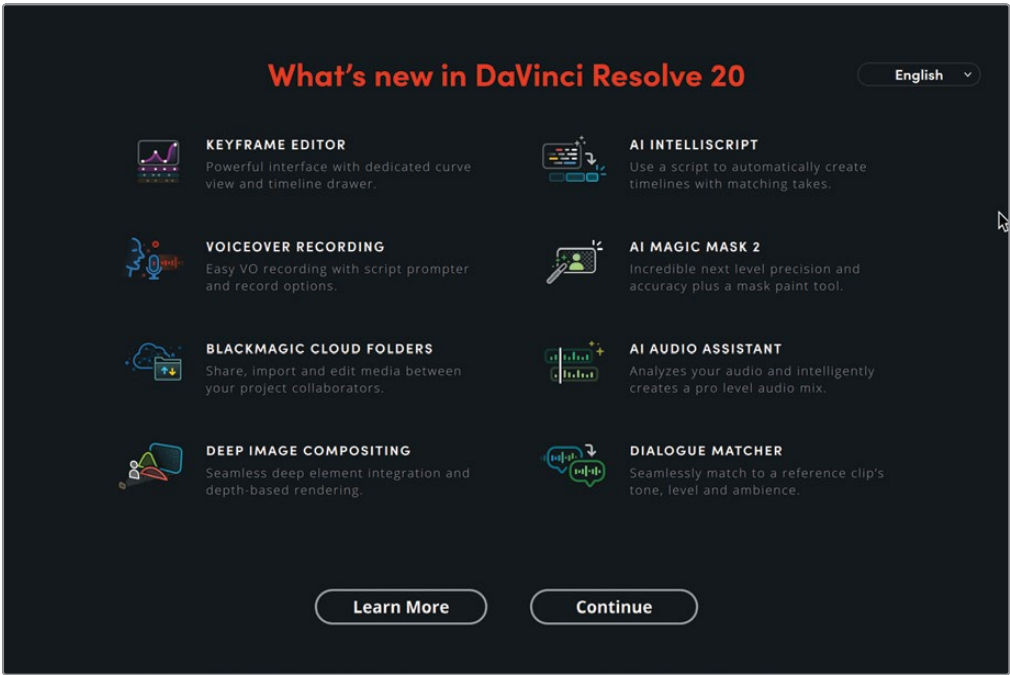
1 If required, you can change the language used. You can also learn more about these and hundreds of other amazing features available in DaVinci Resolve 20 by clicking Learn More. Otherwise, click Continue.
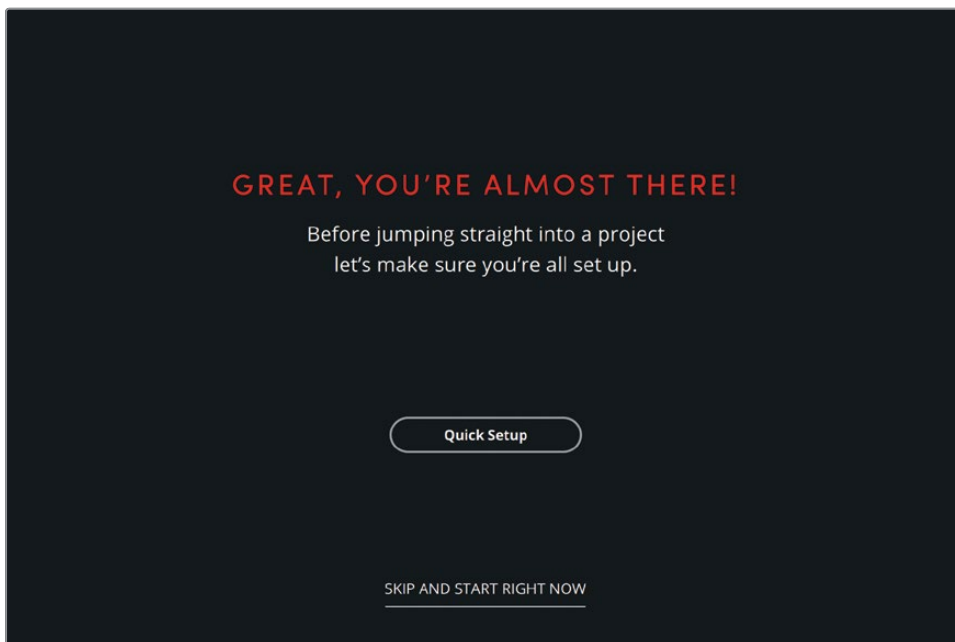
Next, you are invited to go through the Quick Setup process. Experienced users can skip this process by clicking "Skip and Start Right Now," but new users are advised to follow the process. It will only take a couple of minutes and is useful for understanding how Resolve works.

2   Click the Quick Setup button.
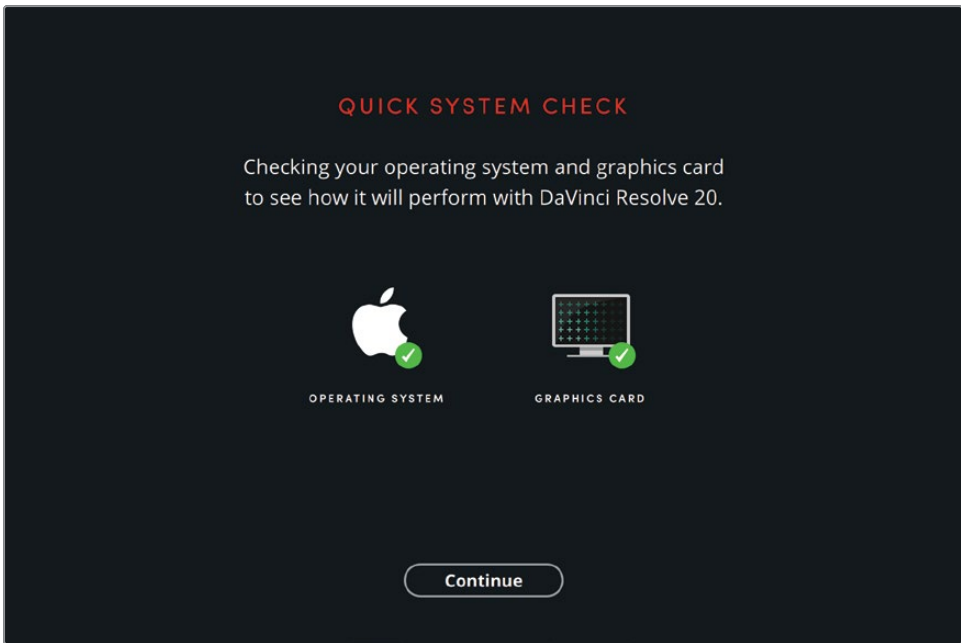
3   DaVinci Resolve will check your system to ensure that your operating system and graphics card will perform well. If both pass this test, click Continue.
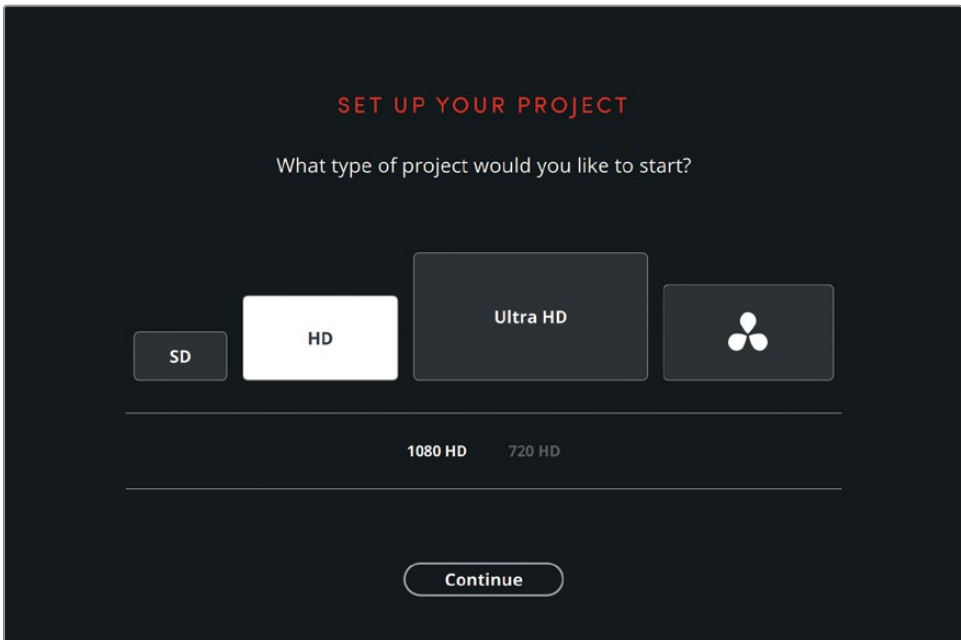
Next, you will be asked what type of project you would like to begin. DaVinci Resolve supports projects at different resolutions, from Standard Definition (SD) and High Definition (HD) to Ultra High Definition (UHD) and beyond.

4   If you know the resolution you commonly work with, you can set that here. Otherwise, leave the resolution set to 1080 HD and click Continue.

> **NOTE** You can learn more about setting up DaVinci Resolve for your system in the *DaVinci Resolve Reference Manual*, available via the Help menu in DaVinci Resolve.
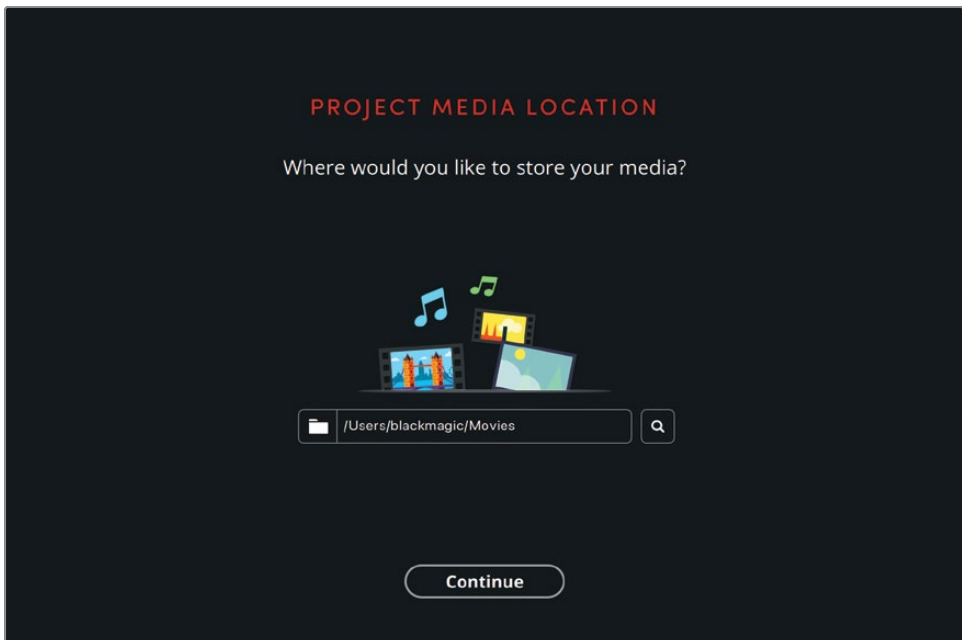
The next screen asks where you would like to store your media. This does not refer to the video, audio, and graphics files you'll edit and grade, but rather the ancillary files Resolve will need to create as you work. This location is commonly referred to as a "scratch disk" and is set to your current user's Movies folder (macOS) or Videos folder (Windows) by default.

5 Leave this set to the default location and click Continue.
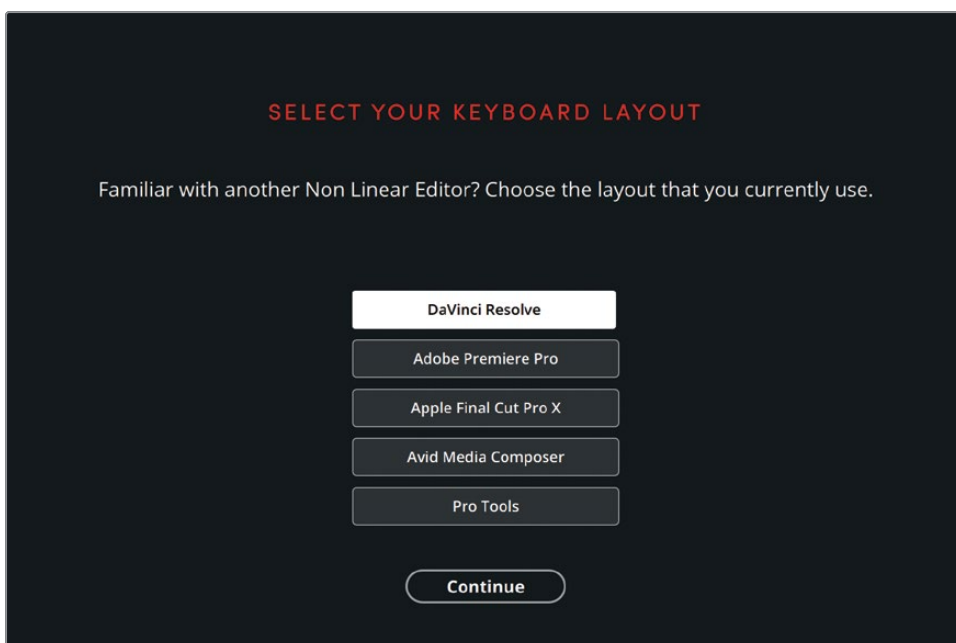
On the next screen, you will be asked which keyboard layout you would like to use. This is specifically relevant if you're familiar with using another nonlinear editor; however, throughout this guide, you will be introduced to keyboard shortcuts that use the DaVinci Resolve keyboard layout. So, if you change the layout at this point, you may find those shortcuts won't work.

6   For now, leave the layout set to DaVinci Resolve and click Continue.
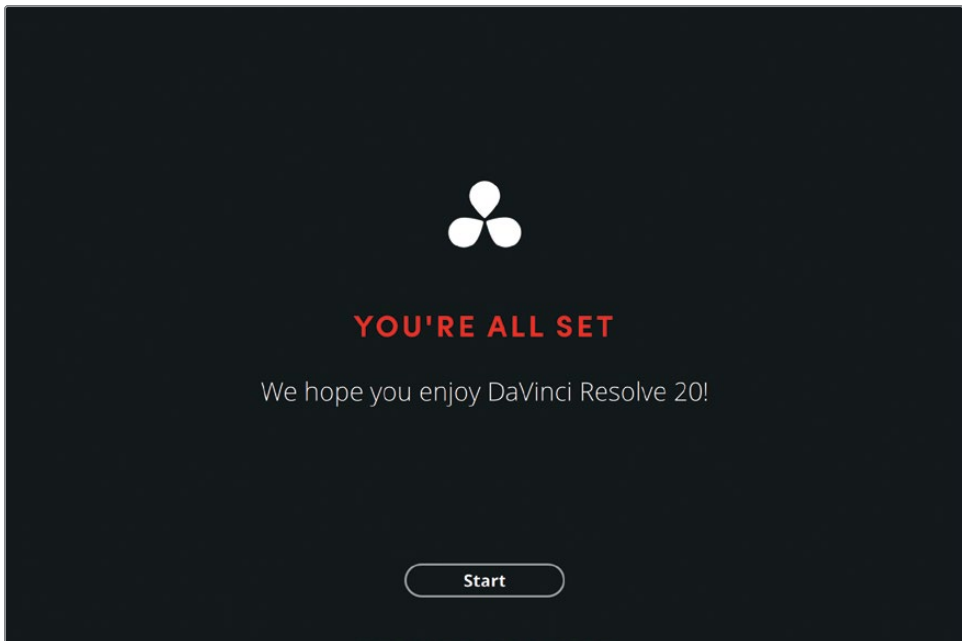
Congratulations! You have completed the Quick Setup process and have changed precisely nothing regarding DaVinci Resolve's default setup. Nevertheless, you have also gained an insight into some aspects of using DaVinci Resolve that will serve you well as you continue learning about the application and how it uses your system.

7   Click Start to launch and begin enjoying DaVinci Resolve 20!
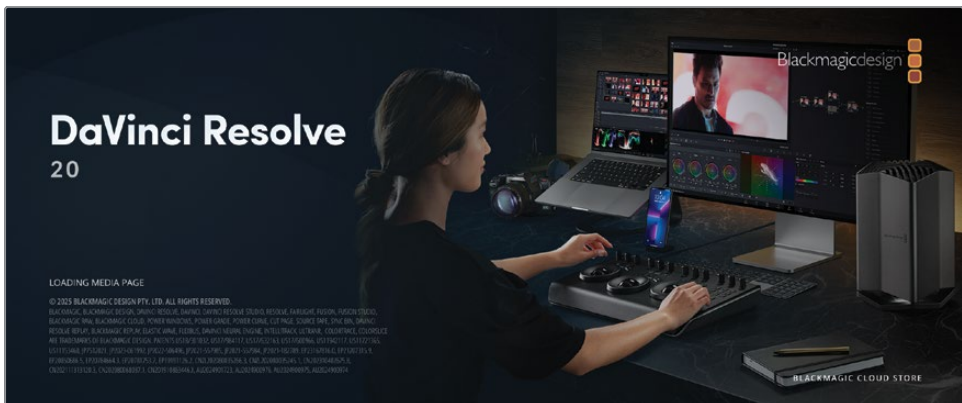
Once loaded, DaVinci Resolve will open to the cut page, which is the default starting page for all projects. However, this is not the usual place to begin working with DaVinci Resolve. Instead, you should now exit the application in readiness to begin the first lesson in this book.

8   Choose DaVinci Resolve > Quit DaVinci Resolve or press Command-Q (macOS) or Ctrl-Q (Windows).

DaVinci Resolve 20 will close.

Get the Lesson Files

To perform the steps detailed in the exercises throughout this book, the Fairlight Audio Guide lesson files must be downloaded to your macOS or Windows computer. After saving the files to your hard drive, extract the file and copy the folder to your Movies folder (macOS) or Videos folder (Windows).

To Download and Install the DaVinci Resolve Lessons Files

When you are ready to download the lesson files, follow these steps:

1   Open a web browser on your Windows or Mac computer.

2   In the address field of your web browser, type
www.blackmagicdesign.com/products/davinciresolve/training.

3   Scroll the page until you locate *The Fairlight Audio Guide to DaVinci Resolve 20*.

4   Click the **Lesson Files Part 1** link to download the media for the first lesson of the book. The R20 Fairlight Part 1.zip file is roughly 165 MB in size.

5   Click the **Lesson Files Part 2** link to download media and projects for Lessons 2–11. The R20 Fairlight Part 2.zip file is roughly 6.5 GB in size.

6   Click the **Lesson Files Part 3** link to download the additional media and projects you will use for Lessons 2–10. The R20 Fairlight Part 3.zip file is roughly 7.65 GB in size.

7   Click the **Lesson Files Part 4** link to download immersive audio files for the projects you will use for Lesson 11. The R20 Fairlight Part 4.zip file is roughly 2.56 GB in size.

8   After downloading all four zip files to your computer, open your Downloads folder and double-click to unzip them if they haven't unzipped automatically.

9   In your chosen storage location—for example, Documents—create a new folder called **R20 Fairlight Book Media**.

10 From your Downloads folder, drag the R20 Fairlight Part 1, R20 Fairlight Part 2, R20 Fairlight Part 3, and R20 Fairlight Part 4 folders into the R20 Fairlight Book Media folder you created in the previous step.
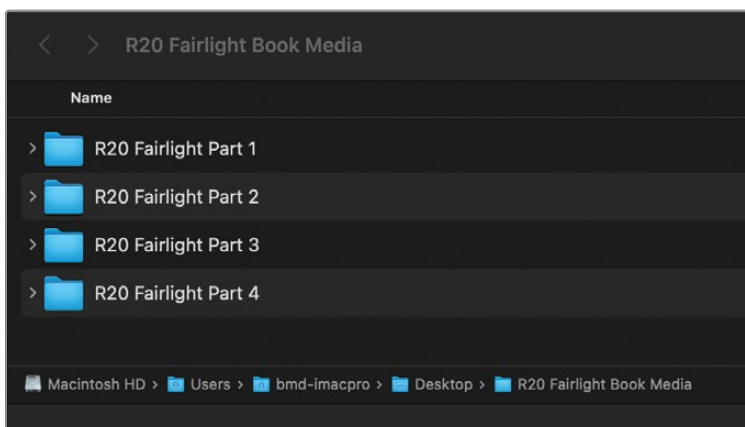
Your media is ready for the first lesson.

Download the Fairlight Sound Library

You can download the Fairlight Sound Library, a royalty-free collection of more than 500 professionally recorded Foley sounds that you can use in your own projects, directly from the Sound Library panel. The Fairlight Sound Library features Foley sounds such as footsteps, body falls, door creaks, and more. This free sound library is designed to work with the Fairlight Foley Sampler plug-in, which lets you use the mouse or a MIDI keyboard to trigger sounds so they can be recorded in sync with the video onscreen. You only need to download and install the Fairlight Sound Library once on your system. Once it has been installed, you can use it with any DaVinci Resolve project on your system.

To download the Fairlight Sound Library:

1 Open DaVinci Resolve, if necessary.

2 In the Project Manager window, open a new project or an existing project. Any project will work.

3 In the Fairlight page, in the interface toolbar at the upper left of the page, click the Sound Library tab to show the Sound Library panel.
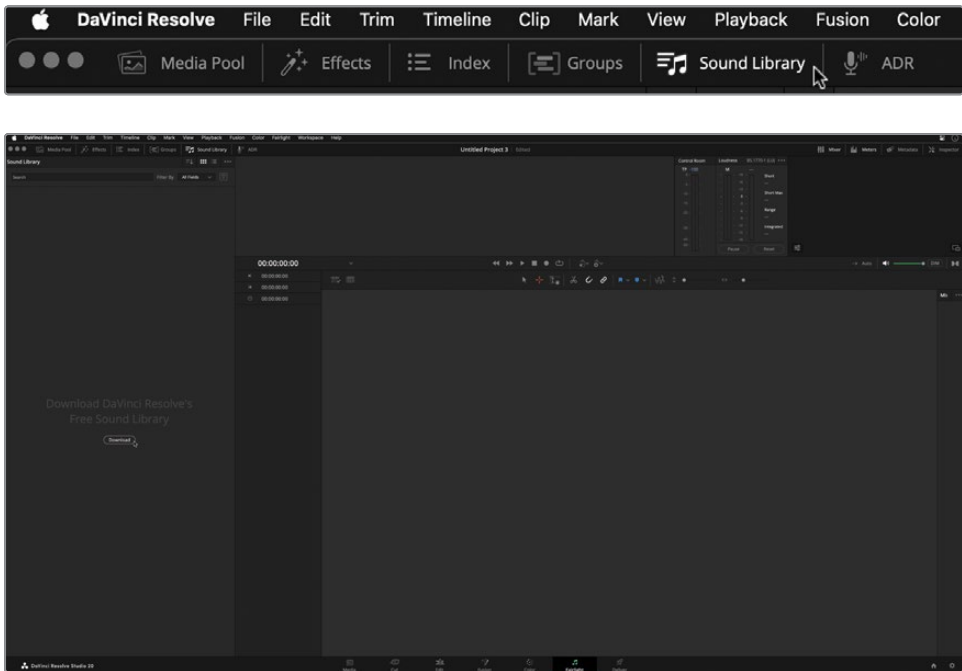
If the Fairlight Sound Library is not installed on your system, you will see the following message, along with a Download button.
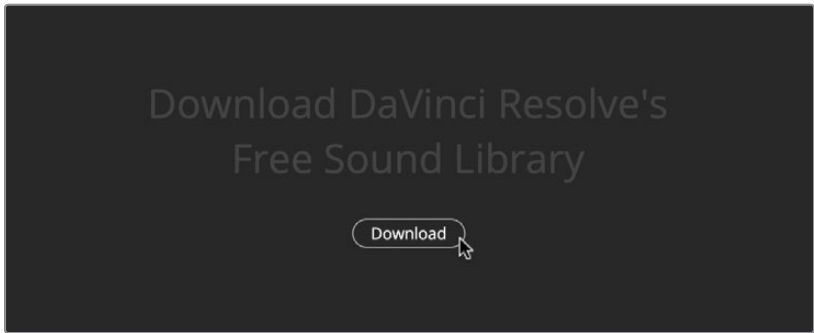
NOTE If you do not see the "Download DaVinci Resolve's Free Sound Library" message in the Sound Library panel, you already have it installed, and you can proceed to Lesson 1.

You can register, download, and install the free Fairlight Sound Library now or later. This is optional and not required to follow along with the book exercises or certification exam.

4   Click the Download button to go to the Blackmagic Design website support page and the Blackmagic Fairlight Sound Library 1.0 Register & Download form.

5   Fill out the online form and start the download. Once the download is complete, run the installer.

The installer creates a library (database) and indexes the sounds automatically so they will be ready to use the next time you open DaVinci Resolve.

> **MORE INFO** You can learn more about the Sound Library in the "Using the Fairlight Page" section of the *DaVinci Resolve Reference Manual* available via the Help menu.

Introducing Blackmagic Cloud

DaVinci Resolve is the world's only complete post-production solution that lets everyone work together on the same project at the same time. Traditionally, post-production follows a linear workflow with each artist handing off to the next, introducing errors and mountains of change logs to keep track of through each stage. With DaVinci Resolve's collaboration features, each artist can work on the same project, in their own dedicated page with the tools they need.

Now Blackmagic Cloud lets editors, colorists, VFX artists, animators, and sound engineers work together simultaneously from anywhere in the world. Plus, they can review each other's changes without spending countless hours reconforming the timeline.

Simply create a Blackmagic Cloud ID, log in to the online DaVinci Resolve Project Server, and follow the simple instructions to set up a new project library—all for one low monthly price!

Once this library is created, you can access it directly from the Cloud tab in the Project Manager to create as many projects as you need—all stored securely online. Then invite up to 10 other people to collaborate on a project with you. With a simple click, they can relink to local copies of the media files and start working on the project immediately, with all their changes automatically saved to the cloud.

Enabling Multiple User Collaboration for your project means that everyone can work on the same project at the same time—edit assistants, editors, colorists, dialogue editors, and visual effects artists can now all collaborate wherever they are in the world in a way never before possible.

Media Sync with Blackmagic Cloud Store

Now you don't need to buy expensive proprietary storage that needs an entire IT team to manage! Blackmagic Cloud Store has been designed for multiple users and can handle the huge media files used by Hollywood feature films. You can also have multiple Blackmagic Cloud Stores syncing the media files with your Dropbox account so that everyone has access to the media files for the project.

To find out more about these exciting workflows, visit
blackmagicdesign.com/products/davinciresolve/collaboration.

Building a Soundtrack

Audio post-production is more than simply adjusting volume levels and mixing tracks. As you embark on your journey through this book and your own projects, keep your eye on the big picture. That is, a project's visual and audio components are of equal importance, and it takes only a few seconds of audio—good or bad—for someone to form an opinion of your entire production. And here's the kicker: the audience doesn't care how you got there; they just want the experience to be awesome. So it is up to you as the audio editor, sound designer, supervising sound editor, re-recording mixer, or all of the above to deliver a professional-quality soundtrack regardless of your budget, format, length, deliverables, or distribution methods.

Time

This lesson takes approximately 75 minutes to complete.

Goals

Luckily, the Fairlight page in DaVinci Resolve includes all the tools you'll need to transform your basic production sound into a fully realized soundtrack from start to finish.

In this lesson, you'll step into the role of an audio editor, where you'll create the intro for a fictional scripted Sci-Fi podcast, "Post Park Normal." Wait. This is DaVinci Resolve, a full video and audio post-production solution from dailies to finishing. Why start with an audio-only project? Because the Fairlight page in DaVinci Resolve is an incredibly powerful digital audio workstation (DAW). Since many audio professionals are accustomed to working with audio-specific software for creating radio spots, music mixing, podcasts, and shows, this is a great time to dive into Fairlight's audio toolset to quickly edit together a soundtrack from scratch. Let's get started.

> **NOTE** This project assumes you have downloaded the media for this book. If you are unsure, return to the "Getting Started" section of this book and follow the download instructions in "Acquiring the Lesson Files."

Building a Sci-Fi Podcast Intro

In this scenario, the original audio editor has called in sick, and it's up to you to create a draft of the podcast intro on your own to play for the clients, who will be there within the hour. No need to panic. You're still an unpaid intern, and this experience can only improve your employment situation. Where to start? The clients met with your predecessor, and you have their brief notes.

> Clients have a Sci-Fi podcast featuring six people who survived the ground-zero events that changed the world. Each storyline starts the same, in the morning at the park, when everything is still normal. The intro begins with the "normal" morning at the park.

In this first set of exercises, you'll create a new project, import audio files, and edit them into a timeline to create a narrative podcast intro. This lesson introduces you to the primary interface elements and tools you need as you go. Once you are comfortable with importing and editing the timeline, navigation, and playback, you'll use additional interface panels and tools to finish the basic podcast intro. Keep in mind that lessons in this book build on each other as you learn new skills and more advanced tools and workflows. This lesson may start with building a basic podcast intro; however, over time, you will develop it into an exciting, fully immersive audio experience for the audience.

Let's start by locating the files you'll need on your system, opening DaVinci Resolve, and creating a new project.

Creating a New Empty Project

In this exercise, you'll create a new project that will be used to build and mix the Post Park Normal podcast intro. The media for this lesson is located in Part 1 of the R20 Fairlight Book Media folder on your system.

1 Locate the R20 Fairlight Book Media folder on your desktop or Finder.

2 Through your computer's Finder, open the R20 Fairlight Book Media > R20 Fairlight Part 1 > Podcast Intro Audio folder to see the contents.
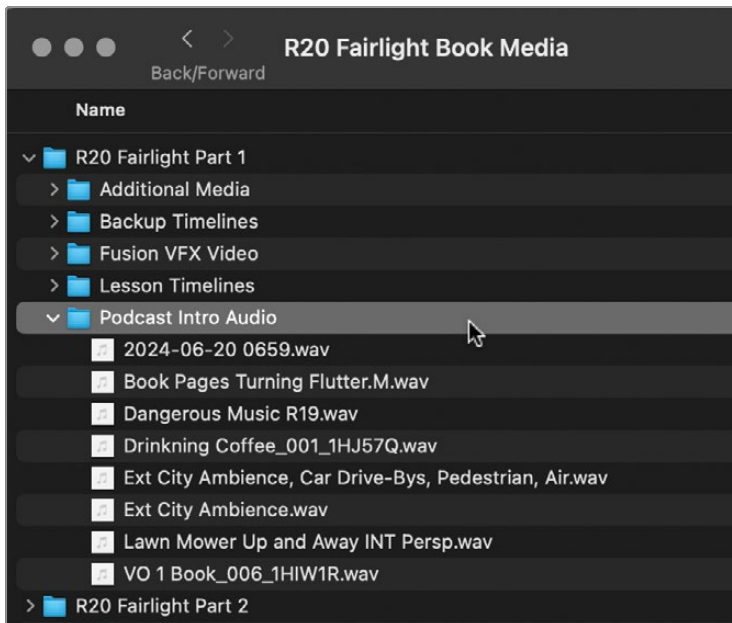
As you can see, the Podcast Intro Audio folder includes seven .wav audio files. Now that you have located the audio files that you'll work with, let's start a new project where you'll import and edit those files to create the podcast intro.

3 Open DaVinci Resolve.

4 In the Project Manager, click New Project.

5   In the New Project dialog, type Post Park Normal Intro in the name field and then
click Create.
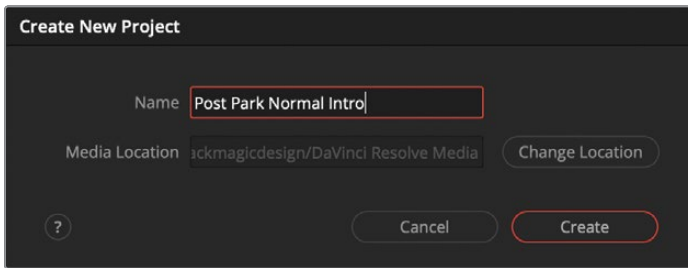
6   If necessary, double-click the new Post Park Normal Intro project to open it.
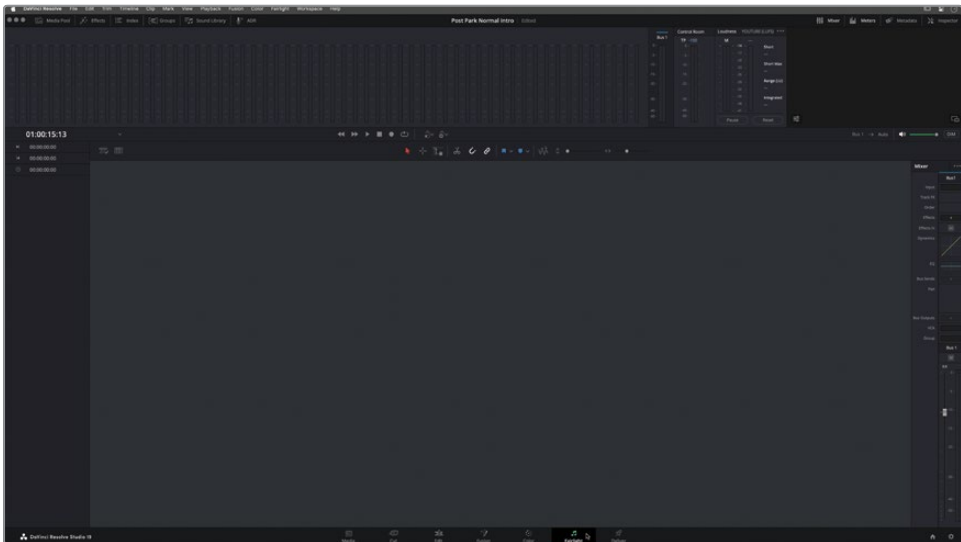
The new project opens in the Fairlight page, where you'll see three primary areas of
the Fairlight interface, including the monitoring panel across the top, the mixer on the
right side, and the empty workspace in the middle of the page that will display the
timeline once you create one.

> **NOTE** If your project does not open to the Fairlight page or additional panels are
> visible, click the Fairlight button at the bottom of the screen to go to that page.
> To reset your user interface, choose Workspace > Reset UI Layout at the top of
> the page.

Importing Audio Files and Creating a Timeline

In this exercise, you'll import the Podcast Intro Audio files in the media pool and utilize some built-in Fairlight page features to quickly create a timeline from an audio file. First, let's show the media pool so you'll see the audio files once they are imported.

1   Click the Media Pool button in the upper left of the window to show the media pool.
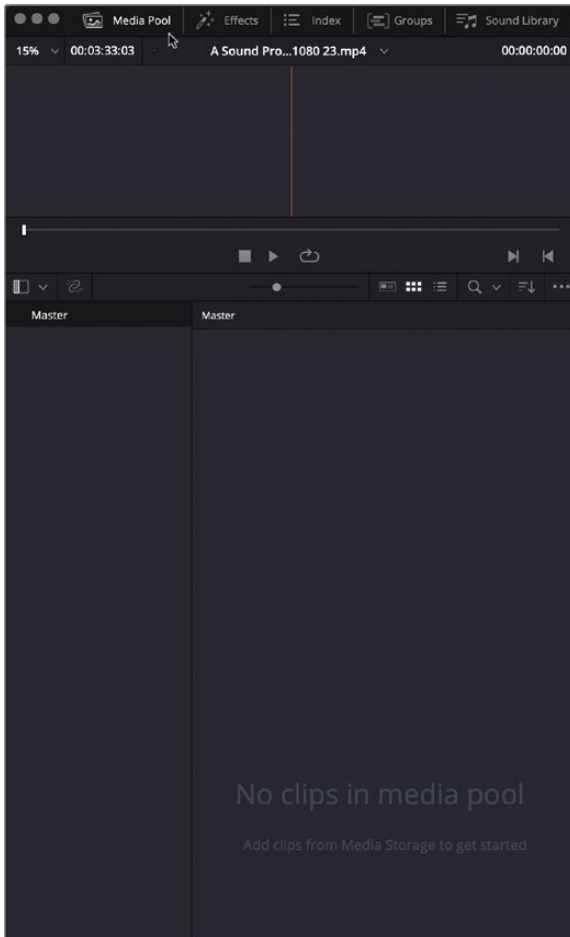
The empty media pool opens on the left side of the window. Here, you can import, organize, and preview media. There are many methods for importing files into the media pool. For this exercise, you'll use either the File menu or a keyboard shortcut.

2   Choose File > Import > Media or press Command-I (macOS) or Ctrl-I (Windows) to open the Import Media dialog.

3 In the Import Media dialog, navigate to the R20 Fairlight Book Media > R20 Fairlight Part 1 > Podcast Intro Audio folder. Select all the media files. Click Open.
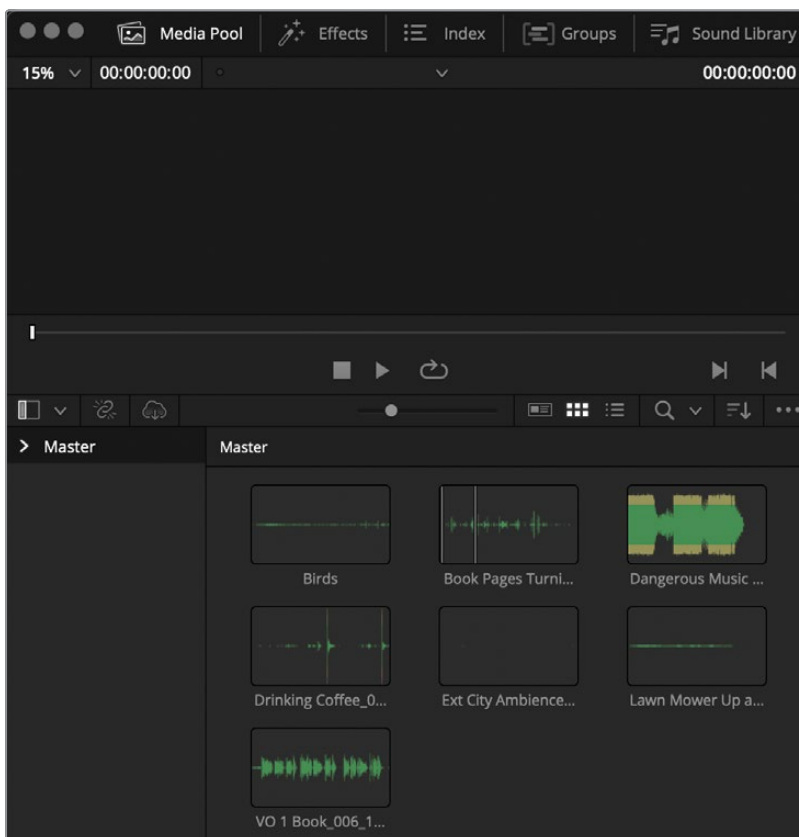
The media files appear in the media pool library. At a glance, you'll see a variety of clips ranging from **Ext City Ambience** to **Lawn Mower…** and **Dangerous Music**.

Next, you'll create a timeline where you can edit, arrange, and build the Post Park Normal podcast intro. Once again, there are many options for creating a new timeline. Luckily, in DaVinci Resolve, you can instantly create the first timeline in a new project by simply dragging a clip from the media pool to the empty space in the timeline area.

Which clip should you use? Any of the clips would work. However, since you are creating a soundscape, starting with an ambient sound effect is a great way to transform silence to "somewhere" in seconds. Let's try it.

4 In the media pool, locate the **Ext City Ambience.wav** audio clip.
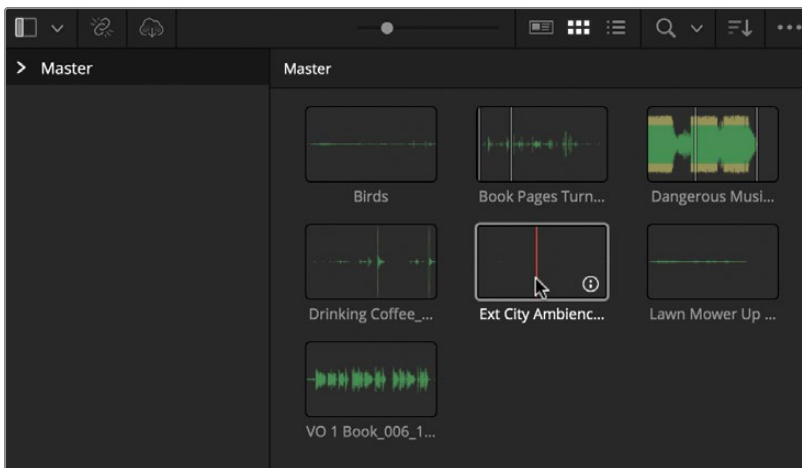
> **NOTE** When dragging a clip to create the first timeline of a project, the clip will initially appear transparent green over the tracks of the newly created timeline. Dragging the clip to the top of the timeline below the ruler will place it in the first track when you release it. Dragging lower in the empty space will add a second track where you can release the clip while creating the timeline.

5 Drag the **Ext City Ambience.wav** audio clip from the media pool to the empty timeline space. When the timeline appears, drag the transparent green clip to the upper left corner of the timeline so it will start at the beginning of the first track. Release the clip.
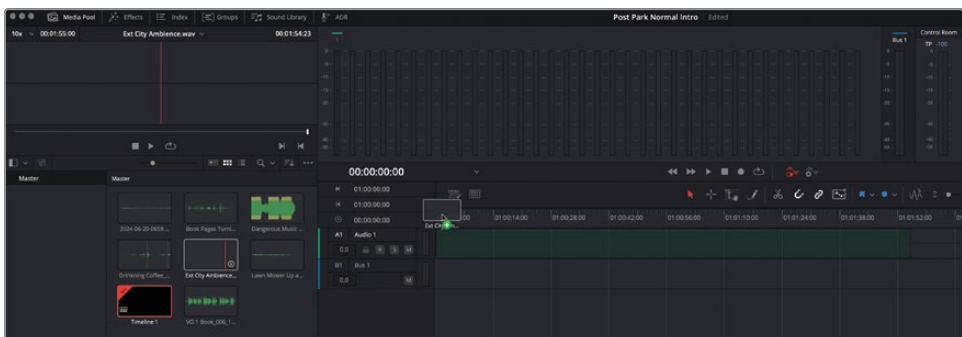
If the clip is not at the beginning of the first track in the newly created timeline, drag the clip toward the left of the track until it starts at the beginning of the track.

Playing and Resizing Tracks in the Timeline

Now that the first clip is in the timeline, it's a good opportunity to play it and familiarize yourself with the basic transport and zoom controls in the toolbar.

The toolbar includes zoom sliders, commands, and mode buttons.

The transport controls include standard and audio-specific transport functions.

The interface toolbar shows and hides various palettes, such as the media pool, mixer, and meters.
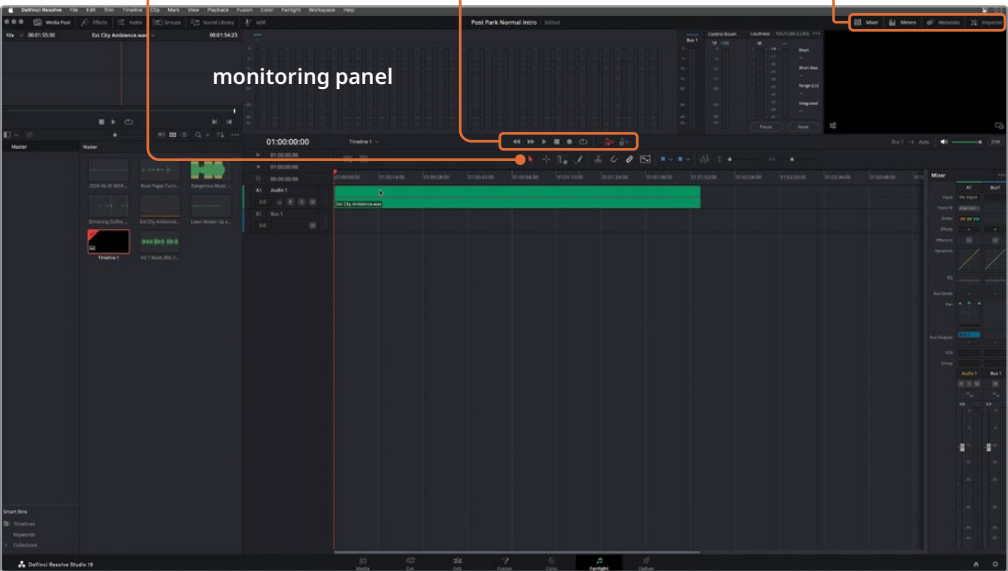
monitoring panel

The current project in the Fairlight page shows the media pool, audio timeline, monitoring panel, and mixer. The timeline includes one audio track and one stereo bus for output. Each element reflects the default names for new timelines, tracks, and busses: Timeline 1, Audio 1, and Bus 1, respectively.

Timecode display   Timeline ruler   Playhead
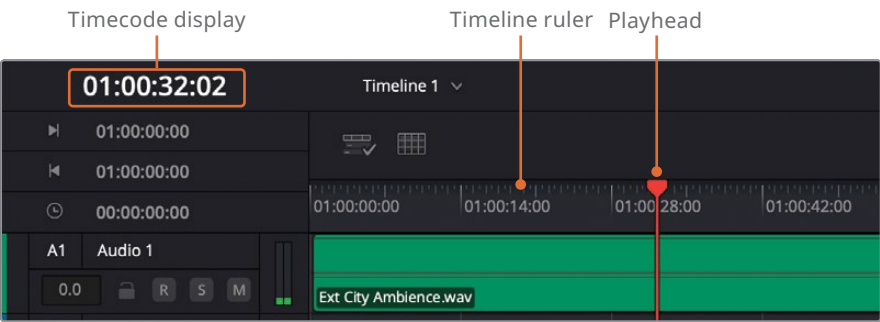
1   Press the Home key or click the Timecode ruler at the beginning of the timeline to move the playhead to that position (00:00:00:00).

The six transport controls above the timeline toolbar are the standard buttons that you'll find on any professional audio recording and playback device. To the right of the transport controls are the two primary automation buttons.
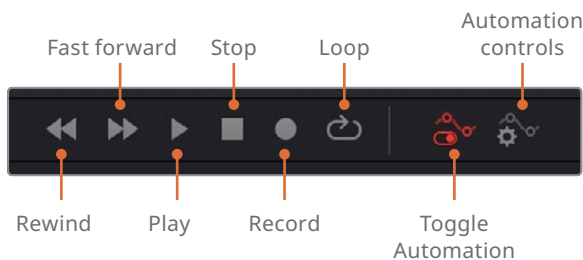
2   In the transport controls, click the Play button or press the Spacebar to start playback and listen to the beginning of the clip. During playback, watch the meters in the monitoring panel at the top of the window and the meters in the mixer on the right side of the screen.
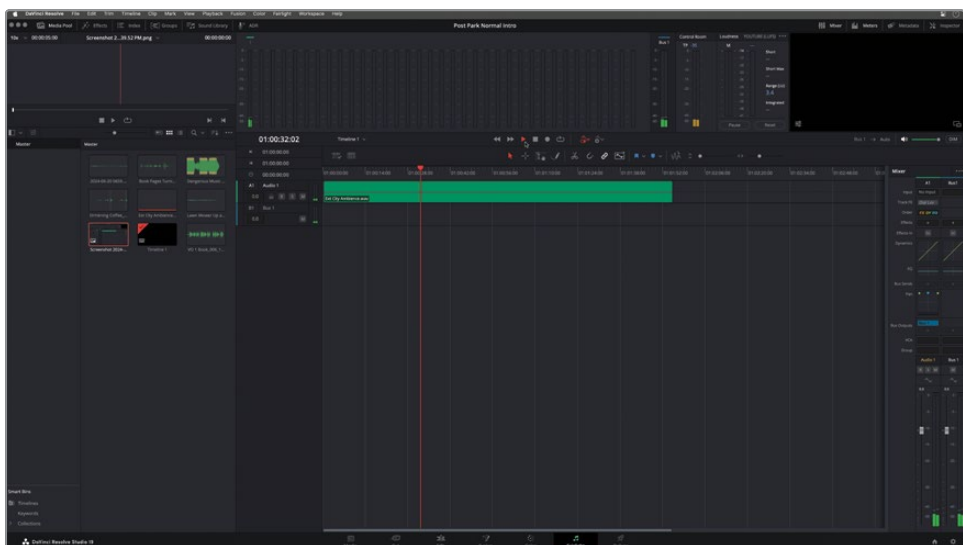
Did you notice that the clip's volume level is low? This corresponds with the low levels in the meters. Let's take a moment to adjust the track height and volume level of the clip.

3 Press the Spacebar to stop playback.

You can resize the track using the zoom sliders located in the toolbar above the timeline.

4 Drag the vertical zoom slider to the right to increase the height of the timeline tracks.
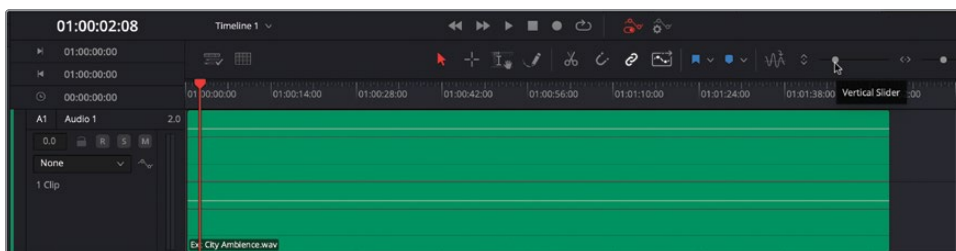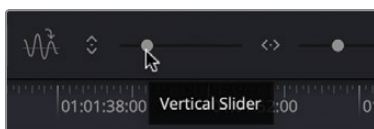
5 Drag the horizontal zoom slider to the right to zoom in on the waveform at the playhead position.

6 Press Shift-Z to fit the timeline clips horizontally in the visible timeline area.

> **TIP** You can use the zoom sliders in the toolbar to zoom in or out of the timeline vertically or horizontally. Vertical zooming is based on track selection, whereas horizontal zooming centers on the playhead. Press Shift-Z to toggle between zoom to fit horizontally and the previous zoom level.

If you're gripping the edge of your desk with white knuckles and thinking that there are too many panels, meters, and buttons to keep track of, you can relax. The Fairlight page is as user-friendly as it is powerful. At any time, you can simplify the interface to show just those tools you need as you need them.

7 In the interface toolbar at the upper right of the screen, click the Mixer button to hide the mixer. Then, click the Meters button to hide the monitoring panel. Finally, at the upper left of the screen, click the Media Pool button to hide the media pool.

Now that you have a focused view of the clip, let's adjust the clip volume level in the Inspector.

Changing Clip Volume Levels in the Inspector

The Inspector gives you easy access to controls for any selected clip. While you will use the Inspector in many ways throughout this book, let's currently focus on the clip volume controls. One advantage of using the Inspector to adjust clip levels is that you can change levels during playback. Let's try it.

1 To the right of the interface toolbar, click the Inspector button to show the Inspector.

> **NOTE** From this point, you'll simply be instructed to show or hide an interface panel during exercises.
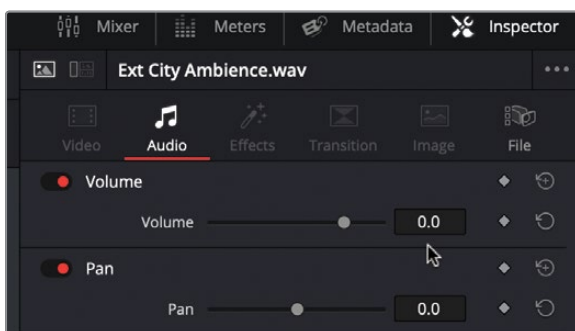
The Inspector shows controls for the Ext City Ambience clip.

2 If necessary, select the Ext City Ambience clip in the timeline to see the controls in the Inspector.

The audio panel in the Inspector offers a variety of controls for the selected clip. In this exercise, you'll use the Volume controls to increase the level of the clip. You can see that the current volume level for the selected clip is 0.00. This does not mean the clip volume is actually at 0 decibels (dB). Instead, the Volume field indicates the amount of volume change (gain) applied to the original source level. In this case, there is no change at all.

3 Move the playhead to the beginning of the timeline and start playback.

You can change the clip volume in the Inspector by dragging the Volume slider, typing a new number in the Volume field, or dragging left or right on the field.

4   While listening, drag the volume slider to the right to increase the clip level.

Notice that the waveform in the clip increases along with the volume level.

5   Increase the volume by around 15.00. Hold Shift while dragging over the Volume field for slower, "geared-down" incremental control.

To reset an Inspector control to the default level, double-click the control name or click the reset button to the far right of the control.
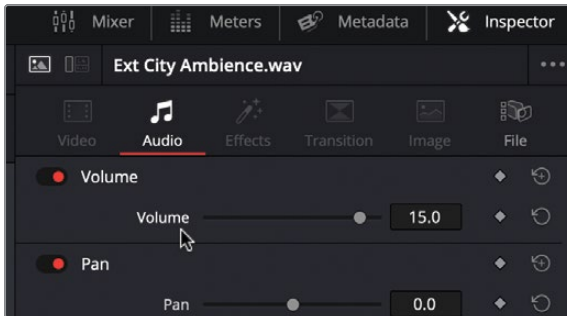
6   Stop playback. Then, double-click the Volume control name to the left of the slider to reset the parameter.

Now that you know how to adjust the level during playback, you can try typing a value.

7   Double-click the Volume field, type **12.0**, and then press Enter or Return.
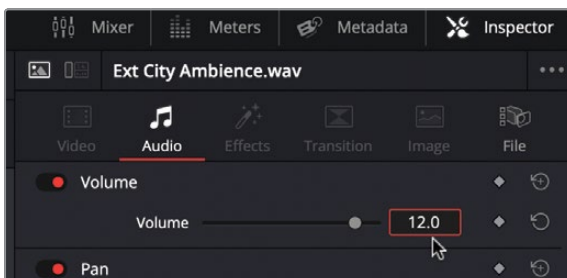
8   Play the beginning of the clip to hear the new level. When you are finished, stop playback.

The timeline clip is louder than before and easier to hear. You'll adjust it again later as needed.

9   Hide the Inspector.

Keep in mind that once your timeline is populated with more clips, selecting the clip you want to adjust is an essential part of using the Inspector. Next, you'll explore the media pool to preview additional source audio clips and use the volume controls in the Inspector to increase their levels as needed before editing them to the timeline.

Previewing Audio Clips in the Media Pool

The media pool contains all the media and timelines in your current project. In this exercise, you'll preview each audio clip to familiarize yourself with them before adding them to the timeline. Whenever you load a clip into the preview player, you can see the waveform for each of the clip's channels and preview the entire clip from its first available frame to the last.

1 Show the media pool.

The media pool opens on the left side of the Fairlight page and includes seven audio clips and one timeline.
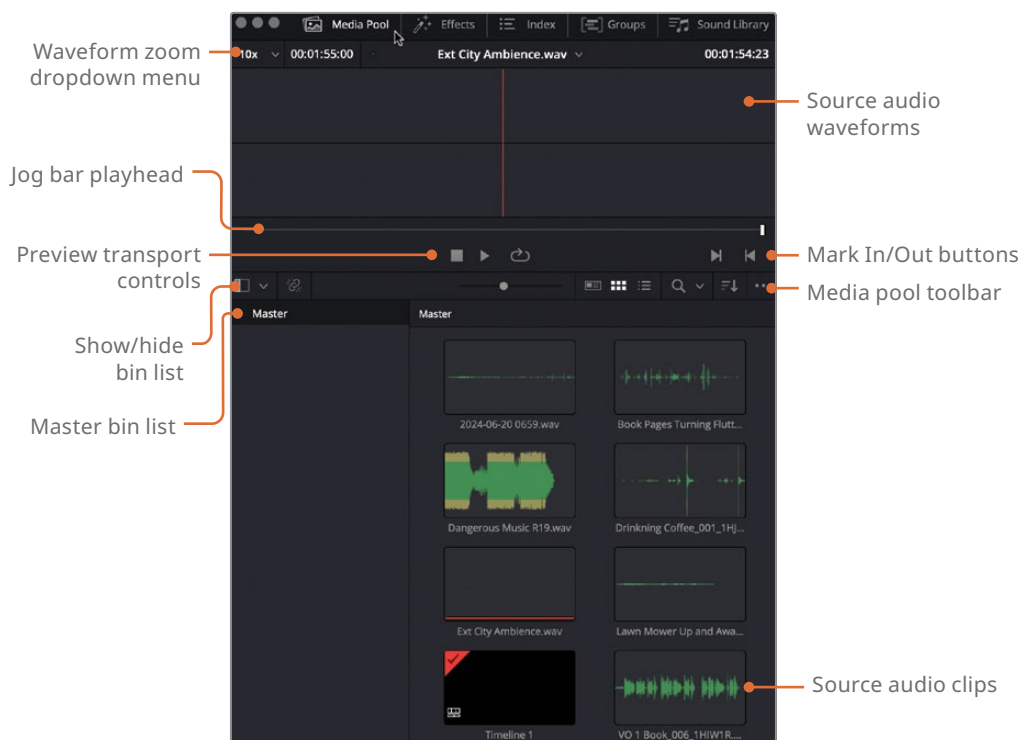
You can view source clips in either metadata or thumbnail view. The default is thumbnail view, which displays a graphical representation of the clip's waveform. The thumbnail waveform's size and color indicate the source clip's volume levels. Based on the thumbnail waveforms for the clips in this project, there is quite a difference in volume between the music, voiceover, and background clips.

2   Select the **Lawn Mower Up and Away** clip to load it into the preview player at the top of the media pool.

The two horizontal waveforms visible in the preview player beneath the clip name show that it is a two-channel stereo clip. This clip came from the Fairlight Sound Library, which you'll work with in a later lesson.

3   Press the Home key to move the playhead to the beginning of the clip in the preview player. Then, click the Play button or press the Spacebar to preview the clip. When you are finished, click Stop or press the Spacebar.
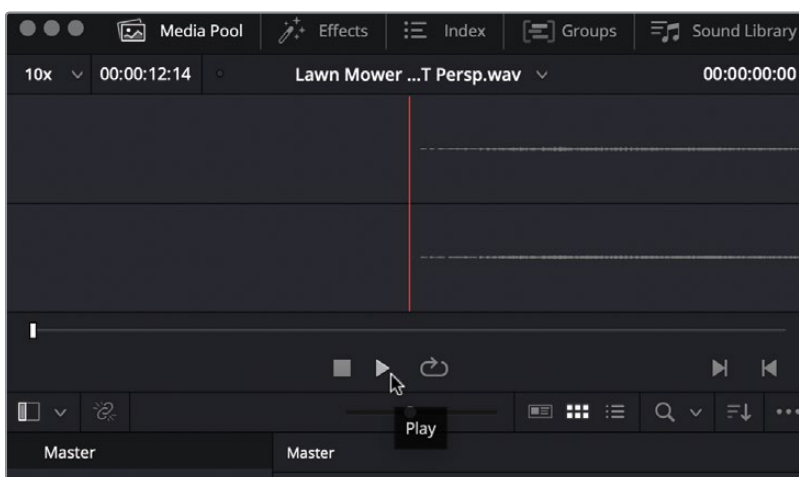
The clip delivers on its name, **Lawn Mower Up and Away**, and will work nicely to help create the audible soundscape of a park, complete with a groundskeeper at work in the distance. Before moving to the next clip, let's increase the clip volume level in the Inspector.

4   Show the Inspector. If necessary, select the **Lawn Mower Up and Away** clip to show the media pool clip's controls in the Inspector.

5   In the Inspector, set the Volume level to 6.0. Then, in the media pool, preview the clip again to hear it 6 dB louder.

How loud should this background sound effect be in the final mix? That all depends on the context of where the lawn mower is in relation to the listener and if someone is talking at the time. For now, it's louder than it was, and you know that you can adjust a clip's volume in the Inspector before or after you add it to the timeline.

Before previewing the remaining clips, you should know how to control the master monitoring levels while listening to louder source clips and timeline playback.

Controlling the Playback Volume Level

Whether you are recording, building tracks, or mixing your final project, it's always a good idea to know how to control your master playback monitoring levels. In the upper right corner of the timeline, you'll find the master playback volume controls. These controls do not affect the levels of your main output or individual tracks. However, they are incredibly useful for quickly adjusting the playback levels in your speaker system, computer speaker, or headphones.
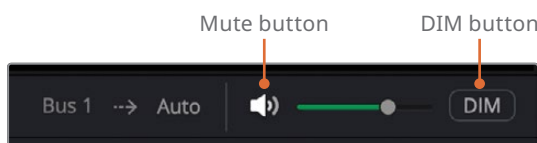
In this exercise, you'll preview the remaining clips, starting with Dangerous Music R19, which is a professionally mixed and mastered piece of music with a much higher overall level than the other clips. One glimpse at the waveform in the clip thumbnail and preview player can tell you what you can expect from the levels before you start playback. In this case, you'll lower the monitoring level rather than the clip level before you preview the clip.

1   Click the DIM button to instantly lower the playback volume by 15 dB.
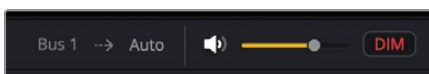
The playback volume fader turns yellow, and the DIM button turns red to indicate that the DIM button is on.

2   In the media pool, preview the **Dangerous Music R19** clip.
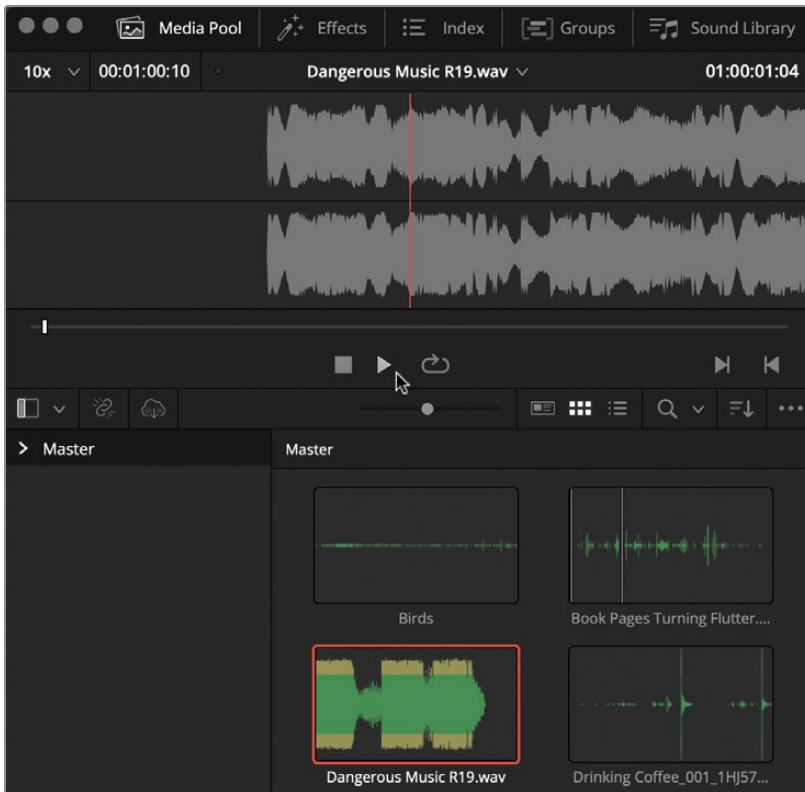
The music level is still much louder than the subtle ambience clips, but the dimmed playback should keep it at a comfortable level for listening. You should be able to preview the other clips without dimming the monitoring levels. You can always raise or lower the monitoring volume control if needed. Once clips are in the timeline and the levels are balanced, you won't need to adjust the monitoring level other than to mute or dim playback.

> **NOTE** Thumbnail waveform colors correspond to metering colors and indicate peak levels ranging from green to red. Green levels are safe with no chance of being too loud, and yellow peak levels are good targets to aim for when working with anchor sounds like dialogue. Red peak levels are getting close to being too loud and clipping or becoming distorted.

3 Select the **VO 1 Book_006** clip to show it in the preview player. Click the DIM button or choose Fairlight > Monitoring > Dim to turn off the DIM button.

The **VO 1 Book_006** clip is a single-channel, mono clip, as indicated by the single horizontal waveform in the preview player.

4 Preview the **VO 1 Book_006** voiceover clip. There are three takes, but you only need to listen to one for now.
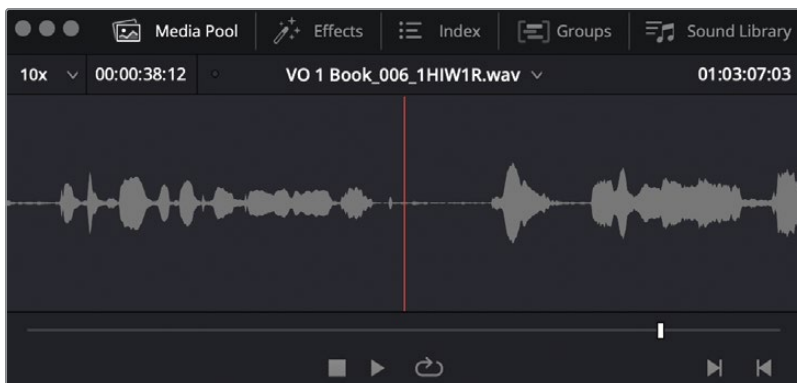
When previewing ambience and background sound effect clips, you don't always need to listen to the entire thing. In fact, previewing the middle of the clip often reveals the sound more effectively than starting from the beginning. Whichever part of these clips you decide to preview, be sure to listen to enough of the clip that you have an idea of the sounds you'll have to work with in building the soundtrack.

5 Preview the **2024-06-20 0659** clip. Increase the Volume in the Inspector to 16.0, and then preview the clip again at the increased level.

6 Preview the remaining clips. When you're finished, hide the Inspector.

Done! You have listened to each of the clips, and you are ready to build the podcast intro, starting with the clip of the birds. Which clip mainly features the sound of birds? Hint: "birds" is not part of the name—yet.

Changing Source Clip Names

There is a big difference between filenames and clip names. Filenames are generated when audio or video files are created and are used to link original media and proxies to the clips in DaVinci Resolve and vice versa. As a rule, filenames are never changed. Clip names, on the other hand, are user-defined nicknames for clips that can be useful for identifying them in the media pool or timeline. By default, clip names are identical to filenames until the user changes them. In this exercise, you'll give the clip with bird sounds a useful clip name.

1   In the media pool toolbar, click the List View button.
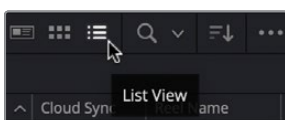
   In list view, the first column of the media pool library is Clip Name.

2   Locate the **2024-06-20 0659.wav** clip.

   This clip was originally recorded on a smartphone, and the filename is the date plus the time.

3   Triple-click the clip name field of the **2024-06-20 0659.wav** clip to select the entire name. Type **Birds**, and then press Return or Enter.
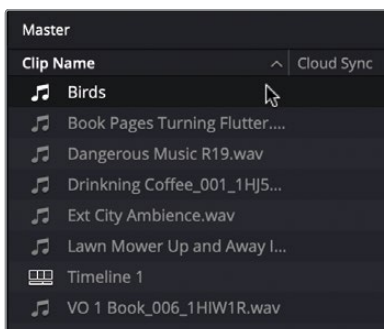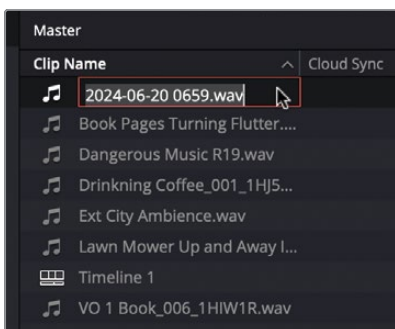
4   Hide the media pool.

You have successfully given the clip a more useful name, which will make it much easier to find and work with later. Next, you'll create two new tracks for additional background sound effects.

Manually Creating and Naming Tracks

You can create a single track or multiple tracks simultaneously from within the timeline. In this exercise, you'll create two new tracks below the A1 Audio 1 track for the birds and lawn mower background sound effects.

1 Right-click the A1 Audio 1 track header and choose Add Tracks.
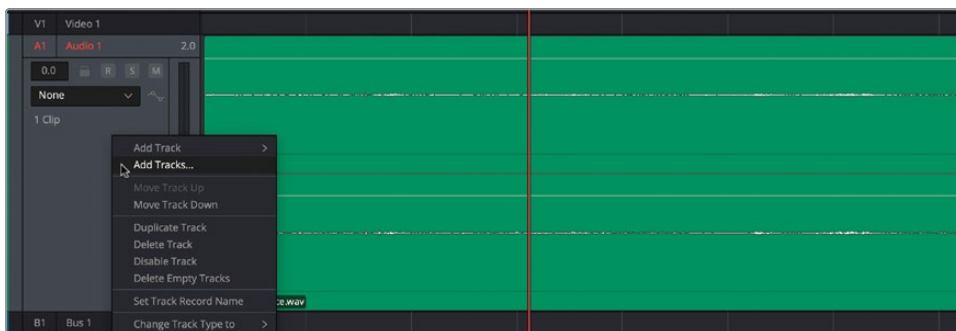
In the Add Tracks dialog, you can determine how many tracks you add and where they are placed.

2 Set the Number of tracks to 2, set Insert Position to Below Audio 1, and set the Audio Track Type to Stereo.
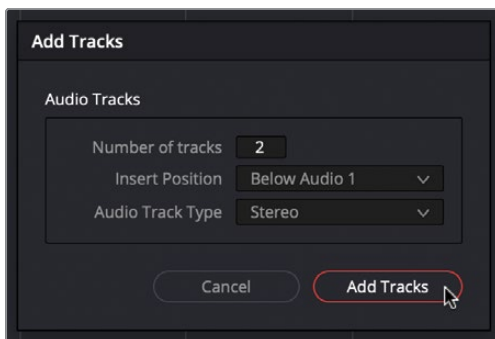
3 Click the Add Tracks button.

Two new tracks appear below the A1 Audio 1 track. Next, you'll rename the tracks.

4 In the A1 track header, select the Audio 1 name field and type **AMBIENCE**. Do not press Enter or Return.

As long as the name field is selected, you can press Tab to automatically move down to the next track and select the name field.

5   Press Tab to select the name field for the next track. Type **BIRDS**.

6   Press Tab to select the name field for the next track. Type **MOWER**. Press Enter or Return.
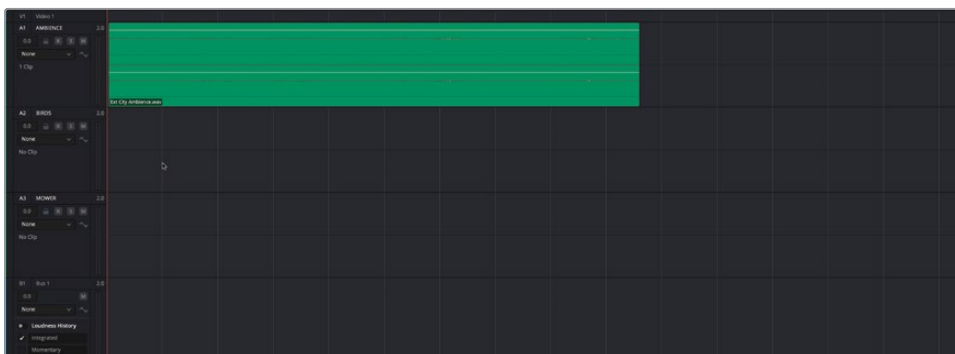
The tracks are ready to add clips.

> **NOTE** In DaVinci Resolve, using the right-click contextual menu from the track header to Add Track creates the new track directly below the selected track.

Adding Audio Clips to the Timeline

Once you find a clip that you want to work with and you know where you want to place it in the timeline, you need only drag it from the media pool to the timeline. In this exercise, you'll add the birds and mower clips to their corresponding tracks.

The preview player includes a handy dropdown menu that shows the 10 most recently accessed clips.

1   Show the media pool.

2 At the top of the media pool, click the dropdown menu arrow and select Birds.
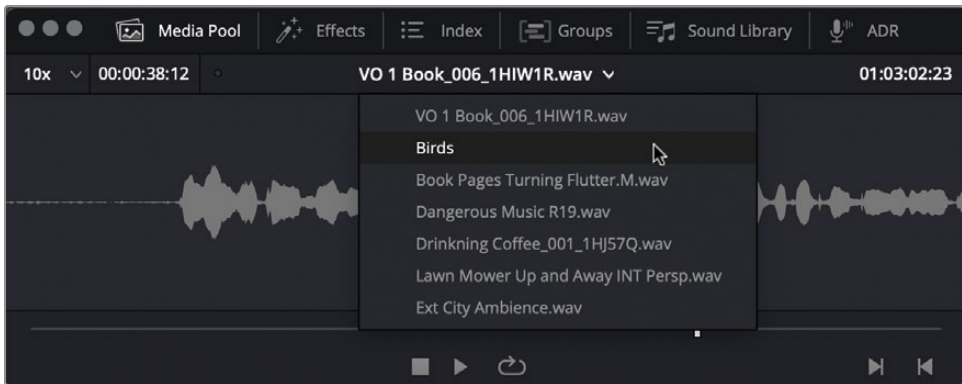
The Birds clip is loaded into the preview player, as indicated by the clip name at the top of the preview player, and the single waveform represents a mono channel of sound.

3 Drag the Birds clip from the waveforms at the top of the preview player to the beginning of the A1 BIRDS track in the timeline.
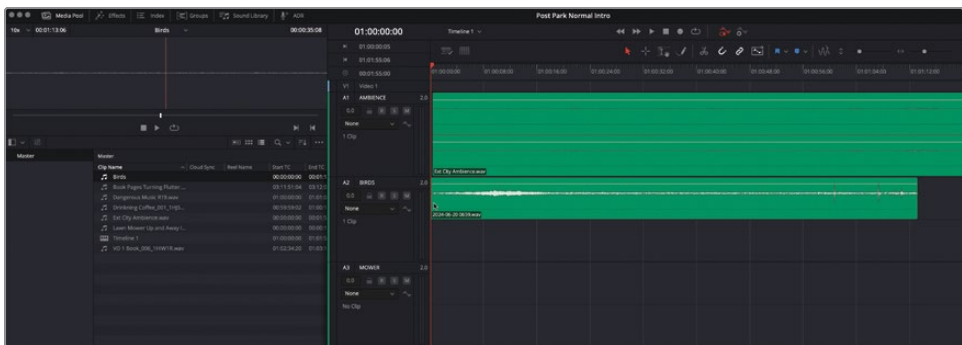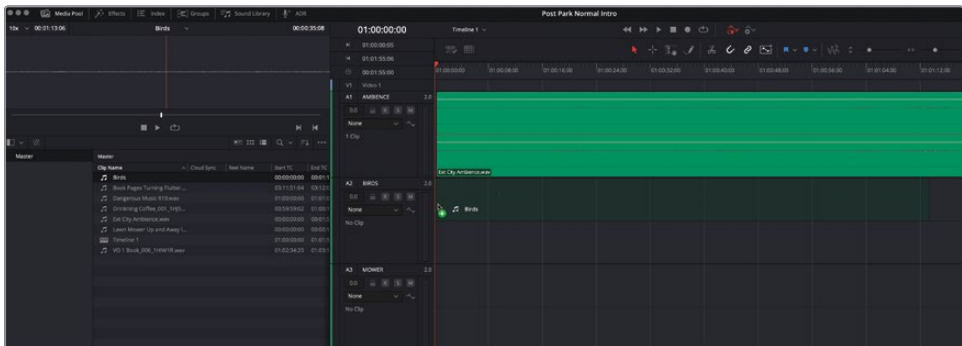
The clip appears in the track once you release it. Now it's time to add the mower clip. This time, instead of dragging from the preview player, you'll drag from the media pool library.

4 Drag the **Lawn Mower Up and Away** clip from the media pool library to the beginning of the MOWER track in the timeline.
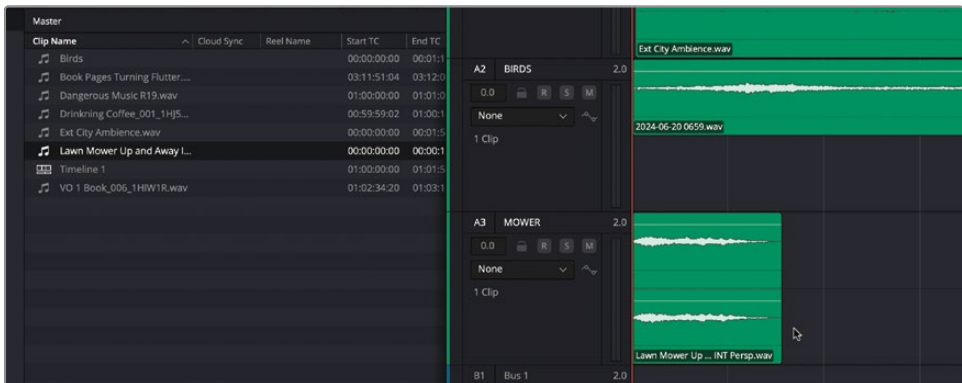
The first three tracks contain clips. However, one of the clips does not match the track's channel format. Notice the empty space below the Birds clip in the A2 track. This is because the birds clip is a single-channel mono clip, while the tracks are all stereo with two channels, left and right. The channel indicator in the upper right corner of the track header always shows the number of channels in the track. At the moment, all of the track channel indicators show 2.0 for two channels. No worries. To fix this, you can simply change the track format to mono.

5 Right-click the A2 track header area and choose Change Track Type To > Mono.
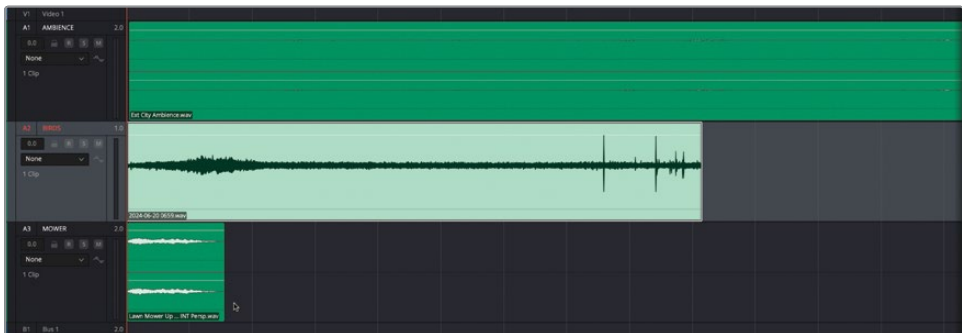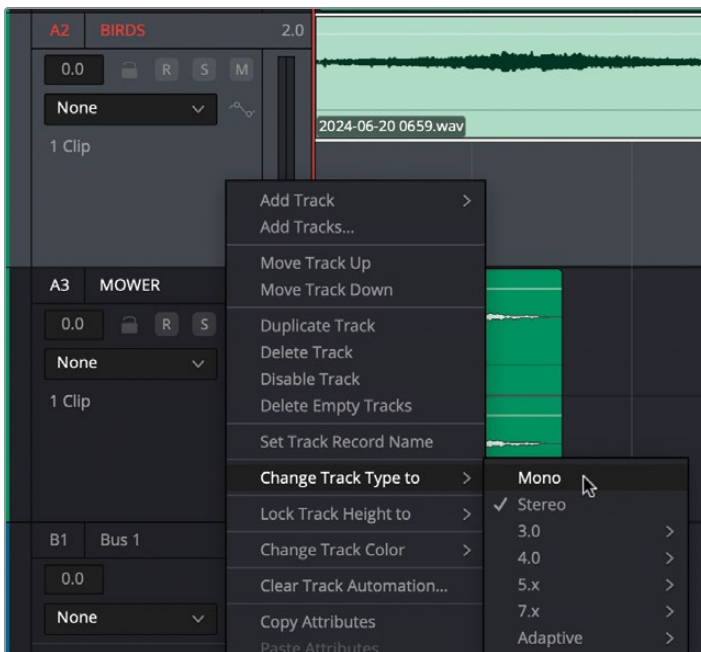
Now, the A2 track header's channel indicator shows 1.0, which means it is a single-channel mono track.

> **NOTE** It is important that timeline tracks match the clip format and vice versa for playback and mixing. For example, a mono clip in a stereo track will play sound in only the left channel or left speaker during playback. The default settings for a mono clip in a mono track will produce equal sound out of both speakers during playback. You'll work more with channel mapping for clips and tracks in Lesson 2, "Editing Dialogue Tracks."

There is still one more housekeeping item to change in the timeline.

6 Look at the name of the clip in the A2 BIRDS track.
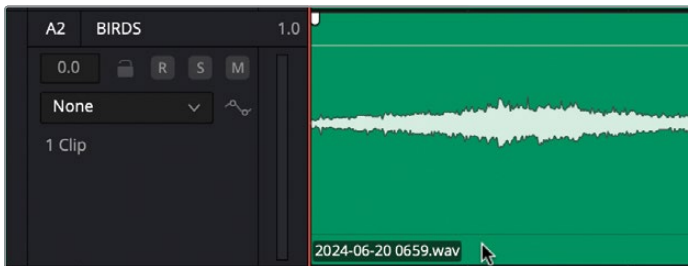
7 Previously, you changed the clip name in the media pool. However, timelines display filenames by default. To display the user-defined clip names in the timeline, you need to enable that option in the View Clip Info Display dialog, available only in the Fairlight menu. Whichever settings you choose in the Clip Info Display dialog are global for timeline clips in all the projects on your system.

8 Choose Fairlight > View Clip Info Display to open the dialog. In the Clip Info Display dialog, click the Clip Name option to select it. Click OK.
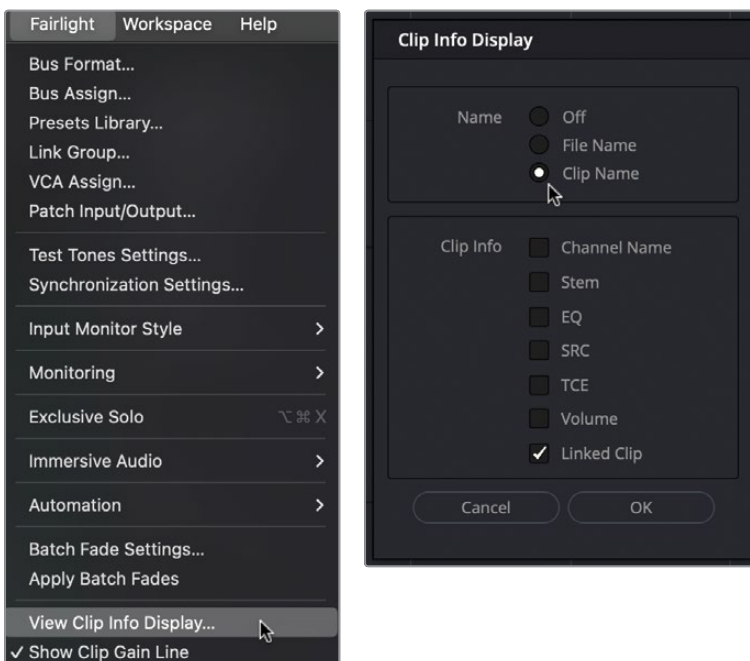
Clip names are now displayed in the timeline for all the clips, including Birds. Let's listen to the beginning of the timeline and evaluate the tracks.

Evaluating Tracks During Playback

In this exercise, you'll listen to and evaluate the tracks during playback. First, let's hide the unnecessary panels, fit the clips to the timeline horizontally, and decrease the height of the tracks to make room for additional tracks as needed.

1 Hide the media pool.

2 Click anywhere in the timeline to make it active. Press Shift-Z to fit the clips horizontally.

To decrease track height, hold down Shift while scrolling down with your mouse wheel or drag the vertical zoom slider to zoom in vertically.

3 Decrease the track height until the current tracks fit in the upper third of the timeline.

4 Using the Timecode field as a guide, play the first 20 or 30 seconds of the timeline to see and hear how it is working so far.
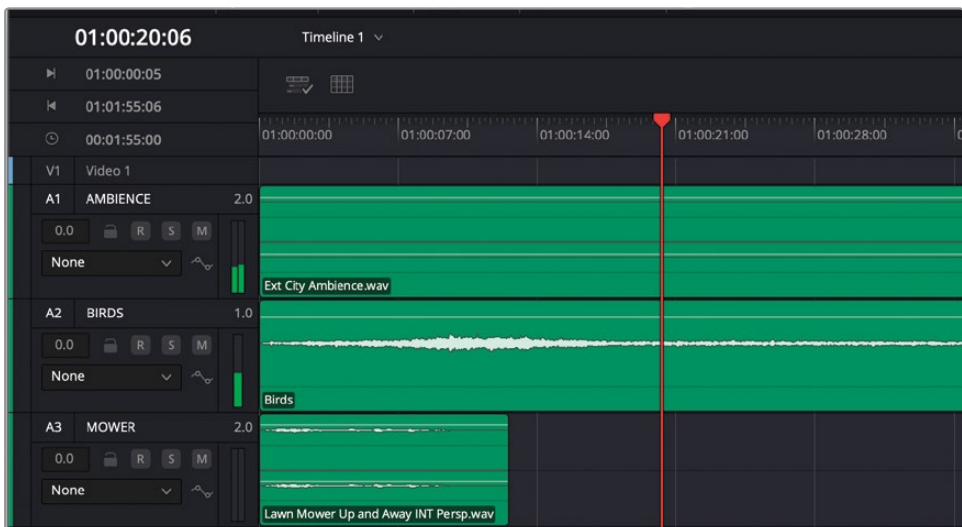
Now that you have heard the initial tracks together, what are your thoughts? Keep in mind that this is a work in progress. Based on a first listen, the mower sound is a bit jarring right at the beginning, and the first part of the bird sound clip sounds like it has more car noise than birds.

To evaluate the tracks, you can use the controls in the track headers. At the left of each track, the header shows each track's name, number, and control buttons.
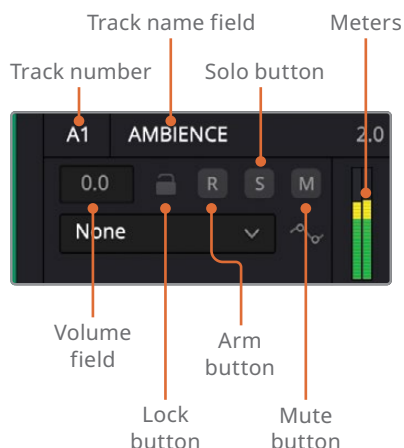
5 Press the Home key or fn-Left arrow to move the playhead to the beginning of the timeline.

6 Click any empty space on the A1 AMBIENCE track header to select that track.
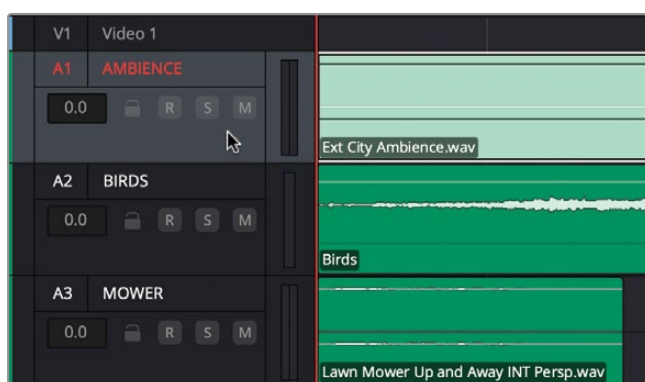
Notice that when a track header is selected, the name and number turn red, and the track brightens. Additionally, any clip beneath the playhead on a selected track brightens to indicate that the clip is selected.

7 Click any empty space in the timeline to deselect the A1 track.

> **NOTE** Track selection is important when you are recording or editing using shortcuts. You can evaluate tracks without selecting them; however, it is always a good idea to be aware of which tracks or clips are selected as you work.

Now, let's try using the Solo and Mute buttons on several tracks. Solo isolates a track by temporarily muting all other tracks. Mute silences a track until it is unmuted. You can click these buttons to toggle each control on and off during playback. Your goal is to listen to the birds, the birds plus the ambience, and then the ambience alone to hear how they work by themselves and combined.

8   Solo the A2 BIRDS track, and then mute the A3 MOWER track.
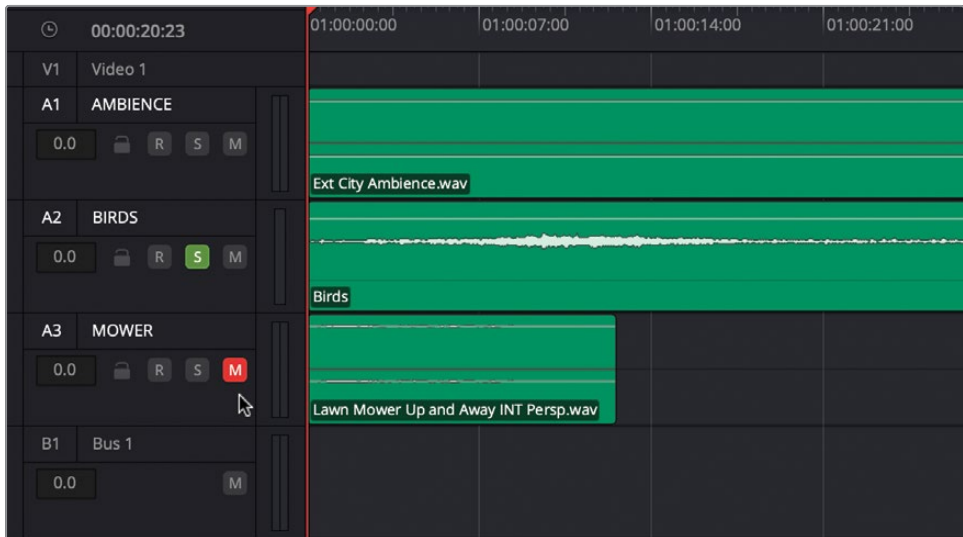
9   Start playback from the beginning of the timeline and listen to only the A2 BIRDS track. At around 00:00:10:00, unsolo the A2 track to hear the birds and ambience together until around 20 seconds. Then solo the A1 AMBIENCE track and listen to it by itself until around 30 seconds. When you are finished, stop playback.

As you can hear, the Mute and Solo buttons are an easy way to listen selectively to specific tracks during playback. You can also swipe them on or off to quickly solo multiple tracks at once.

10   Unsolo the A1 track. Leave the A3 track muted.

Hopefully, you were able to focus on the first two tracks and how they work both separately and together to establish the soundscape of a park. This exercise also clarified the issue that the first part of the Birds clip is dominated by a passing vehicle. In the next exercise, you'll clean up the beginning of the Birds clip.

Trimming Clips in the Timeline

DaVinci Resolve offers many options for editing and trimming audio clips, either manually or with keyboard shortcuts. In this exercise, you'll start by manually trimming the beginning of the Birds clip, and then you will use a keyboard shortcut to trim the ends of multiple clips simultaneously. Your first goal is to trim the beginning of the Birds clip to remove the sound of the car. Once that is done, you'll trim the clips in the A1 and A2 tracks so that they end at 30 seconds, since that is the duration of the podcast intro.

To manually trim a timeline audio clip, you can drag an edge of the clip toward the right or left. While trimming, you'll see a translucent waveform image of the entire audio file that you can use as a guide as you trim.

1   Solo the A2 track. Start playback and listen to the Birds clip. Stop playback when you no longer hear the passing car (at around 01:00:19:00).
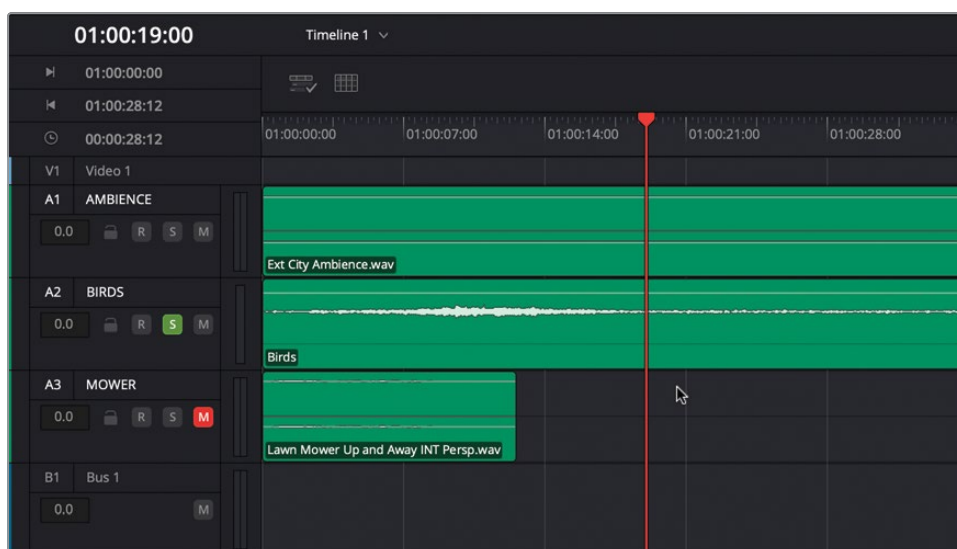
The playhead marks where you want to trim the head (start) of the clip.

2   In the A2 BIRDS track, drag the head (left edge) of the clip to the right until it reaches the playhead.
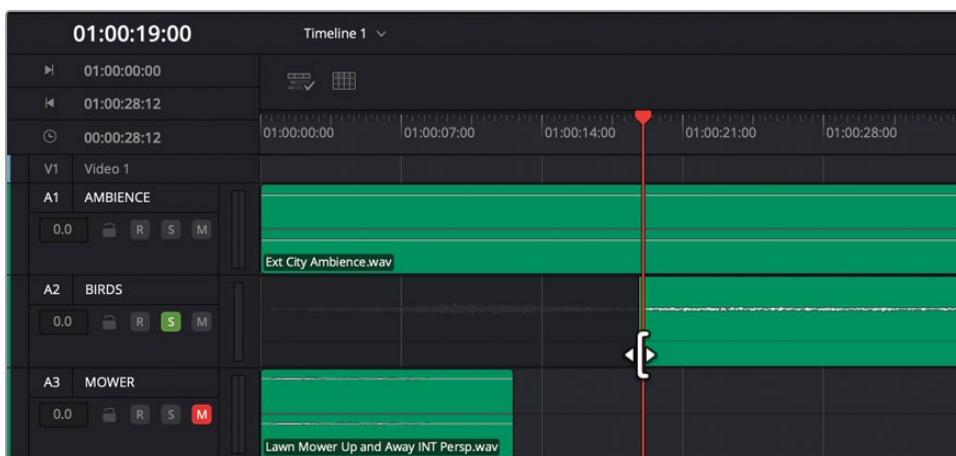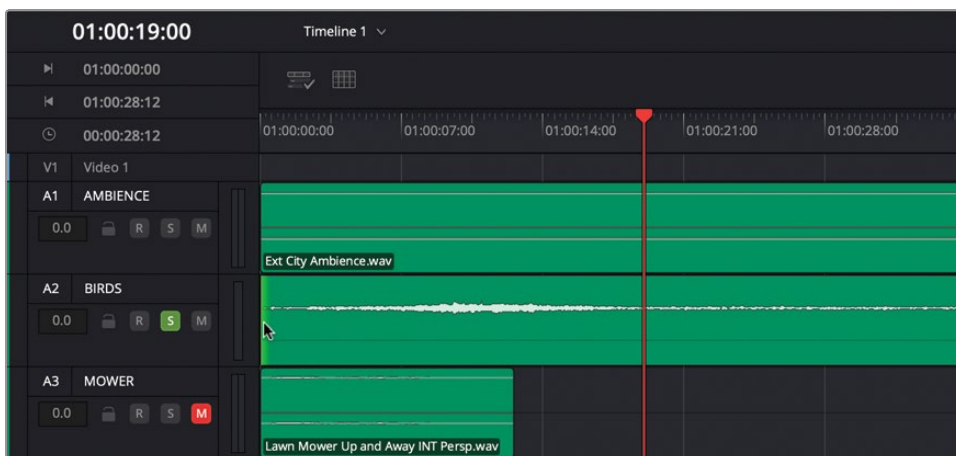
3   Drag the trimmed Birds clip toward the left so that it starts at the beginning of the timeline.

4   Unsolo the A2 track and play the beginning of the timeline to hear the improved birds and ambience together.

Finally, the birds clip lives up to its name, and you can move on to trimming the tails of the clips in the A1 and A2 tracks to end at exactly 30 seconds (01:00:30:00).

When working with timecode, it is easy to navigate using the Timecode display. Numbers are entered from right to left as you type them. If you want to move to 30:00, you just type 3000 or type 30. (period). Entering a period (.) or colon (:) will automatically add two zeros (00) in the timecode field. In this case, you don't have to type the hour and minutes if they are unchanged; the current hour and minutes will stay the same, so the results will be 01:00:30:00.

5 Click the Timecode display in the upper left of the timeline to select it. Type **30.** (thirty period) to set the timecode to 30:00.
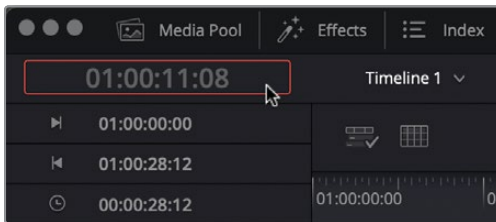
6 Then press Enter or Return to move the playhead to 01:00:30:00 on the timeline.
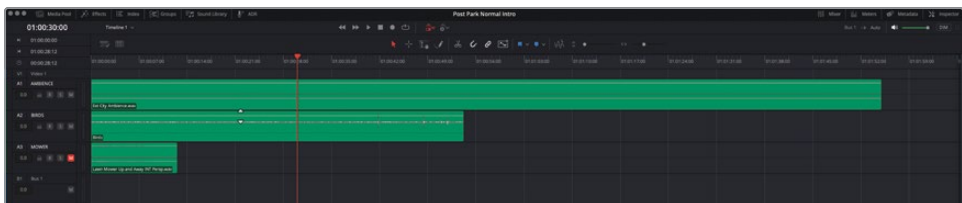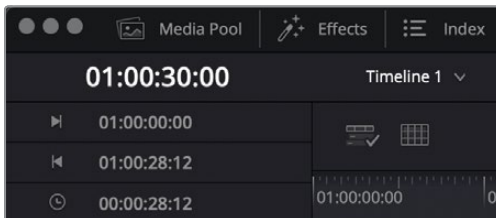
The playhead moves into position at 01:00:30:00. Next, you will trim the tail of the clips using the Trim End option available in the Trim menu.

> **NOTE** In the Fairlight page, you can edit and trim clips using the playhead plus menu options or keyboard shortcuts. This type of trimming targets selected clips or tracks. If no clips or tracks are selected, all clips beneath the playhead will be affected.

7 If necessary, click the empty space in the timeline to deselect all clips and tracks and ensure that the playhead is at 01:00:30:00.

8 Choose Trim > Trim End or press Shift-] (right bracket) to trim the tail of the clips beneath the playhead to the playhead position.
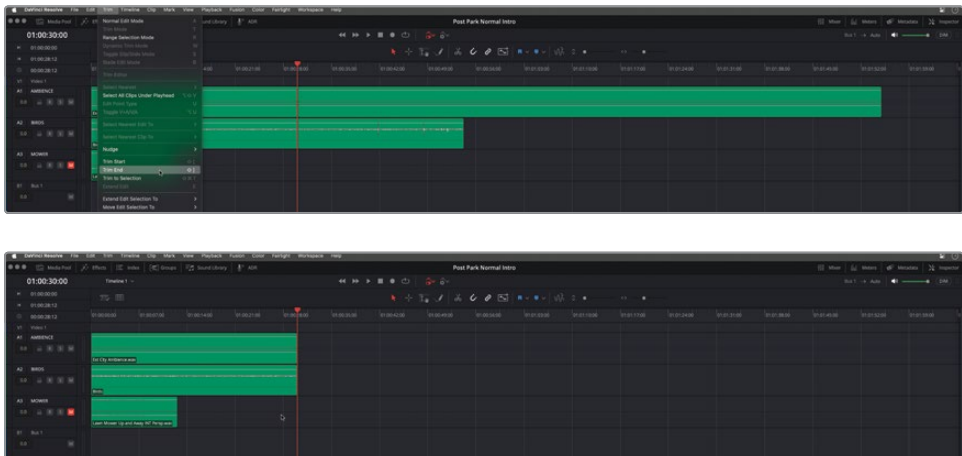
Done! The ambience and birds are now the exact duration they need to be for the podcast intro. While the playhead is still at 01:00:30:00, this would be a great time to set a marker in that position that you can see at a glance while you work.

> **NOTE** If you didn't finish all the steps in this lesson, open the timeline **1c A1 to A3 Trimmed** to catch up.

Working with Markers

Markers are often used in audio post-production as a guide to setting music cues, marking sound effects, or identifying elements such as dialogue takes or problems that must be addressed. They can also be used to aid navigation or as a guide when adding clips to the timeline. In this series of exercises, you'll start by adding markers in the timeline to indicate the end of the podcast intro and the starting position for the voiceover. Then, you'll move to the media pool, where you'll use markers to label events in a sound effect and separate takes in the voiceover.

1 If necessary, move the playhead to 01:00:30:00 and deselect all clips and tracks.

2 In the timeline toolbar, click the Markers button to set a marker in the timeline ruler at the playhead position.
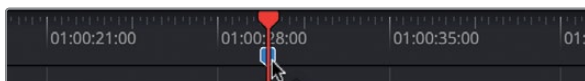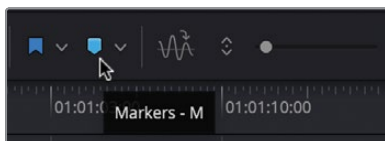
A marker appears in the timeline ruler. The default marker color is blue. You can change the marker color and edit the marker information in the Markers dialog.

3 In the timeline, double-click the blue marker beneath the playhead to open the Markers dialog, and change the name and color as follows:

— In the Name field, type **END Intro Here**.

— In the Color options, click the red marker to change the marker color accordingly**.**
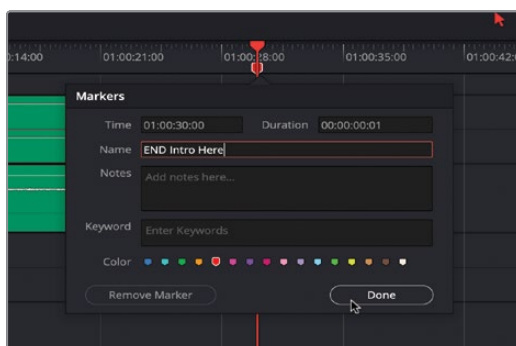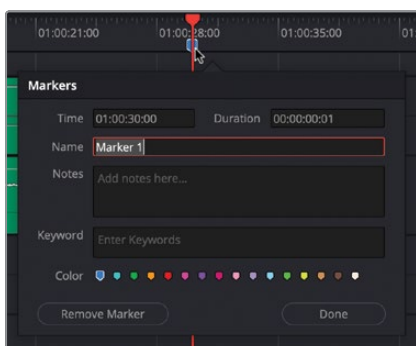
4 When you are finished, click Done.

Next, you'll use the arrow keys and keyboard shortcuts to move the playhead to the starting position for the voiceover and set a marker there as well.

5 Press Home to move to the beginning of the timeline. Press Shift-Right Arrow to move the playhead one second to the right.

6 Press M to set a marker at 01:00:01:00. Press M again to open the Markers dialog. Then, in the Markers dialog, type **START VO**. When you are finished, click Done.
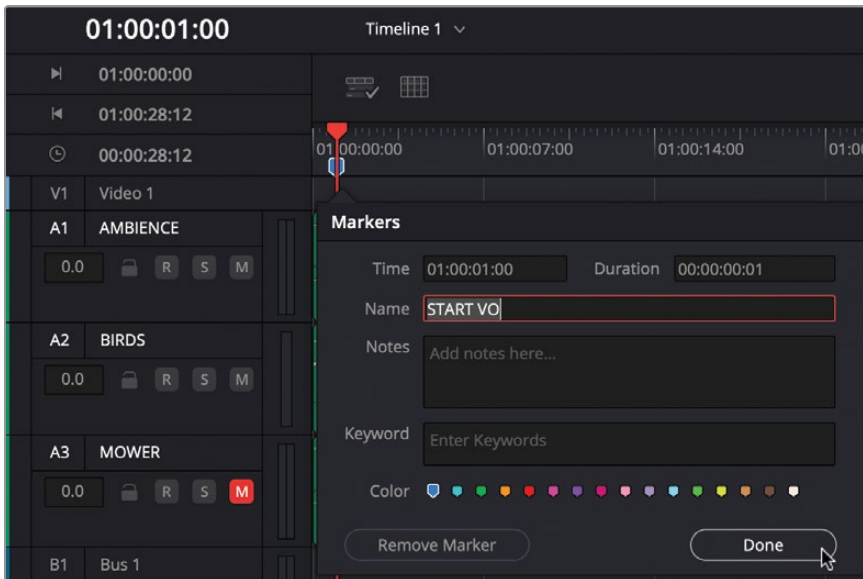
To navigate between markers in the timeline, you can hold down the Shift key and press the Up Arrow or Down Arrow keys. Pressing Shift-Down Arrow moves down the timeline to the next marker. Pressing Shift-Up Arrow moves the playhead to the previous marker. Navigating to a marker also selects it so you can easily open the Markers dialog by pressing M. Let's try it.

7 Press Shift-Down Arrow to move to and select the red marker. Press Shift-Up Arrow to move to and select the blue marker. Press M to open the Markers dialog for the blue marker. Change the color to yellow. When you are finished, click Done.
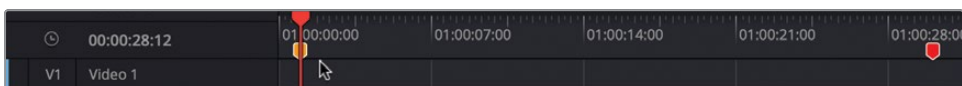
In the next series of exercises, you'll return to the media pool, where you'll apply markers to source clips as you review the remaining clips and edit them to the timeline.

Marking and Editing Select Portions of a Clip

So far, you have previewed and added whole audio clips. However, in audio post-production, you'll often work with long clips comprising multiple takes. When working with a clip that includes more content than you need, you can place markers on the clip to label specific sections. You can also mark a useful clip range by placing In and Out points. In this exercise, you'll use both methods to mark clips.

1 Show the media pool.

Here, you'll see the seven audio clips and the timeline. The timeline is still named Timeline 1. Let's rename the timeline before moving on to the next steps.

2 In the media pool library, double-click the Timeline 1 name field to select it. Type **Podcast Intro v1** and then press Return or Enter.
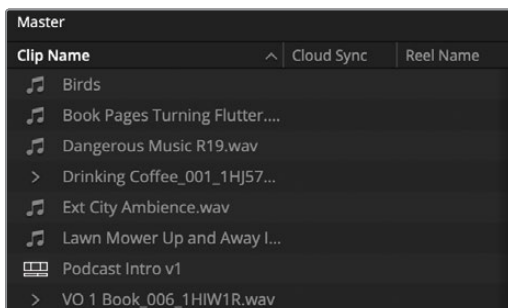
The first clip you'll preview and mark is **Drinking Coffee_001**. Your goal here is to mark two key audible moments in the clip: the sound of coffee sloshing in the thermos and the sound of drinking and swallowing the coffee.

3 Select the **Drinking Coffee_001** clip to load it in the preview player. Play the entire clip and listen to both takes.
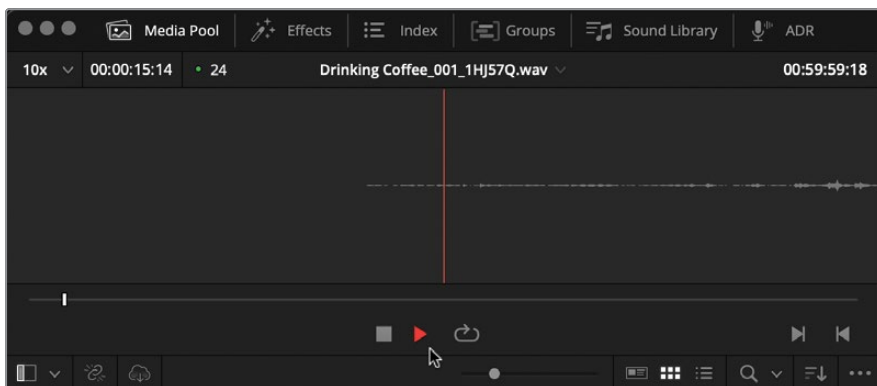
For this intro, the director likes the first take. Fun fact: the director is the one who was actually drinking coffee in the recording.

Previously, you set markers at specific timecode locations while the playhead was parked in position. This time, you'll set markers while the playhead is moving, or "on the fly." Don't worry about setting these marks on exact frames; these are a general guide while editing the clips.

4   In the preview player, play the clip from the beginning and press M when you hear the sloshing start and again when you hear the sound of someone taking a drink. When you're finished setting the two markers, click Stop or press the Spacebar.

> **NOTE** When using common keyboard shortcuts in the preview player or timeline, you may need to first click the area of the interface you want to focus on to be sure you are controlling the desired playhead

5   Press Shift-Up Arrow or Shift-Down Arrow to navigate between the two source clip markers and name the first marker **Slosh** and the second marker **Slurp.** Notice that when the playhead moves to a marker, the marker information appears in the preview player.
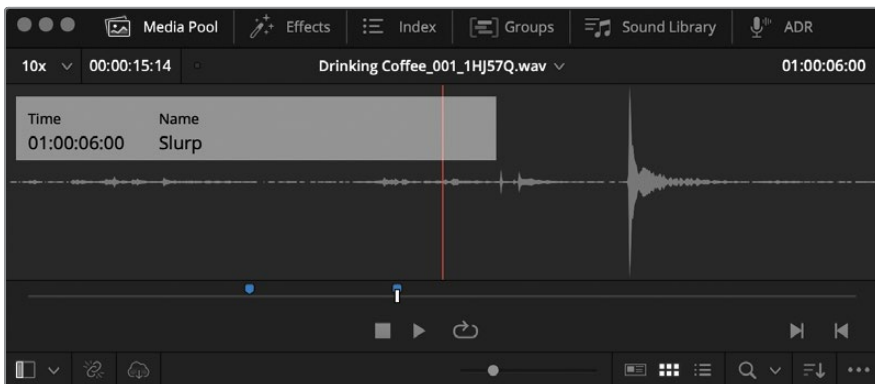
Now that you are familiar with setting markers, let's move on to marking In and Out points to select specific portions of a clip.

Marking In and Out Points

In the lower right corner of the preview player, you'll see a set of buttons to mark In and Out points. The keyboard shortcuts for placing these marks are I and O.
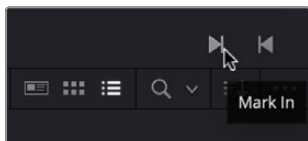
In this exercise, you'll use the In and Out points to mark a specific section of the book turning. As with markers, you can set In and Out points with the playhead parked at a specific location or during playback.

1   Select the **Book Pages Turning Flutter** clip and preview it.
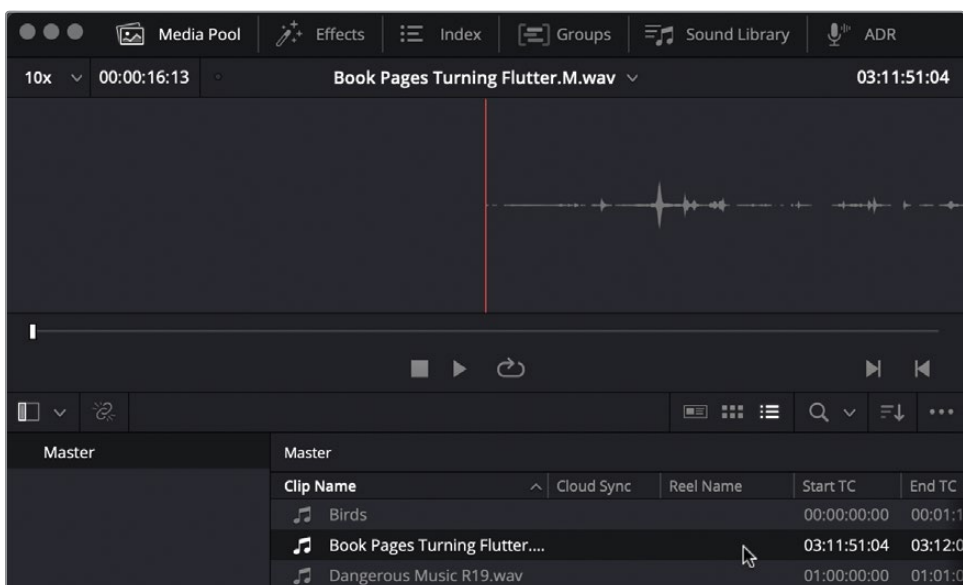
For context, the narrator of the podcast intro is at the park drinking coffee and reading a book for book club. You'll use this sound effect sparingly to sell the idea that the person talking is reading and turning a page once or twice. As is, it sounds more like someone is flipping through a book looking for something than actually reading. Luckily, the first few turns will work well for this project.

2   In the preview player, move the playhead to the beginning of the clip.

3   Click the Mark In button or press I to mark the In point at the beginning of the clip.

4 Play the clip from the beginning and listen for the first and second page turns. Stop playback after the second page turn, around 03:11:55:08 in the source clip's timecode, located in the upper right corner of the preview player.

5 Click the Mark Out button or press O to mark the Out point after the second page turn.
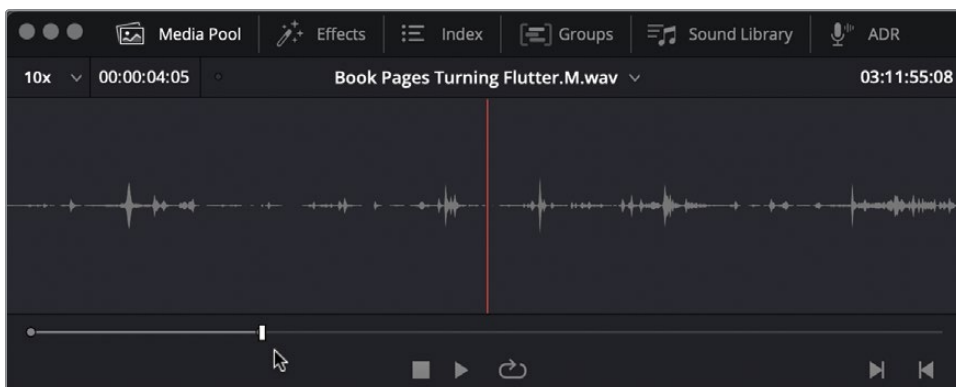
The scrubber bar in the preview player shows the marked portion of the clip.

6 Press Option-/ (forward slash) on macOS or Alt-/ on Windows to play the marked section from the In point to the Out point. Listen to the page-turn sound effect.

Excellent. That clip is marked and ready to edit to the timeline once the voiceover is in place, and you know where to place the sound.

> **NOTE** When working with In and Out points, you can use Shift-I or Shift-O to navigate to the In or Out, and Option/Alt-I or Option/Alt-O to clear them. Option/Alt-X clears both the In and Out points. These options are also available in the Mark Menu.

Setting Duration Markers

The last clip that you'll mark is the voiceover clip containing three takes of the narrator describing a specific morning at the park. This time, instead of just setting a marker for each take or for In and Out points, you will combine both to create duration markers for easy access to each take. An advantage of working with duration markers is that they mark a specific range of the clip that can be edited to the timeline, like a subclip. To simplify this process, let's use a new set of shortcuts to quickly scrub through the audio without using your mouse.

Scrubbing with the JKL Keys

Using the JKL keys allows you to quickly scrub through clips in both the timeline and preview player. Pressing the L key plays forward, pressing the J key plays backward, and pressing the K key stops playback. Tapping the L or J keys multiple times will speed up playback. Holding down L or J will play one frame at a time and stop playing when you release the key. Holding down K while tapping L or J will play forward or backward one frame at a time, whereas pressing K together with L or J will play in slow motion. Let's give these keys and combinations a try as you preview the Line 4 voiceover takes.

1   In the media pool, select the **VO 1 Book_006** clip.

The first and last frames of a source clip are the default In and Out points for the clip.

2   Press Shift-I to move the playhead to the beginning of the clip.

3   Press L to play forward until just before the first take. Press K to stop. Hold K and tap L or J as needed to move one frame at a time until you are clearly before the first words start (approx. 01:02:37:11). Press I to mark an In point.

4   Press L to resume playback. After the narrator says, "... and then out of nowhere they arrived," press O to mark an Out point. You can do this during playback, or you can press K to stop before pressing O. When you are finished, stop playback if necessary.

> **TIP** In and Out points update whenever you press I or O, which makes "on the fly" marking easy. For example, as the playhead approaches the desired Out point, you can continuously press O while listening to the playback and stop once you've hit the perfect mark. To save time, you can even set marks in fast forward, fast reverse, or slow-motion playback as needed using JKL. Conveniently, the I, O, and M keys are located adjacent to the JKL keys on a standard QWERTY keyboard.

5 Press Option-/ (forward slash) on macOS or Alt-/ on Windows to play the marked section. Feel free to expand the selection range by dragging the In or Out points in the scrubber bar of the preview player.

If the entire take is within the In and Out points, you are ready to turn the selection into a duration marker.

6 In the preview player, right-click the marked range and choose Convert In and Out to Duration Marker from the menu.
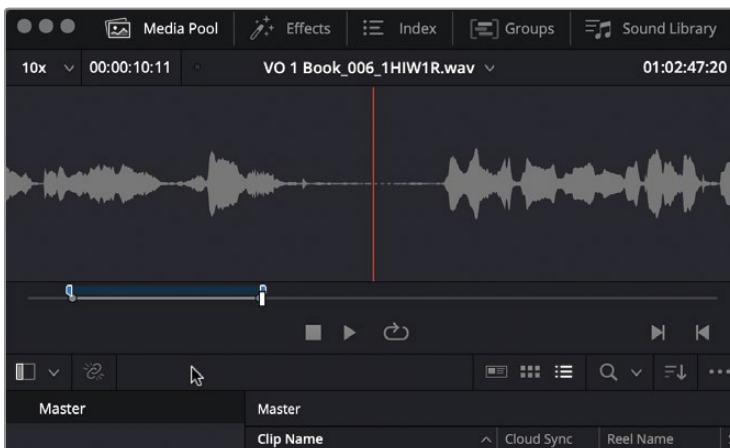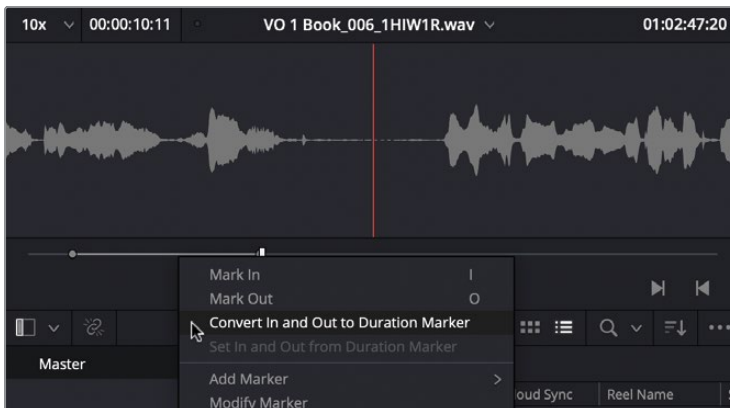
A blue duration marker appears above the marked range.

7 Double-click the blue duration marker to open the Markers dialog, and change the name and color as follows:

— In the Name field, type **Take 1**.

— In the Color options, click the yellow marker to change the marker's color accordingly**.**

8 Mark the second take with In and Out points. Convert the marks to a duration marker. Change the marker name to **Take 2** and the color to yellow.

9 Repeat step 8 to create a duration marker for the third take.

When you are finished marking all three takes, you can clear the In and Out points.

10 Choose Mark > Clear In and Out or press Option/Alt-X.

Not only do the source clip markers show in the preview player jog bar, but they also appear in the Clip Name list.

11 If necessary, set the media pool library to list view.

12 Click the arrow at the left side of the **VO 1 Book** clip's icon to show the markers in the media pool list.
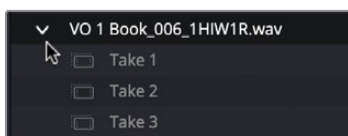
13 Select Take 1 to load only that marked portion of the clip into the preview player. Play the selected take.
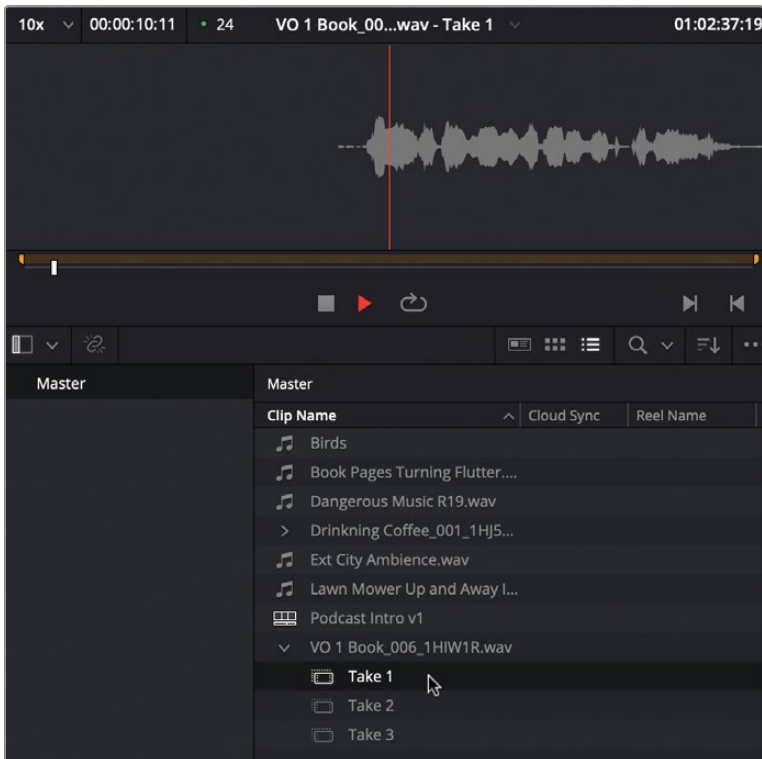
You've successfully marked three source clips in three different ways. Now, they are ready to be added to the timeline.

Creating and Editing Additional Tracks

In this exercise, you'll continue building the podcast intro using skills you've learned so far in this lesson. First, you'll create and name new tracks, and then you'll edit the corresponding source clips to the tracks.

1 In the timeline, right-click the A1 AMBIENCE track's header and choose Add Tracks. In the Add Tracks dialog, set the following:

— Number of tracks: 3

— Insert Position Below: AMBIENCE

— Audio Track Type: Mono

2   Click Add Tracks or press Return.

3   Name the new tracks as follows:
- — A2 track **VO 1**
- — A3 track **COFFEE**
- — A4 track **BOOK**

4   In the timeline, move the playhead to the yellow marker.

5   In the media pool library, select **Take 1** in the **VO 1 Book_006** clip. Drag **Take 1** from the preview player to the playhead position on the A2 VO 1 track.

6   Drag the **Drinking Coffee** clip to the playhead position on the A3 COFFEE track.

7   Drag the **Book Pages Turning** clip to the playhead position on the A4 BOOK track.
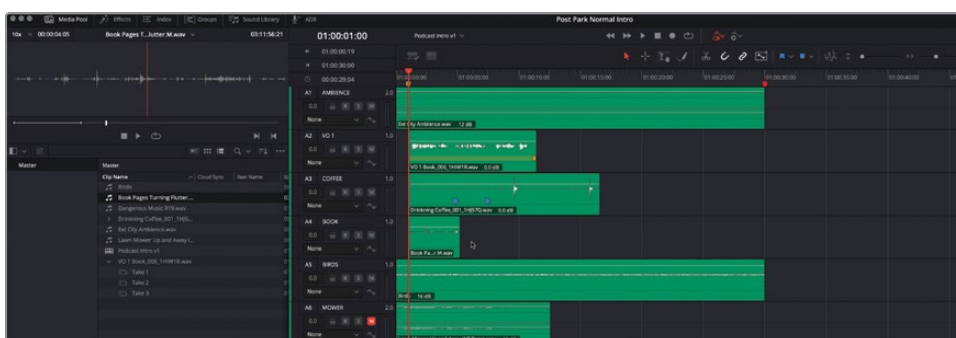
8   Hide the media pool.

9   Play the timeline once from the beginning to hear how it is progressing. Keep the A6 track muted for now.

What did you think of the work in progress? The soundscape is starting to come together. You probably noticed that the Drinking Coffee clip needs trimming. Additionally, the timing and levels of some clips need to be adjusted. Soon! First, let's color and rearrange the tracks to organize them. Then, you'll move on to trimming, timing, and balancing levels.

Coloring and Reordering Tracks

Descriptively naming and organizing your tracks can save you time later in your mixing process. In this exercise, you'll change the color of each track based on the contents, then reorder them by priority, starting with the voiceover and ending with the background ambience. You can change the track color in the timeline track headers or the tracks index. Reordering tracks, on the other hand, can be accomplished by dragging the left edge of the track header, or dragging the track name in the mixer or tracks index. There is also a

shortcut (right-click) menu option for moving a track in the timeline. In this exercise, you'll use the timeline and track index methods.

1   In the timeline, right-click the A2 VO 1 track header and choose Change Track Color > Yellow.
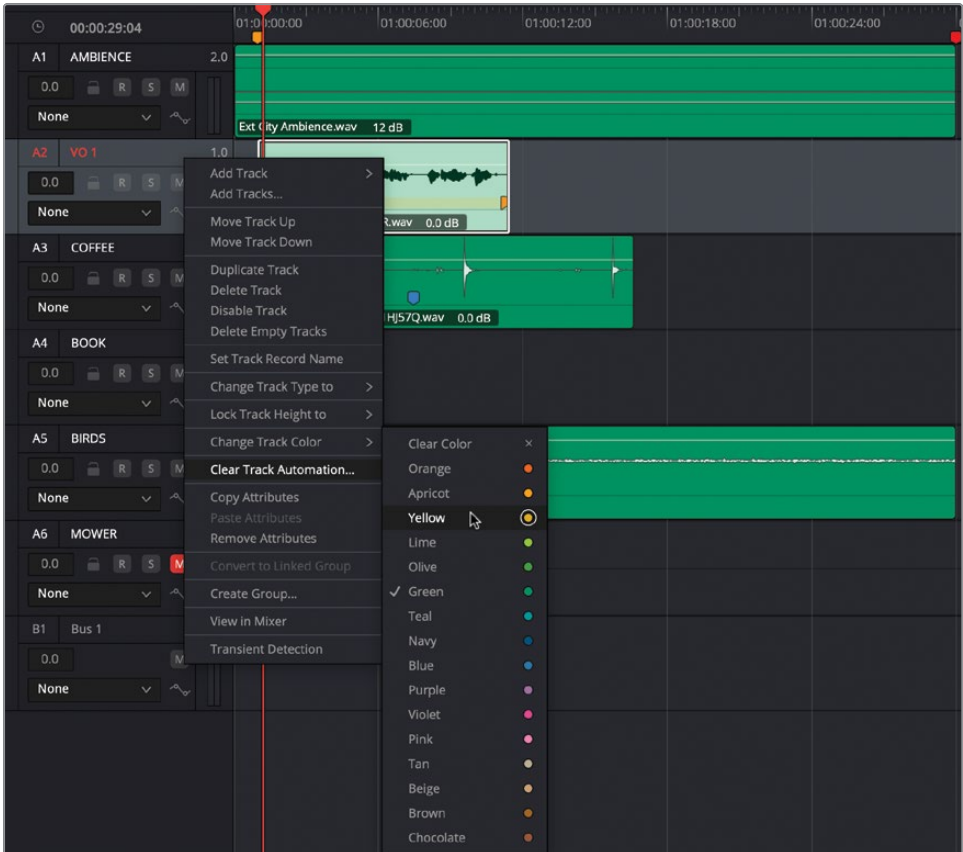
To move a track up or down, you can use the right-click shortcut menu in the track header.

2   Right-click the A2 track header and choose Move Track Up.
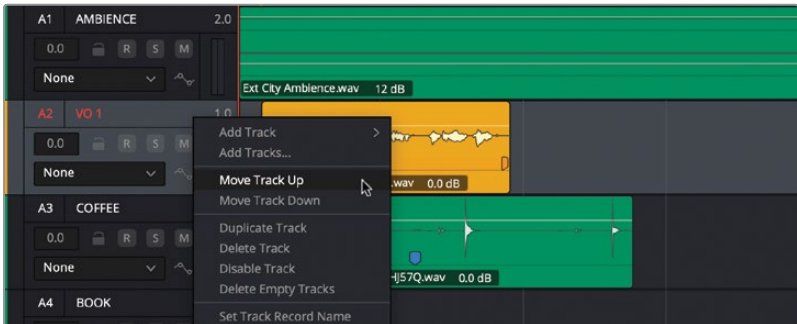
The VO 1 track is now in the A1 position in the timeline, and the clip color within the track is yellow. As you can see, track numbering is based on the position in the timeline and will update automatically when you reposition tracks.

You can also color multiple selected tracks at once. To select multiple consecutive tracks in the timeline, drag a selection up or down to the previous or next track headers. When selecting tracks, click and drag the empty space near the top of the track header to avoid clicking any controls.

> **NOTE** You can use common Shift and Command/Ctrl modifier shortcuts to select multiple clips or tracks. For continuous clips or tracks, select the first track and then Shift-click the last consecutive track to select them all at once. For noncontiguous tracks, Command-click (macOS) or Ctrl-click (Windows) to select or deselect specific clips or tracks.

3   Drag a selection from the top of the A3 COFFEE track header to the A4 BOOK track to select both tracks.
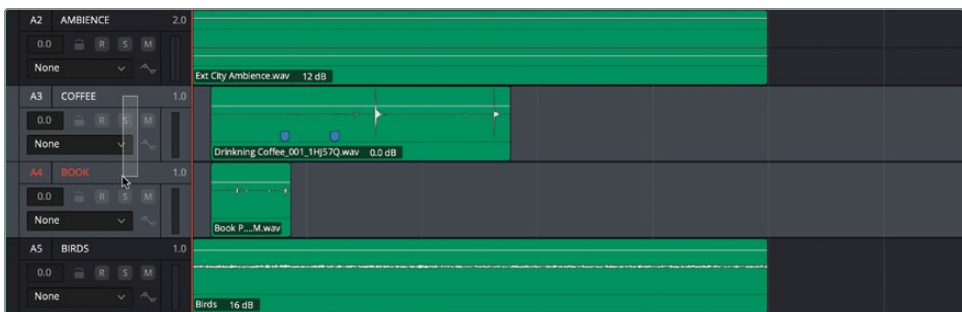
4   Right-click within the selected track headers and choose Change Track Color > Chocolate.

5   Change the Birds track color to Blue.
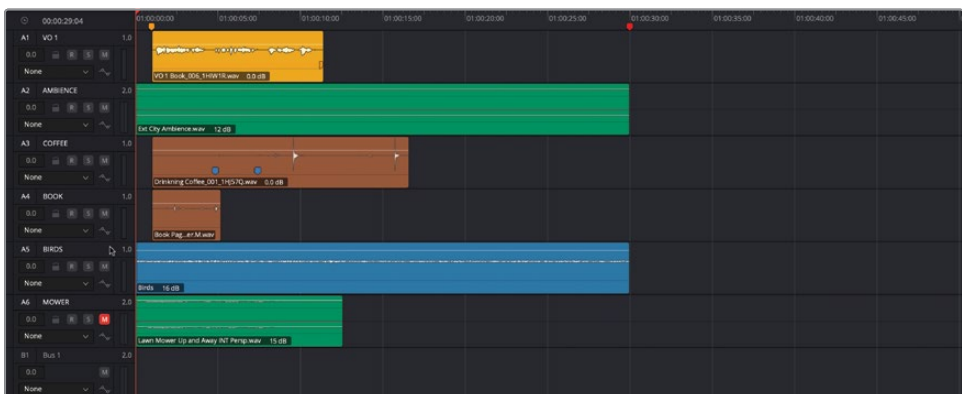
So far, so good with the track organization. Let's finish coloring the tracks in the tracks index.

Moving and Coloring Tracks in the Tracks Index

The more tracks in your timeline, the more control you'll need to manage them. The tracks index shares a panel with the markers index and edit index. Each index is an interactive list that lets you quickly select tracks, markers, or timeline edits. The track index also offers options to show/hide, change track color or track type, or drag and drop tracks in a different order. In this exercise, you'll change the color of the A2 and A6 tracks and then drag them to a different position.

1 Show the index and click the Tracks tab to show the tracks list.
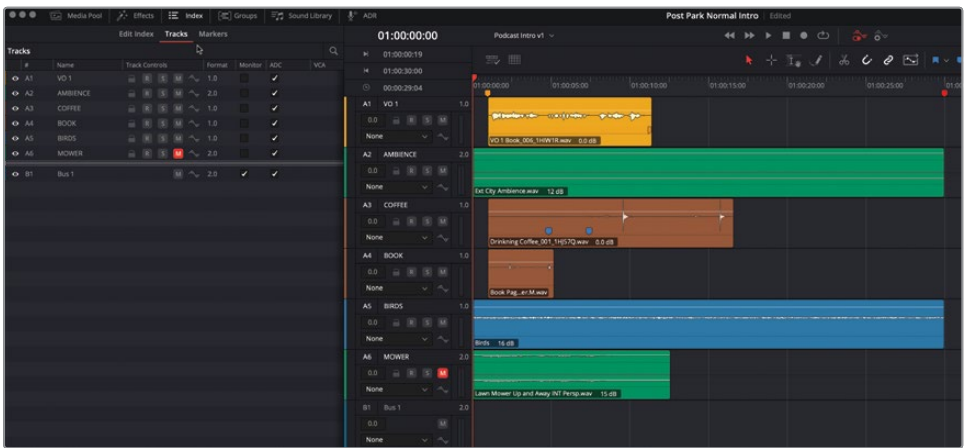
Here, you can see a row for each track that includes information such as the track number, name, and controls.

2 In the tracks list, select the AMBIENCE track.

The A2 AMBIENCE track is selected in both the index and timeline. You'll find options to delete or change its track type or color in the shortcut menu.
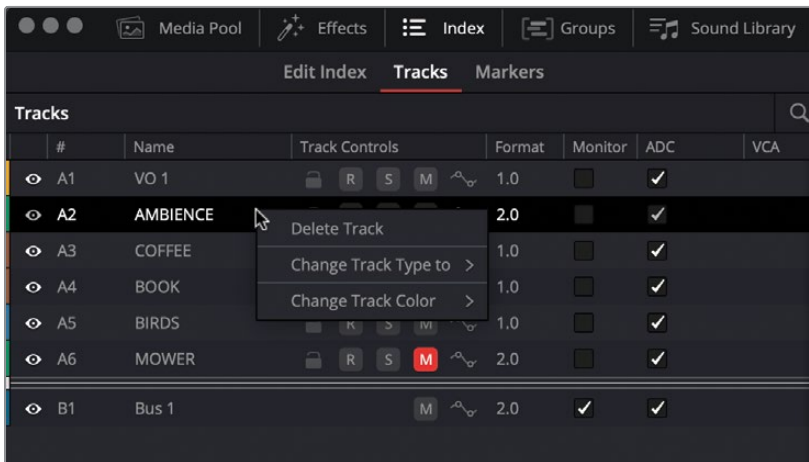
3 In the track list Name column, right-click the AMBIENCE track and choose Change Track Color > Beige.

You'll leave the A6 track green for now. Next, you'll drag and drop tracks in the tracks list to rearrange them. Your first move will be to drag the AMBIENCE track down to the position below BIRDS and above MOWER. A white positioning line appears as a guide while dragging and dropping tracks in the index.

> **TIP** When dragging tracks in the tracks list, it's best to grab an empty space in the track's row so you don't inadvertently select a field or control. The empty space in the Name column to the right of the track's name works well. Don't click the name itself, or you'll open the Name field.

4 In the track list Name column, drag the A2 AMBIENCE track down to the position between the BIRDS and MOWER tracks.
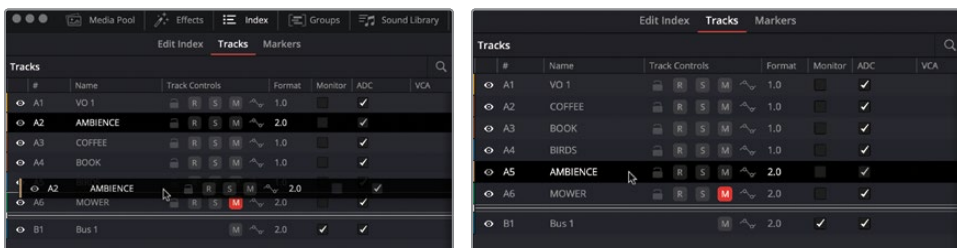
5 Drag and drop the MOWER track above the BIRDS track.

6 Click the empty space at the bottom of the track index to deselect all tracks.
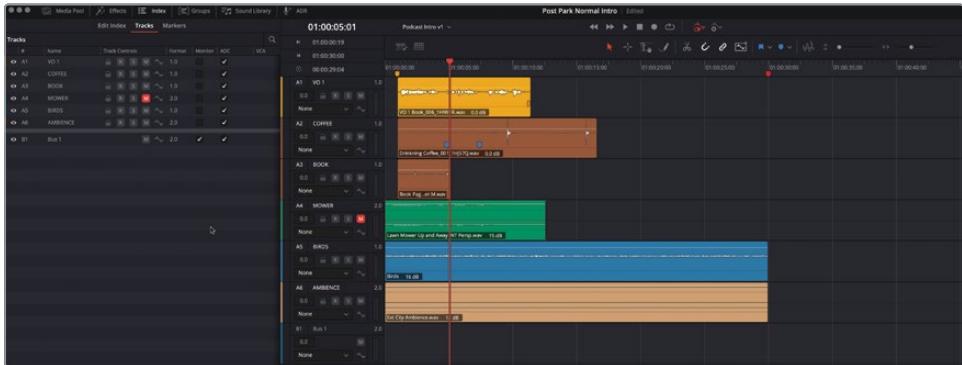
The tracks are colored and ordered from voiceover to background ambience.

Showing and Hiding Tracks

The Fairlight page in DaVinci Resolve offers a variety of tools at your fingertips to quickly customize how you view the timeline tracks and contents so you can focus on the tracks and clips you need while you work. In the next section, you'll edit the clips in the A2 and A3 tracks to improve the timing of the book and coffee-drinking sound effects against the voiceover. To simplify editing, you can hide the other tracks and zoom the remaining tracks for easy access and a better view of the waveforms within.

To the far left of the track list, you can see visibility controls represented by eye icons. You can click these controls off and on to hide or show a track. Or you can click and swipe multiple contiguous tracks off and on at once.

> **NOTE** You can also swipe on or off track controls, including Track Lock, Record Enable, Solo, and Mute. Additionally, the improved Tracks index lets you double-click to rename tracks and drag and drop to reorder tracks right in the tracks list!

1   In the tracks list, with your pointer over the visibility control (eye icon) for track A4, drag down over the visibility controls for tracks A4 through A6 to hide them.
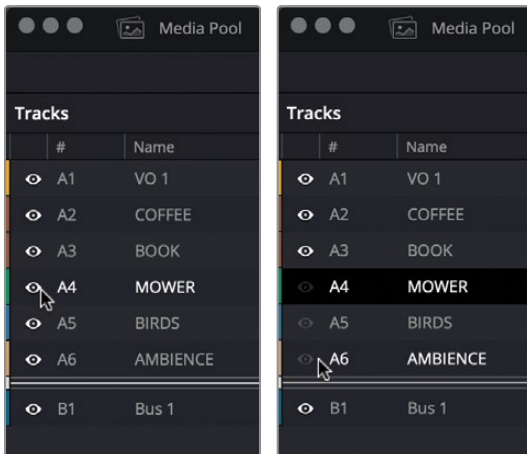
Those tracks are no longer visible in the timeline; however, their audio contents will continue to play normally.

Next, you'll simultaneously resize the A1, A2, and A3 tracks to a custom height. Previously, you've used the zoom sliders in the toolbar or shortcuts with the middle mouse wheel to resize track heights. This time, to demonstrate DaVinci Resolve's intuitive, user-friendly timeline interface, you'll select the tracks and drag the lower edge of the track header to resize them all simultaneously to a custom height.

2   Hide the tracks index.

3   In the timeline, select the A1-A3 tracks.
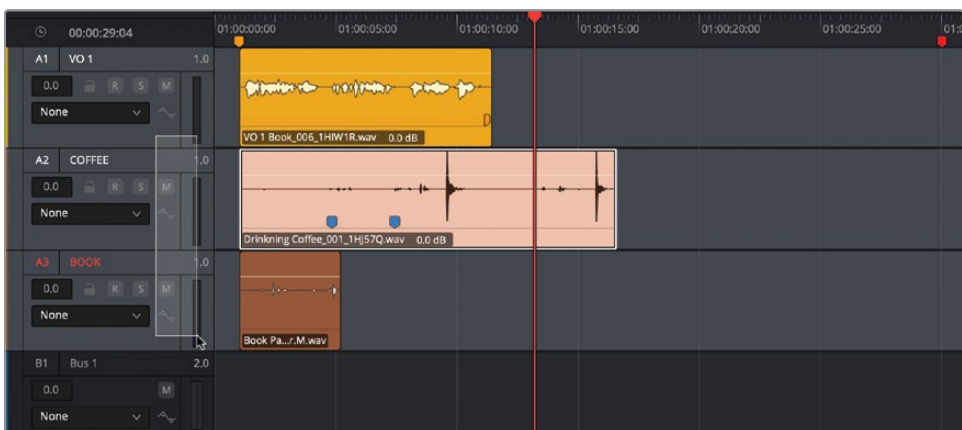
4   Drag the lower edge of the A3 track header to resize all selected tracks until they are large enough to clearly see the clips and waveforms.

5 Press Shift-Z to zoom the clips horizontally.
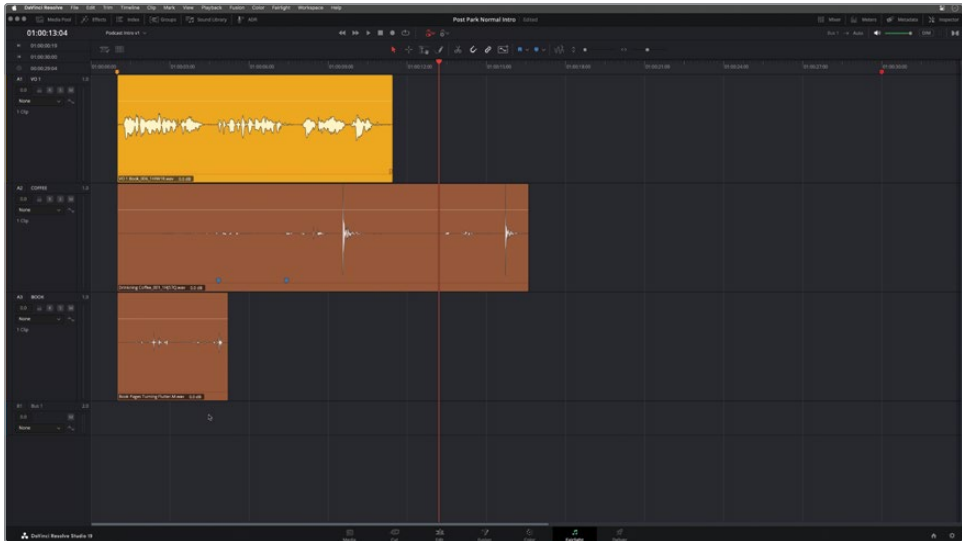
Now, you can see the clips much better and are ready to arrange and trim them. Remember that Shift-Z is a Zoom to Fit shortcut that fits all clips horizontally within the visible area of the timeline, even if they are video only or in hidden tracks.

Editing and Arranging Clips in the Timeline

Now that the tracks are organized and focused on the clips that need your attention, you can tidy up the obvious issues—for example, if a clip is too long or has a distracting element in a sound effect. In this exercise, you'll trim the head and tail (start and end) of the clip in the A2 COFFEE track to remove the excess sounds before and after the desired coffee drinking section, such as the clunking of the thermos being set down on the park bench. Additionally, you'll move the clips in the A2 and A3 tracks so that their timing works better with the voiceover in A1. This is also a good time to introduce waveform zoom, the Range Selection tool, and the new Exclusive Solo option.

1   Solo the A1 VO 1 track and play the clip once to remind yourself of what is said and the timing in the waveform.

"The last day of normal started like every morning, at the park with my coffee, reading my book. Then, out of nowhere, they arrived."

2   Unsolo the A1 track and solo the A2 track. Play the clip in that A2 track.

You'll trim that clip shortly to remove the clunking thermos sections at the end of the clip.

3   Choose Fairlight > Exclusive Solo to enable that option.

4   Solo the A3 Book track.

Notice that clicking the Solo button on the A3 track automatically unsoloed the A2 track. Exclusive Solo is great when you are evaluating a specific track. If you wish to solo multiple tracks, you'll need to turn off Exclusive Solo the same way you turned it on.

5   Play the clip in the A3 track.

> **NOTE** Feel free to zoom as needed to better see the clips and tracks you're working with throughout the lessons in this book.

6   Solo the A2 track again. Play the clip and pay attention to the excessive sounds before the first drink and after the second drink.

Your goal is to trim away the unwanted sounds to leave only the desired portion of the clip. You could trim the start and end of the clip or use the Range tool to select the range you want to keep and remove the excess. Let's try the latter option. First, let's zoom in on the waveform for the A2 track so it is easier to see the waveform without increasing the volume level.

7   Choose View > Zoom Audio Waveform > Increase Height.
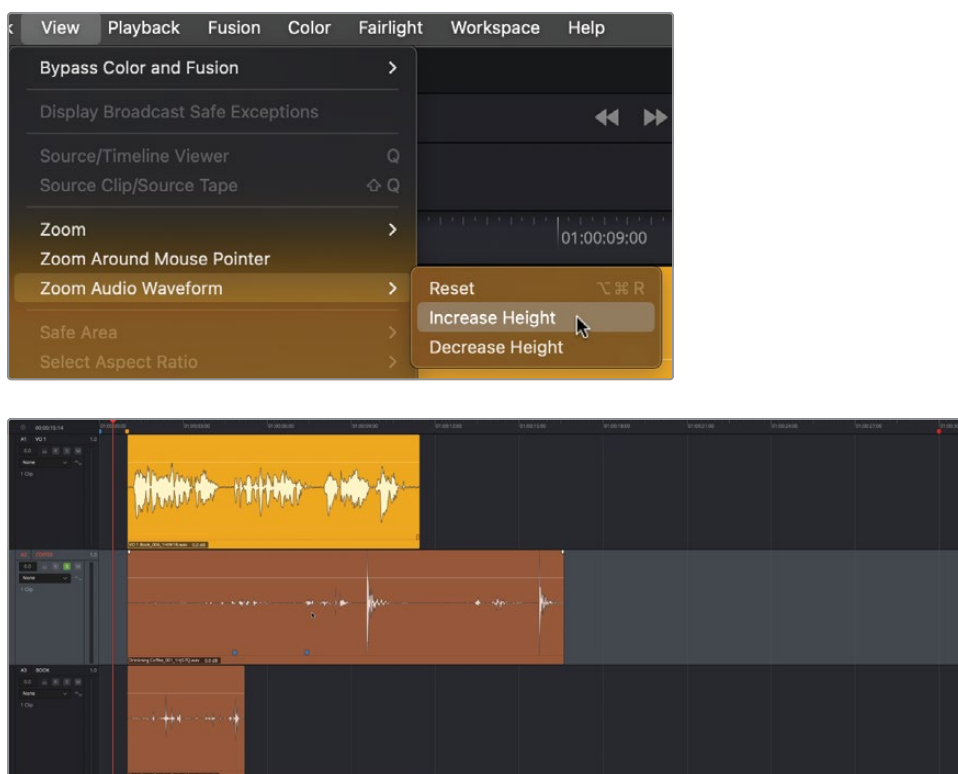
The waveforms on all clips in the timeline increase in height.

> **NOTE** If you're working with a three-button mouse, you can hold Option-Command (macOS) or Alt-Ctrl (Windows) and scroll the middle mouse button/wheel to increase or decrease the waveform zoom level. Remember that changing the waveform zoom level does not affect the track's volume.

Selecting and Editing with the Range Selection Tool

Now that you can see the waveform a little better, it's time to trim the clip with the Range tool. To select a specific range in the timeline, you'll use the Range mode Range Selection tool. So far, you've been working in the default Pointer mode using the selection (arrow) tool to select, move, and trim clips in the timeline. To switch to Range mode, press the R key. (Incidentally, if you haven't guessed already, the shortcut for the arrow tool in Pointer mode is A for arrow.) The Range tool can be used to select multiple clips, sections of clips, or an entire clip. The contents of the selected range can then be cut, copied, pasted, deleted, moved, trimmed, and so on.

To drag a selection on a clip, you need to drag on the upper half of the clip. Clicking anywhere on the lower half of a clip will select the entire clip. Clicking any empty space in the timeline clears the current range. In this exercise, you'll select the portion of the Drinking Coffee clip that you want to keep and trim the head and tail of the clip to the selection.

1 Press R, or click the Range Mode button in the toolbar.
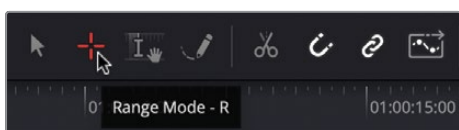
> **TIP** When dragging a range, don't worry about getting it perfect on the first try. You can always Shift-drag the edges of a range to trim it.

2 Play the clip again from the beginning and stop when you hear the thermos and liquid just before the first drink (around 01:00:03:10). This will be the start of the range. Using the Range Selection tool, click the upper half of the clip starting at the playhead and drag from left to right until you reach the end of the second drink and the "aah." (The range ends before the loud spike in the waveform where the thermos is slammed onto the bench.)
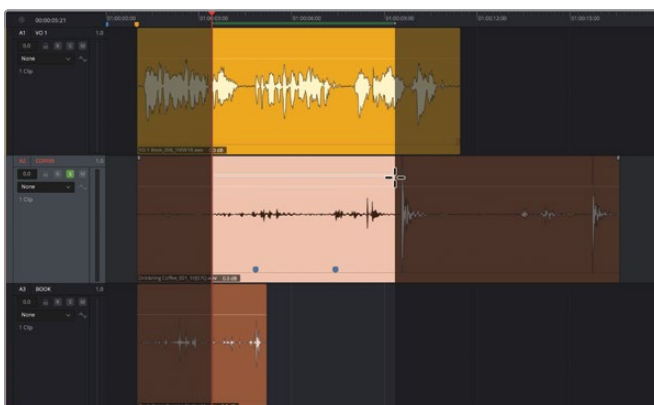
The green bar in the ruler above the timeline indicates the In and Out points of the range. You can also see the range's In and Out points in the timecode display. The section of the selected clip that is within the range brightens. Let's play the selected range and then trim to it.

3   Choose Playback > Play Around/To > Play In to Out or press Option-/ (slash) in macOS or Alt-/ (slash) in Windows to play the range. If you need to adjust the range, Shift-drag the edges as needed. It doesn't have to be perfect; you can trim the clip later.

> **NOTE** If you accidentally click an empty space and clear the range or click the lower half of the clip to select the whole clip, simply deselect the clip and drag the range again.

4   Choose Trim > Trim to Selection or press Shift-Command-T (macOS) or Shift-Ctrl-T (Windows).

Only the selected portion of the clip in the A2 track remains in the track.

5 Click the empty space in the timeline to clear the range.

Next, you'll listen to the voiceover to find a good spot for the book and coffee sound effects, then use the Range Selection tool to select and move them into position.

6 Solo the A1 track and play the clip to see and hear where the narrator says, "at the park with my coffee reading my book."

That section of the voiceover is the middle section of the clip. The gaps in the waveform before and after that sentence will be ideal places to align the sound effects.

7 Unsolo the A1 track. With the Range Selection tool, click the lower half of the Book Pages Turning clip in the A3 track to select the whole clip.

The entire clip brightens to indicate it is selected, and the pointer becomes a grab (hand) tool that you can use to drag the clip to a new position. When working with the Range Selection tool to move clips, the brightened area of the timeline within the range acts as a guide while you drag to assist with positioning the clip. In this case, by serendipitous coincidence, the loudest peaks in the Book Page Turning clip (the page flips) fit nearly perfectly before and after the middle section of the voiceover on A1.

8 Using the waveforms and range as a guide, drag the selected clip toward the right until the highest peaks in the waveform align with the beginning and end of the middle section of the voiceover clip.
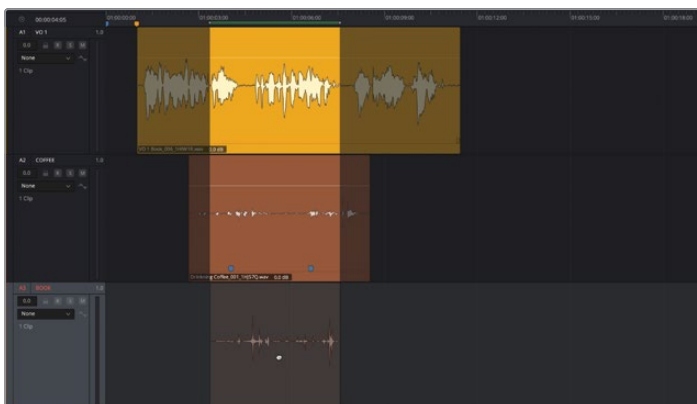
9 Play the timeline from the beginning.

Thoughts? The sound of the pages turning is good, but there are one too many page flips. Luckily, you can use the Range Selection tool to trim clips as you did with the Arrow tool. Let's trim the second loud flip in the Book Pages Turning clip.

10 With the Range Selection tool, drag the right edge of the clip toward the left until the loudest peak section (flip) is removed.
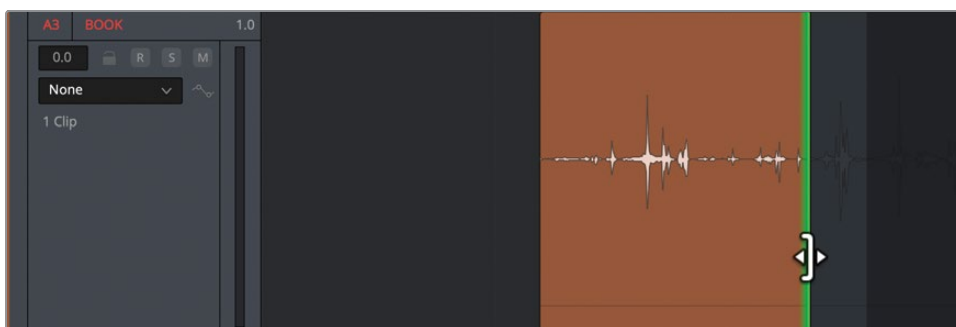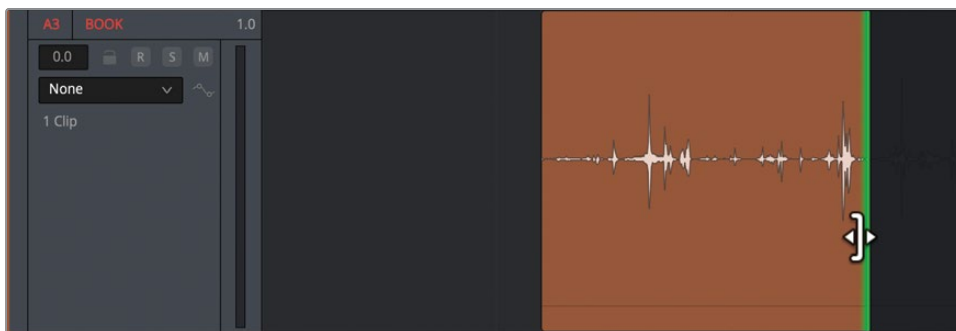
11 Play the timeline again to hear the work in progress. When you're finished, deselect the current range.

> **NOTE** You can always deselect a range with the shortcut Option-X (macOS) or Alt-X (Windows).

Preparing the Project

Before adding the music and balancing the levels, let's bring back the other tracks, change the track heights, and zoom so everything fits nicely in the timeline.

1   Press A to return to the standard Pointer mode.

2   Choose Fairlight > Exclusive Solo to disable that option so you can solo more than one track at a time if needed.

3   Move the playhead to the beginning of the timeline.

4   Show the tracks index and turn on visibility for the A4, A5, and A6 tracks. Then, hide the index.

5   Choose View > Zoom Audio Waveform > Reset or press Option-Command-R (macOS) or Alt-Ctrl-R (Windows) to reset the clip waveform's zoom level without changing the volume level.

6   Use the Vertical Zoom slider or Shift-middle mouse wheel to resize the track heights to clearly see all six tracks.
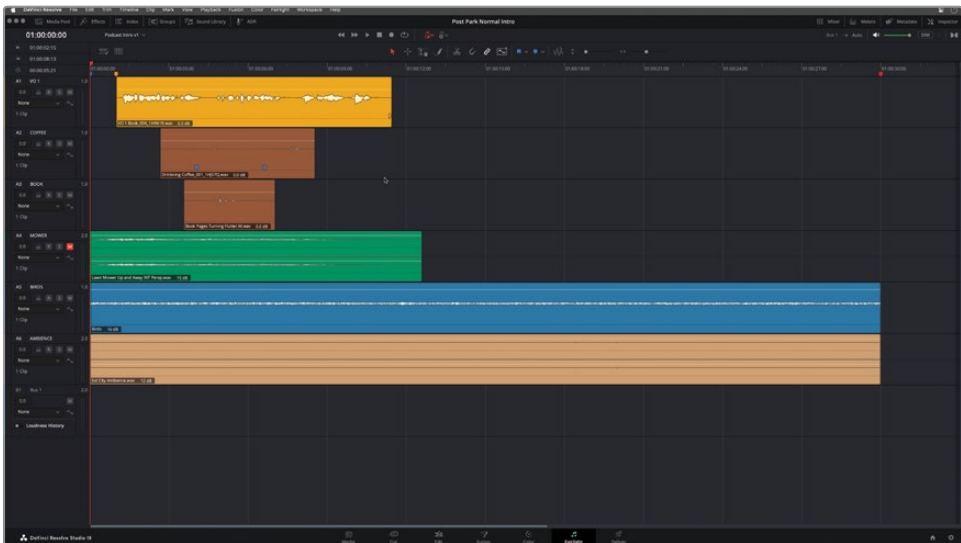
> **NOTE** If you didn't finish all the steps in this lesson, open the timeline
> **1e A1 to A6 Add Music** to catch up.

Marking and Adding Music to the Timeline

The soundscape is starting to come to life; all it needs is some dramatic music for the podcast intro. You have already learned how to preview and mark source clips, create new timelines, and add clips. So this is a perfect time to practice some of your new skills to add music to the project. In this exercise, you'll mark around 30 seconds of music and add it to a new track in the timeline. A few new features and techniques will be introduced along the way to keep building on what you've done earlier in the lesson.

1   Click the DIM button or choose Fairlight > Monitoring > Dim to instantly lower the playback volume.

2   In the media pool, preview the **Dangerous Music R19** clip.

For a better view of the waveform in the preview player, you can change the zoom level in the Zoom menu located in the upper left corner of the preview player. To see the waveform for the entire clip from start to finish, you can set the Zoom menu to 1x.
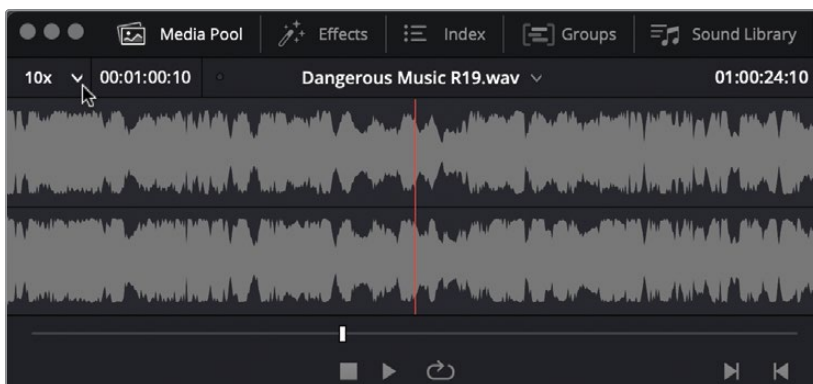
3 Click the Zoom menu in the upper left corner of the preview player and choose 1x.
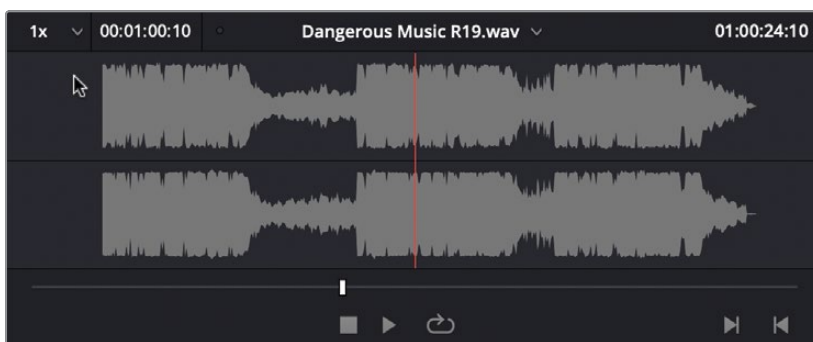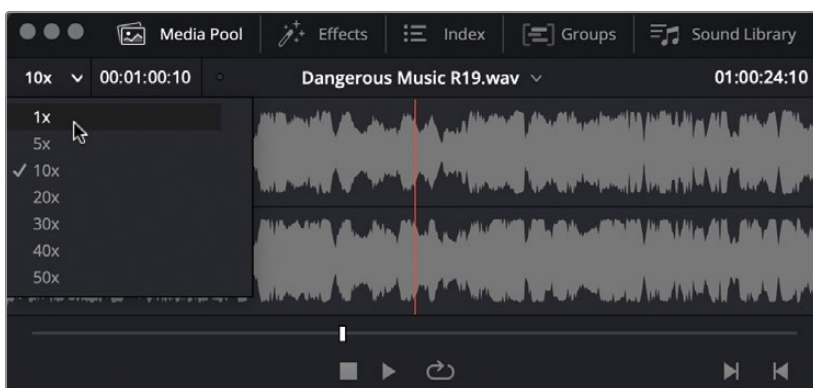
Now, you can clearly see the entire waveform for the music. Since this piece of music will be used as the intro theme for the podcast show, you'll want to mark a definitive ending.

4 Play the last section of the music to hear the ending.

Perfect! You've heard the ending. Let's mark the clip.

> **NOTE** The preview player scrubber bar always represents the entire selected clip from the first frame to the last, regardless of the zoom level displayed.

Scrubbing with In and Out Marks

Previously, you've used the JKL keys to scrub audio in the preview player. In this exercise, you'll also drag the In and Out points to scrub and mark the 30-second section of the music clip that you'll add to the timeline. Since you already know how you want the music to end, that's the first mark you'll set.

1   If necessary, select the **Dangerous Music R19** clip in the media pool to load it in the preview player.

2   Press End or drag the jog bar to the end of the clip.

3   Press O or click the Mark Out button to set an Out point at the end of the clip.

    As you can see, the end of the clip is beyond the end of the waveform. No problem; you'll fix that shortly. First, let's set an In point using the timecode fields and waveform as a guide.
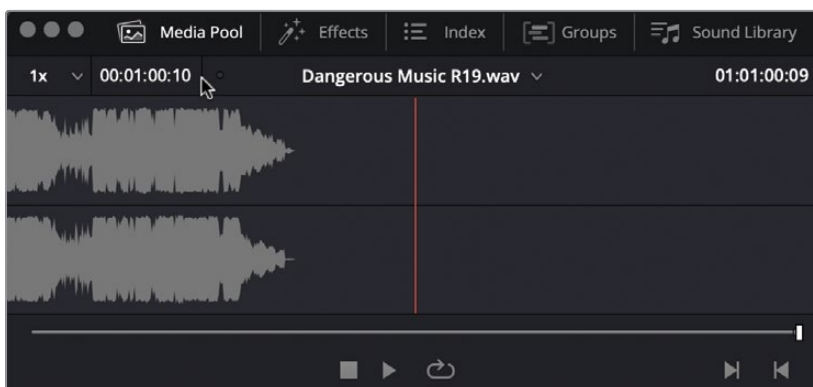
Timecode fields in the upper left and right of the preview player display duration and source frame, respectively. The clip duration is one minute and ten frames (01:00:10). So for 30 seconds of music, your In point should be somewhere near the middle of the clip.

4   Move the jog bar to the middle of the clip and mark an In point.
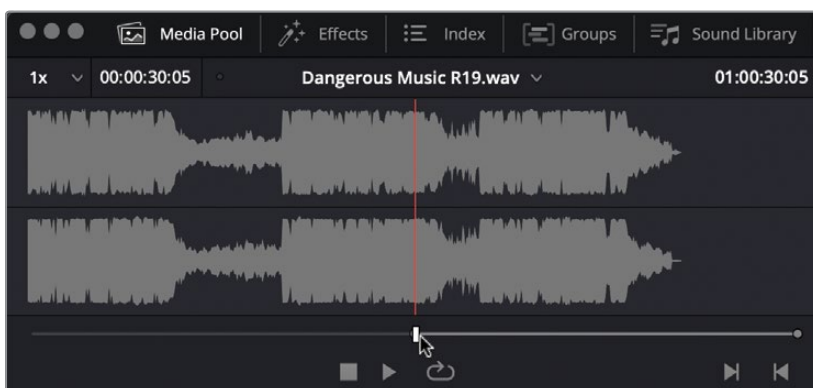
The duration field should now be around 30 seconds. The duration is fine, but the extended silence at the end of the clip means there won't be 30 seconds of music. That's easy to fix by scrubbing the Out point to find the end of the music.

5 Drag the Out point toward the left until you hear the end of the music. Continue dragging the Out point left or right as needed until the music stops.
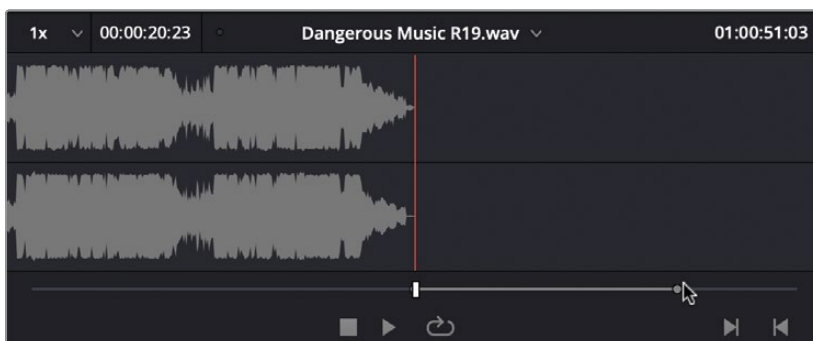
The Out point is set, but the duration is now too short. To change the duration, you'll drag the In point while looking at the timecode duration field.

6 Move the jog bar out of the way if needed. Drag the In point toward the left while listening and watching the duration field. When the duration is around 30 seconds, stop.
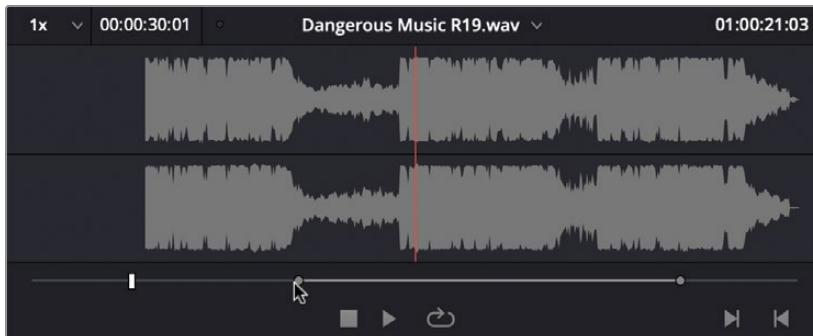
Creating a New Track with a Source Clip

You have around 30 seconds of music ready to add to the timeline. This time, instead of creating a new track for the music clip, you'll use the music clip to create the new track. The secret is to drag a source clip to the empty space below the other tracks in the timeline. This will automatically create a new track for the clip. In this exercise, you'll use the **Dangerous Music R19** clip to create a new track and then name and color the track.

1   Drag the **Dangerous Music R19** clip from the media pool to the empty space below the A6 track to create a new track for the incoming clip.
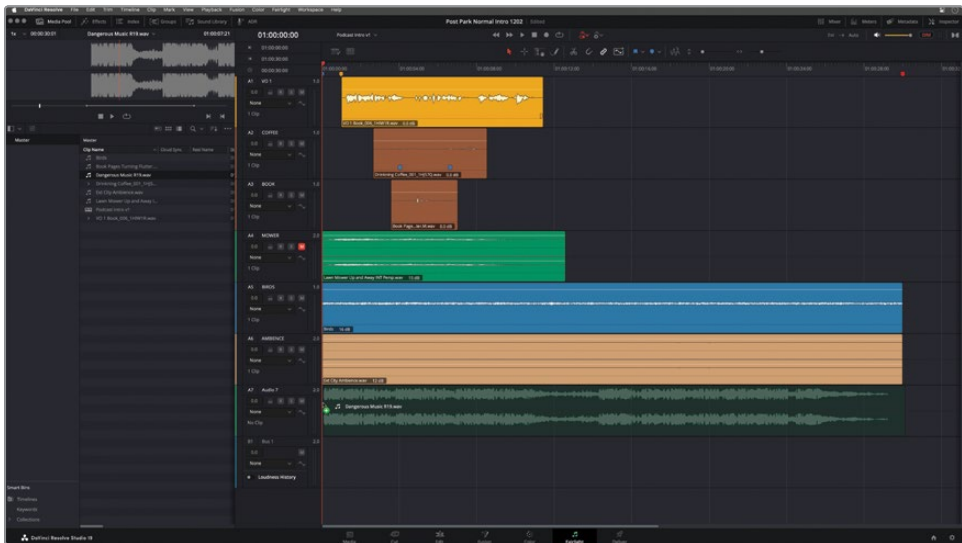
The music clip is in the new A7 track.

2   If necessary, move the clip to the beginning of the A7 track.

3   Name the track **MUSIC**.

4   Change the A7 track color to teal.

5   Hide the media pool and play the beginning of the timeline to hear how it works with the music.
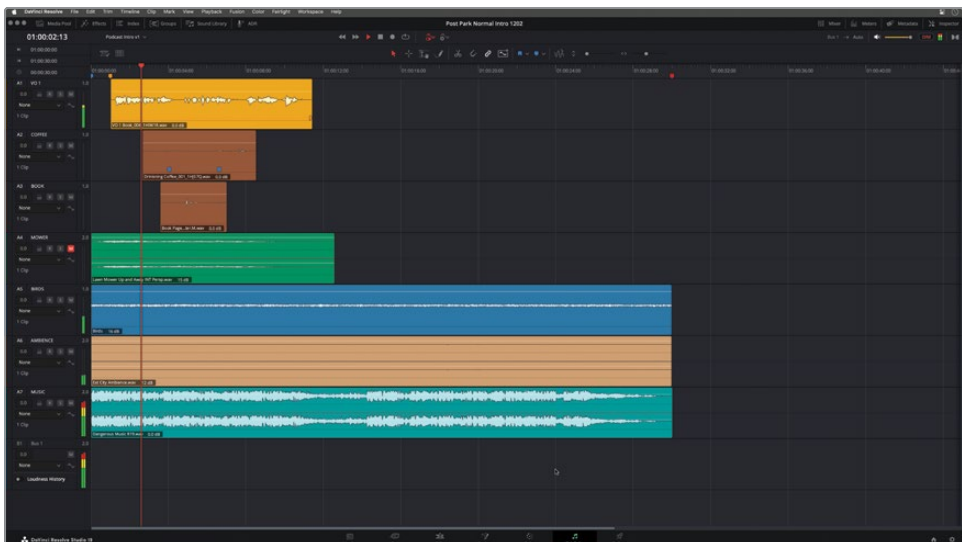
It's hard to say how it works with the music because the music completely dominates the soundtrack. This is evident not only when you listen to the tracks, but also when you glance at the timeline waveforms and red levels in the track meters. Luckily, it's easy to adjust clip levels right in the timeline.

Balancing Clip Levels in the Timeline

If you're wondering which track is the priority, dialogue or music, this is a good time to mention the golden rule of audio post-production, also known as the "Dialogue Is King" rule. In short, spoken words such as voiceover, narration, or dialogue take priority over all other audio tracks. This rule also applies to a music score, when the actors' lines take priority; action scenes, when characters' shouting must be heard over helicopters and explosions; and even documentary films, when subjects are talking in a noisy location.

Your goal in the next series of exercises is to balance the clip levels of all the timeline clips, starting with lowering the music clip. When balancing clip levels, you'll use your ears to listen and your eyes on the clip gain line and meters as you go.

Each timeline audio clip includes a clip gain line that looks like a white horizontal line across the upper third of the clip. To adjust the volume level of a timeline clip, you can drag the clip's gain line up or down.

1 Choose Fairlight > Monitoring > Dim or click the DIM button for normal playback levels.

2 Select the A7 MUSIC track and increase the track height until you can clearly see the track, waveform, and white clip gain line. If the clip gain line is not visible, choose Fairlight > Show Clip Gain Line.

3 In the **Dangerous Music R19** clip, drag down on the clip gain line to reduce the clip's volume level until the tooltip reads -20 dB.
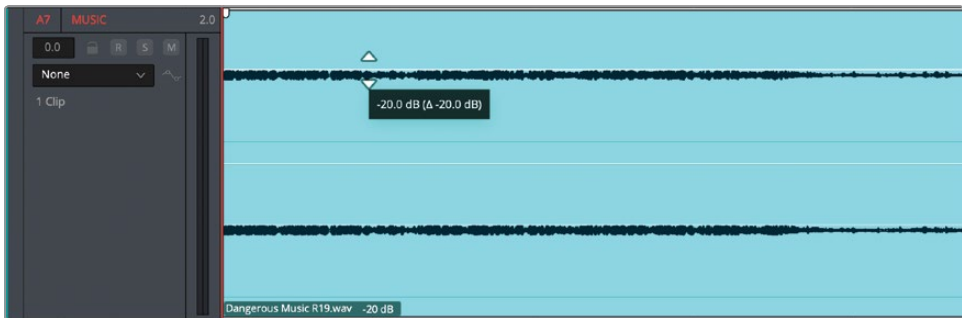
> **TIP** Shift-drag the gain line for a slower response while you drag. Double-click the clip gain line to reset it to its original level.

4 Play the first half of the timeline to hear how the music and voiceover complement the new music levels.

Is it working? How does the music sound with the voiceover and other effects? Sometimes, less is more. Even at the lower levels, the music competes with the voiceover. In fact, the park's soundscape worked much better without the music.

It's time for a decision. Either lower the music even more or trim it so it starts later, near the end of the voiceover. For this exercise, you'll trim the music.

5 Move the playhead to the start of the last section of voiceover, just before the narrator says, "then out of nowhere they arrived" at around 01:00:07:22.

6 Select the A7 track, if necessary. Then press Shift-[(left bracket) or choose Trim > Trim Start to trim the head of the music clip to the playhead.
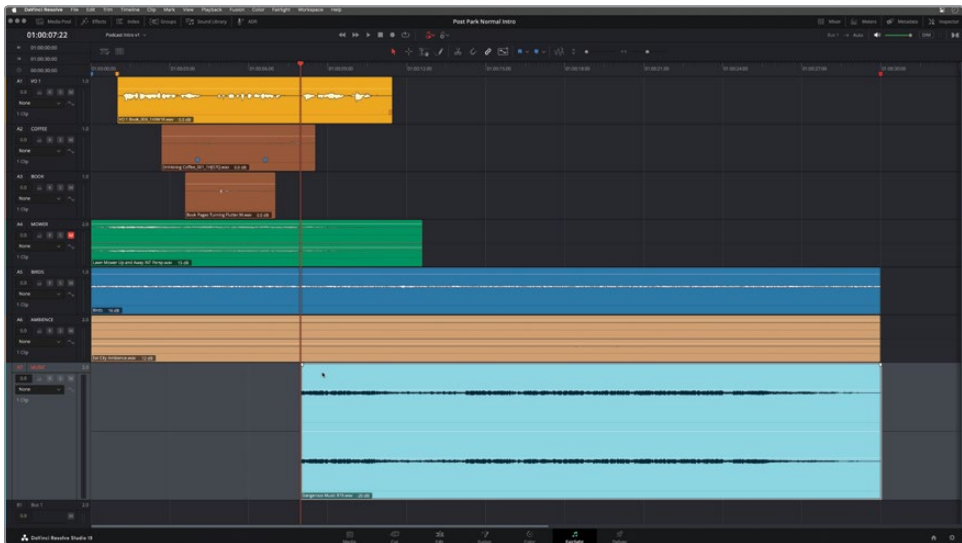
7 Deselect the A7 track and then play the first half of the timeline.

The intro is working much better, but the music needs a fade at the beginning to ease it into the soundtrack.

Adding a Fade

Although there are many ways to add fades to timeline clips, one of the easiest is to simply drag the fade handle located in the upper right and left corners of every audio clip. In this exercise, you'll add a 2-second fade to the beginning of the music clip.

1 Move the playhead to the beginning of the clip in the A7 track.

2 Press Shift-Right Arrow two times to move the playhead 2 seconds toward the right.

3 Hover over the upper left edge of the clip to show the fade handle. Then, drag the fade handle to the playhead or select the clip and choose Trim > Fade In to Playhead.
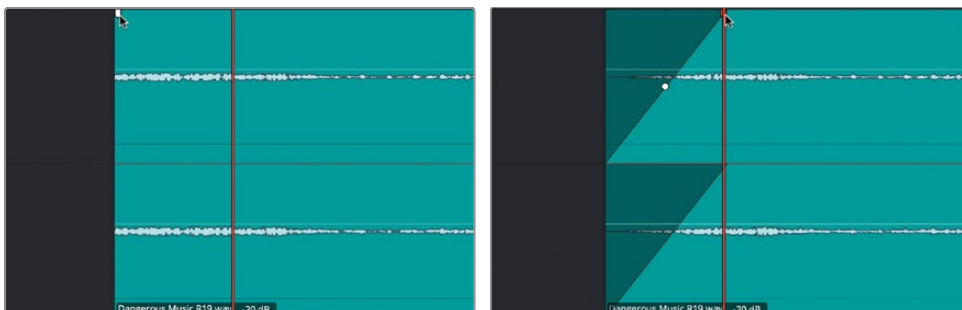
4 Listen to the last section of the voiceover with the music.

Wow! What a difference a fade can make!

> **NOTE** If you didn't finish all the steps in this lesson, open the timeline
> **1f Finish Balancing** to catch up.

Finish Balancing the Clips

The clients have arrived at your audio facility and are eager to hear the first draft of the podcast intro—right after they finish a call and grab a cappuccino. So you have a few minutes to tidy up the clip levels. You've got this!

Using what you have learned so far, adjust the levels on all the other clips to keep the focus on the voiceover and overall soundscape. You can adjust clip levels in the timeline or Inspector. Don't forget to utilize the shortcuts you've already tried, like Shift-dragging the gain line or clip volume field for geared incremental adjustments and double-clicking the gain line or clip volume label in the Inspector to reset them.

In this exercise, you'll adjust clip levels in track order, starting with the voiceover in A1. You'll learn much more about balancing clips and track levels in later lessons. For now, follow the suggested levels below while you train your ears.

1 Unmute the A4 MOWER track.

2 Press Shift-Z to fit the clips to the visible timeline.

3 Adjust the vertical track height so you can see all the tracks.

4 Set the clip levels as follows:

— A1 Track, VO 1 Book clip: 2.0 dB

— A2 Track, Drinking Coffee clip: 13 dB

— A3 Track, Book Pages Turning clip: 3.4 dB

— A4 Track, Lawn Mower clip: 2.3 dB

— A5 Track, Birds clip: 14 dB

— A6 Track, Ext City Ambience clip: 12 dB

— A7 Track, Dangerous Music clip: -20 dB

5 When you are finished, hide the Inspector.

6   Play the timeline from the beginning to hear how it sounds with the new clip levels.
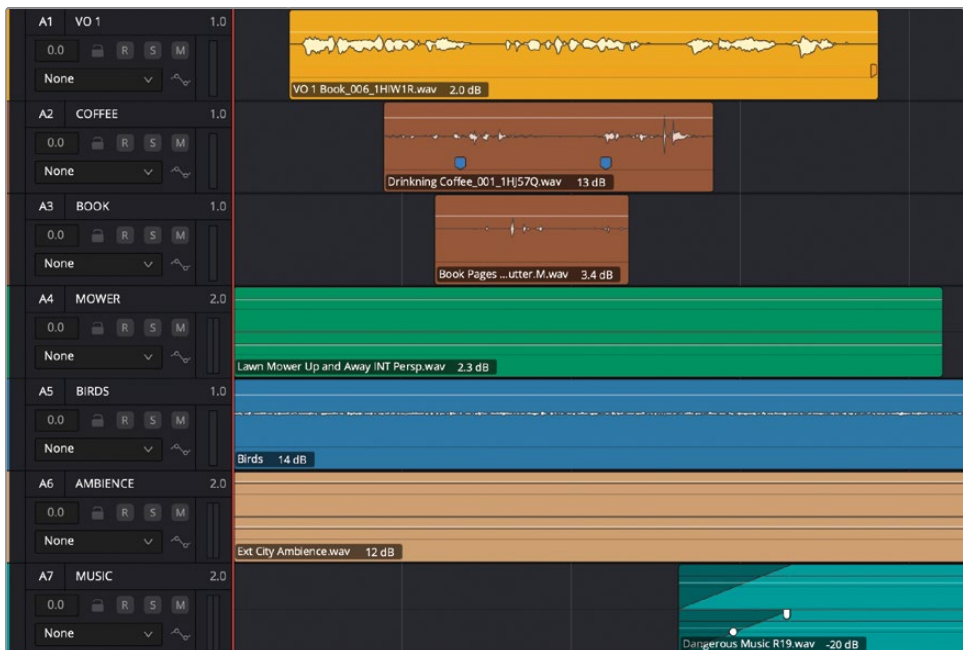
Nice job! By the way, the clients have returned with their cappuccinos while you were playing back the tracks, and they like how the intro is coming together. In fact, they are rather impressed with how fast you worked, considering you are a newly appointed intern. Overall, they are happy. Almost. As expected, they have a few notes:

— *Voiceover is too tight, let it breathe.*

— *Coffee drinking is too in your face.*

— *Duck the second gulp.*

— *Love the mower, but it should start when narrator says, "...started like every morning."*

Finessing the Audio Edit

There are only a few things left for you to do to finish up the basic podcast intro. In the next series of exercises, you'll take care of all the clients' notes as you learn a few new tools and techniques.

Let's start with the first item on the list: *voiceover is too tight, let it breathe*.

They are requesting that you add space between the voiceover phrases. Not only will this leave more space for sound effects between words, but it will also add dramatic pauses near the end.

Splitting and Nudging Clips

DaVinci Resolve offers many methods for splitting clips. In this exercise, you'll use the playhead, Razor, and Range tools to split the voiceover clip into four parts. Then, you'll move the clips to create 1-second gaps between phrases.

1 Move the playhead to the beginning of the timeline.

2 Solo and select the A1 track.

3 Play the first section of the clip. After the narrator says, "The last day of normal started like every morning," stop playback.

4 Use the JKL keys or the Left and Right Arrow keys to move the playhead to the middle of the silent section between phrases in the waveform (around 01:00:04:13).
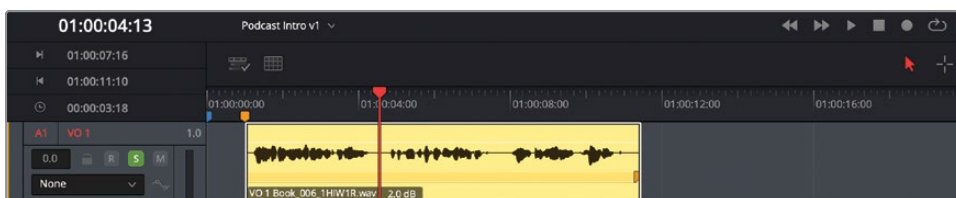
5 In the timeline toolbar, click the Razor tool icon (scissors) to split the selected clip at the playhead position.
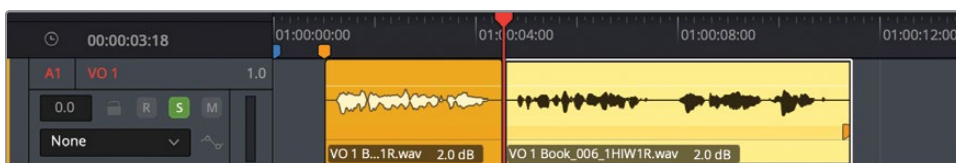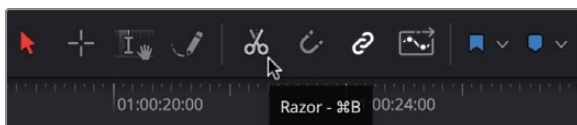
> **NOTE** If you inadvertently split clips on all tracks, choose Edit > Undo, and then try again. This time, be sure to select the track first so that you split only the clip on the selected track.

You've successfully split the first phrase from the rest of the voiceover. Now you can move the remaining voiceover 1 second to the right to add a pause between phrases.

6 Press Shift-Right Arrow to move the playhead 1 second to the right.

7 Drag the second clip in the A1 track to the right so it starts at the playhead.

For the next section, you'll use the Range Selection tool to split and move clips.

8 Press R or click the Range Mode button to use the Range tool.

9 Play the second clip in the A1 track from the beginning and stop after the narrator says, "at the park with my coffee, reading my book."

10 With the Range tool, drag a range over the upper half of the clip from the playhead to the end of the clip. The range can extend beyond the end of the clip.
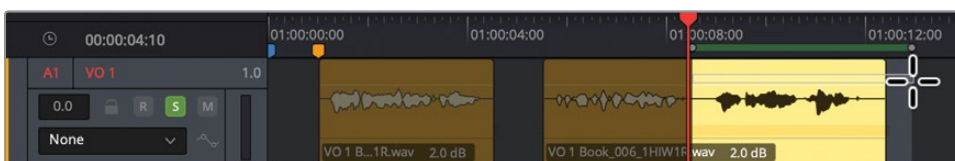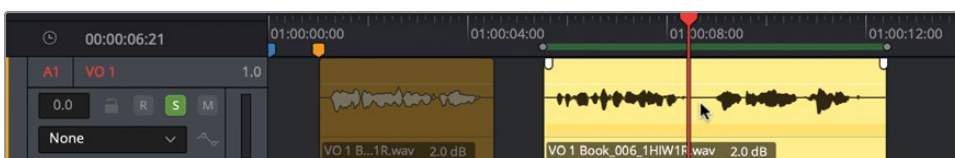
Rather than dragging the selected range into position, this is a great opportunity to use the Nudge commands available via keyboard shortcuts and in the Trim menu. Unlike manually dragging, the Nudge commands allow you to precisely move a selected clip one frame at a time to the left or right by pressing the , (comma) and . (period) keys for single frame movement or the Shift-, (comma) or Shift-. (period) key combinations to nudge multiple frames.

11 Choose Trim > Nudge > Multiframe Right or press Shift-. (period).

The selected clip moves five frames to the right but still must move another 20 frames or so.

12 Press Shift-. (period) four more times to move the clip 20 frames to the right.
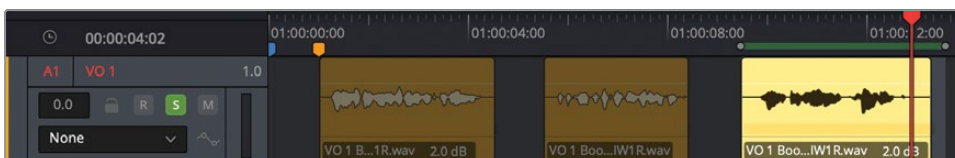
13 Click any empty space to clear the current range.

Let's do one more Range tool edit.

14 Use the Range tool to select the last two words, "they arrived," and move the selection around 1 second to the right.
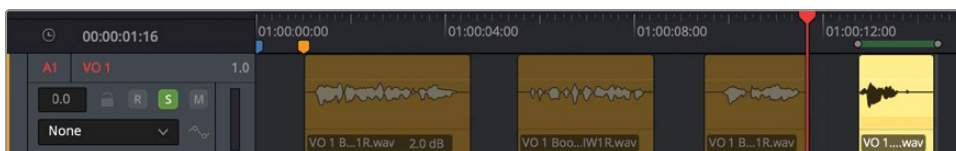
15 When finished, click an empty space to clear the range. Press A to switch to the Arrow tool in Pointer mode.

16 Unsolo the track. Play the timeline to hear the adjusted voiceover with the other tracks.

The timing is better. However, the clients want another second of "air" between the first two clips and the last two clips. You can nudge any selection, whether a range or selected clips. This time, you'll nudge selected clips while in Pointer mode.

17 With the Pointer tool, select the last two clips in the A1 track. Press Shift-. (period) five times to nudge the selected clips 25 frames to the right.

18 When you are finished, deselect the clips.

One note down, three to go.

Mind the Gaps!

Before moving on to the next note, it's a good idea to adjust the timing of the clips in the A2 and A3 tracks so they align better with the newly created gaps. That way, the coffee drinking and page flips will be easier to hear without competing with the voiceover. For this brief exercise, you can use the waveforms in the Drinking Coffee and Book Page Turning clips as a guide to align the clips into position.

1 Select the Drinking Coffee clip in the A2 track and drag it toward the right until the second gulp and "aah" align with the second gap between clips in the A1 track.
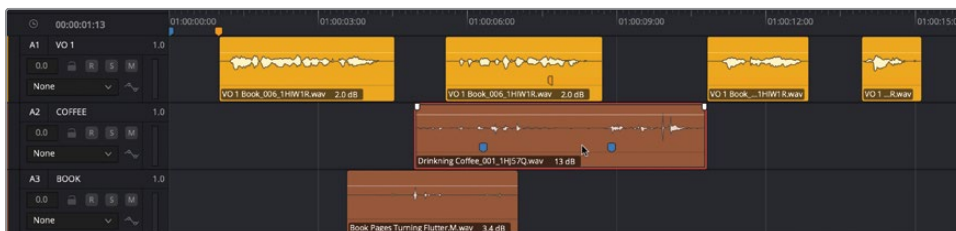
2 Drag the Book Pages Turning clip in the A3 track to the right until the waveform aligns between the gulps in the A2 track.
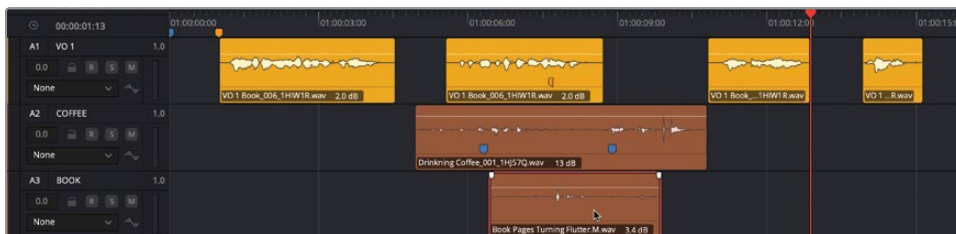
3 Play the timeline from the beginning and listen to the newly timed clips.

The clients like the new timing but are asking for you to add one more second of space between the last two clips so that it times better with the dramatic music beat just before the narrator says, "they arrived."

4 Select and nudge the last yellow voiceover clip 25 frames to the right. When you are finished, play the middle of the timeline to hear the timing of the last two voiceover clips with the music and sound effects.

The improvement in the pacing and literal timing of the sound effects and music with the narrator's words is noticeable. Apparently, the clients really know what they want, and their requests result in noticeable improvements!

On to the next note!

— *Voiceover is too tight, let it breathe*

— *Coffee drinking is too in your face.*

— *Duck the second gulp.*

— *Love the mower, but it should start when the narrator says, "...started like every morning."*

Changing Levels within a Clip

Balancing clip levels is a process. As you move and edit clips for context, you may need to adjust the levels more than once. You may also need to change the levels within a clip and bend the gain line with the help of keyframes. In this exercise, you'll tackle the second and third notes: *Coffee drinking is too in your face* and *Duck the second gulp.* Translated, these notes from the clients mean that the volume level of the Coffee Drinking clip is too loud, especially the second gulp. To fix this, you'll reduce the entire clip and then use the range tool to reduce the second gulp an additional amount. Let's try it.

1   Adjust the vertical and horizontal zoom to see the clip in the A2 track clearly.

2   Using the gain line on the Drinking Coffee clip, lower the clip level from 13 dB to 10 dB.
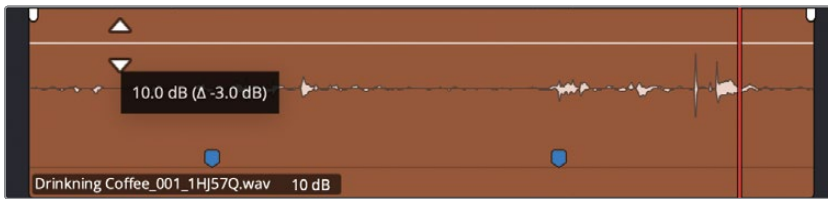
3   Play the timeline to hear it with the lowered drinking sounds.

Next, drag a range that includes the second gulp and lower the level within the range.

4   Press R for the Range tool. Then, drag a range that includes the entire second gulp through the end of the clip.

5   In the selected range of the clip, drag the gain line downward to reduce the level to 7 dB.
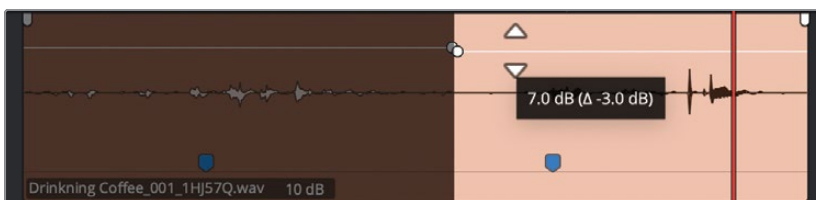
As you can see, two keyframes were created on the gain line to accommodate the level change in the selected range.

> **NOTE** You can also manually add or delete keyframes as needed along the gain line. You'll work extensively with keyframes in later lessons. For now, you've experienced the ease of changing levels within a range.

6   Clear the range and press A for the Pointer tool.

7   Play the timeline with the new levels in the A2 track.

You may have noticed that the clip level in the Drinking Coffee clip header shows 10 dB. Whatever level is at the start of a clip will be displayed in the clip's header. You can see the levels of different clip sections in the tooltip when you click the gain line in that section.

8   Click the gain line near the end of the clip to see the level in the tooltip.

Done! You're ready for the last note.

Finish the Notes

You have nearly completed the brief set of client notes for the first draft of the podcast intro! All you need to do is the final note—unless the clients change their minds and have additional notes, which is likely, so be prepared for anything.

—   *Voiceover is too tight, let it breathe*

—   *Coffee drinking is too in your face*

—   *Duck the second gulp*

—   *Love the mower, but it should start when the narrator says, "...started like every morning."*

You are on your own for this task. Start by increasing the level of the Lawn Mower clip in the A4 track to 5.0 dB. Play the timeline to find where the narrator says, "started like every morning," and move the Lawn Mower clip in the A4 track so that the sound of the mower starting up begins just after the spoken words "started like." When you are finished, feel free to finesse levels or nudge any of the clips if needed as you wait for the clients to arrive and review your work—again.

One More Thing

Excellent news! The clients are extremely pleased with this draft! Then, out of nowhere, they have another tiny request. They noticed that everything sounds very stationary, and they are wondering if you could have the mower moving in the background. Of course, your answer is "Sure!"

All the primary sound elements are in fixed positions, as you would expect for a narrator on a park bench, drinking coffee and reading a book. An important element of sound design that you will learn in this book is the importance of placing sounds to fill the panoramic space and, when possible, have objects moving dynamically to create interest and enhance the experience for the audience. Even in this "audio only" soundtrack, you can still move sound objects around to bring them to life. For this last-minute maneuver, you'll use the simplest method possible.

Panning an Audio Track from the Viewer

DaVinci Resolve is the only software that combines professional audio and video tools to offer audio pan tracking in the viewer. Throughout this book, you will spend time panning tracks for stereo, 5.1, and immersive audio projects using many different methods. For this first lesson, you're working with a stereo project with two speakers, left and right. This doesn't limit your creativity or require you to use advanced techniques, panning controls in the mixer, or even automation tools. You'll get to all those things later in the book. At this time, you'll simply point and click where you want the mower sound to start and, again, where you want it to finish! In this case, the client wants the mower to move, so that's exactly what you'll do in a few clicks. First, let's listen to the mower sound to see if there is any movement of the sound.

1   Solo the A4 track. Play the mower clip and listen to the sound.

    Does it sound as if it is actually moving in any specific direction? Not really. You are about to change that by panning the clip from left to right. Later, you'll use the Pan window to carefully pan a track to specific positions between speakers. In this lesson, you'll use the viewer to accomplish this; no details are required.

2   Click the Meters button to show the Monitoring panel, including the viewer.

    If the timeline had a video track, the viewer is where you would see the video output.

3 In the lower left corner of the viewer, click the Controls menu and choose Show Tracker Controls.
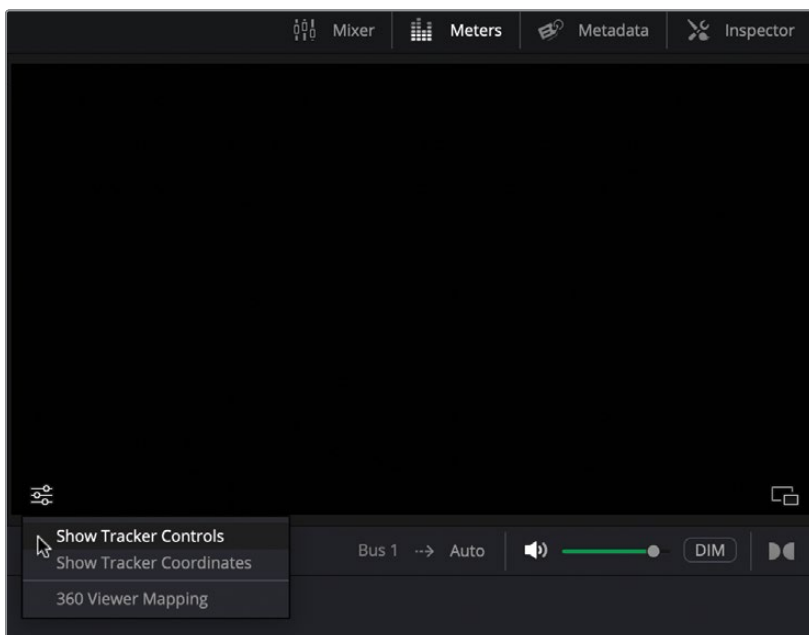
The clients want the mower to move. Since this is a stereo project with only two speakers, your options for movement are simply left to right, right to left, or back and forth between left and right. This makes the controls easy.

4 In the Panning controls, click the Left to Right option.
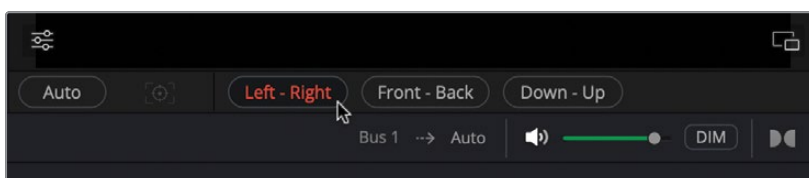
5 Press R for the Range tool and click the lower half of the mower clip to select the entire clip plus the track containing the clip.
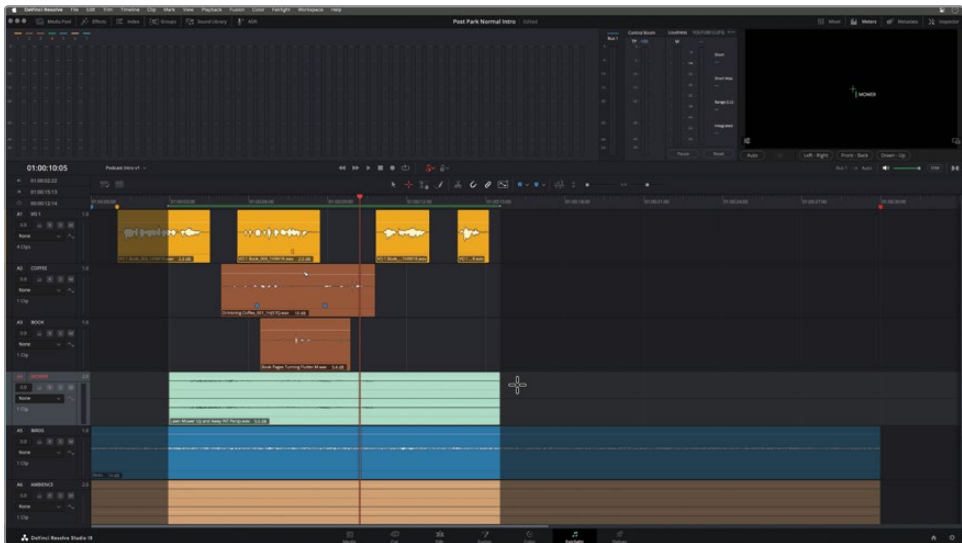
Selecting the track shows the track name in the viewer along with a pan tracker (crosshairs). In the viewer, you'll see a crosshairs labeled MOWER in the center. To move the tracker and subsequently pan the track, you Option/Alt-click the viewer to set the tracking points. For this exercise, you'll pan the mower from right to left, so you'll use the first and last frames of the clip as a guide to set the tracking points.

6 Select the clip in the A4 track, if necessary. Press Shift-I to move the playhead to the clip's In point.

Now, you can set the starting position on the far right of the viewer.

7 Option/Alt-click the right side of the viewer to set the pan tracker and a left-right keyframe in that position.
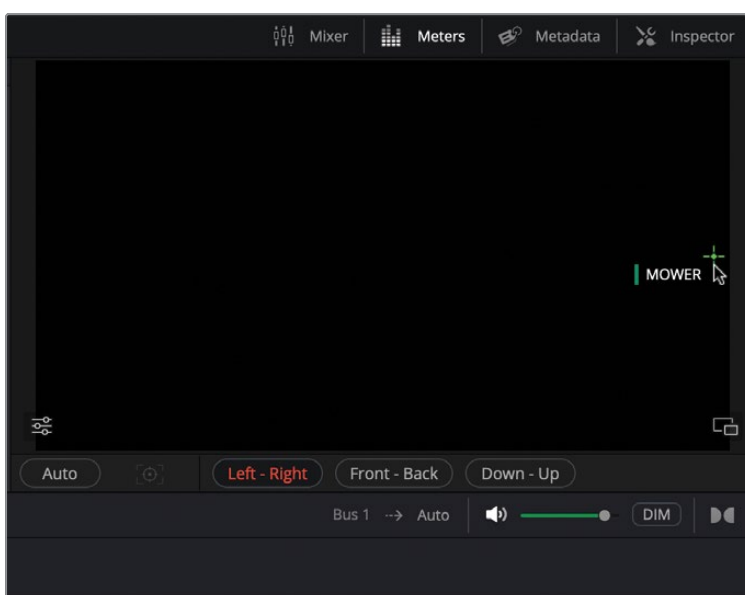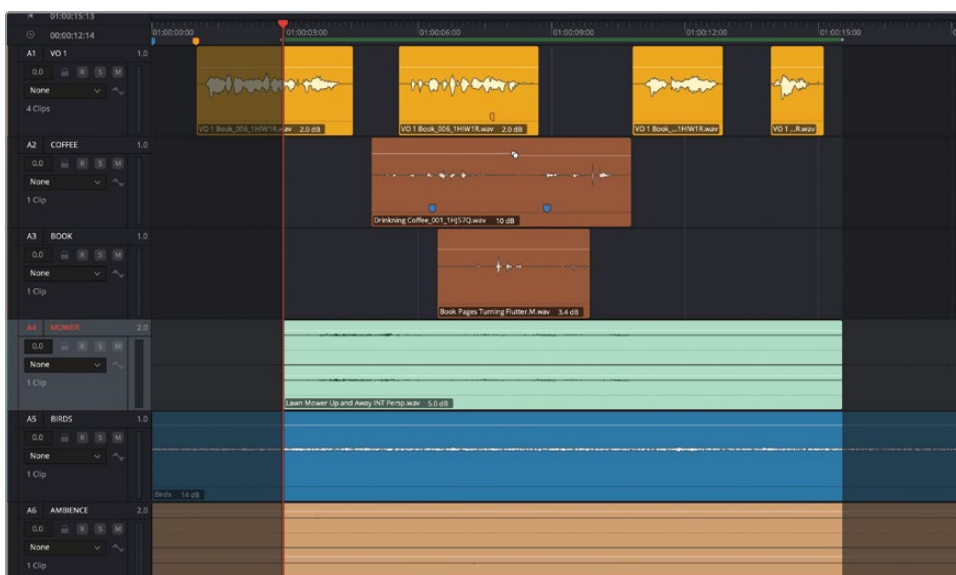
8 Press Shift-O to move the playhead to the selected clip's Out point. Option/Alt-click the far left side of the viewer to set a left-right keyframe in that position.
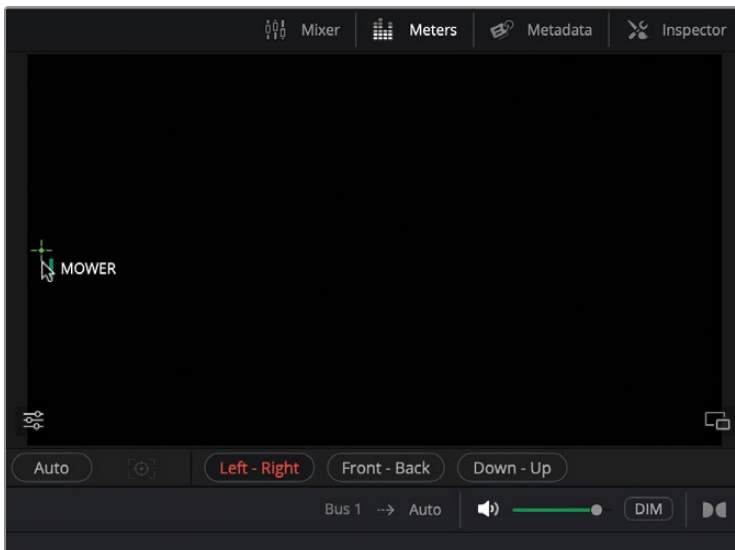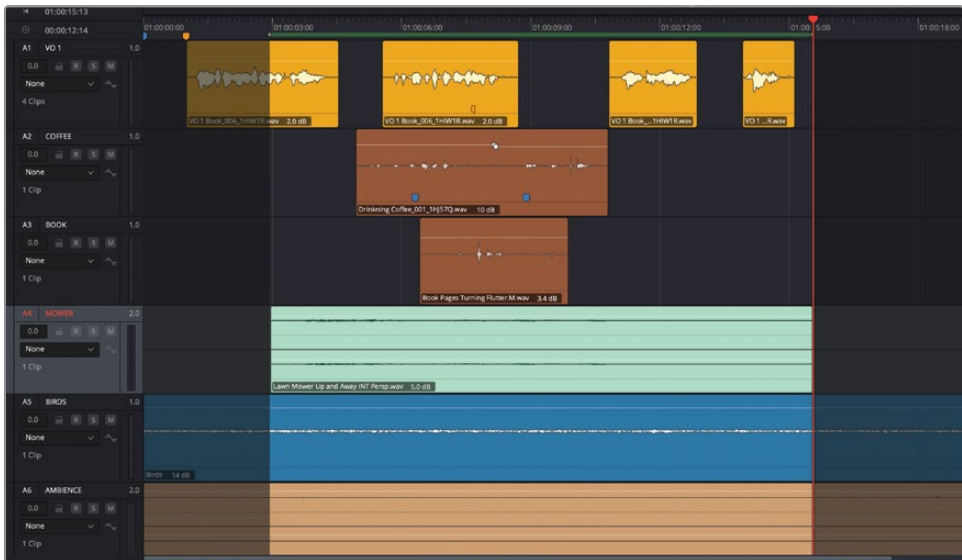
> **NOTE** To see the Pan tracker in the viewer, be sure to show the controls and select the track.

9 Play the clip from the beginning and listen to the clip while watching the tracker move in the viewer.

Fantastic! Just like that, the mower sounds like it is moving in the distance from the right to the left. The clients are thrilled and can't wait to hear what you do with the helicopter and dragon sound effects! Choppers and dragons?... To be continued in Lesson 3, "Editing Sound Effects and Music."

Congratulations! You survived and thrived in your first fictional audio assignment, built a basic podcast intro from scratch, and completed the first lesson in this training guide. You'll work more on this project in later lessons.

> **NOTE** If you didn't finish all the steps in this lesson, import the backup timeline 1h Intro v1 Finished to see the finished timeline.

Lesson Review

1 In the default layout, which Fairlight panels are displayed with the timeline? Choose all that apply.

   a) Mixer

   b) Media pool

   c) Index

   d) Monitoring panel (meters)

2 True or False? The viewer in the Fairlight page shows only the selected video tracks in the edit page.

3 True or False? You can only change a clip's volume level in the timeline or Inspector once it has been added to the timeline.

4 In the Fairlight page, which of the following can you do in the Tracks Index? (Choose all that apply.)

   a) Select tracks

   b) Reorder tracks

   c) Show or Hide tracks with visibility controls

   d) Change a track's name or color

   e) Make a new timeline from a selected track or tracks

5 What shortcuts are used to mark the beginning and end of a section that you want to use for a source clip in the media pool?

   a) I and O

   b) B and E

   c) S and F

   d) . (period) and , (comma)

   e) You can't mark the beginning and end of a source clip. A clip must be in the timeline before you can choose the section you want to use.

6 What is audio scrubbing?

   a) Cleaning a clip's audio to remove background noise

   b) Searching for a clip in the media pool

   c) Finding a clip's fundamental frequency

   d) Listening to a clip while moving the playhead forward, back, fast, slow, or anywhere in between

   e) Erasing a clip from the project

Answers

1 a, d

2 False. The viewer in the Fairlight page shows the video output of the edit page.

3 False. You can change the volume level of a selected media pool clip in the Inspector. You can also change the level of a timeline clip in either the timeline or the Inspector.

4 a, b, c, d

5 a

6 d

Lesson 2

Editing Dialogue Tracks

Welcome to dialogue editing, in which every word from every character counts. In this lesson, you will assume the role of a dialogue editor. You will follow real-world workflows to manage multichannel dialogue clips, transform production dialogue into effective dialogue tracks, and edit multiple voiceover takes to build a composite take. Spending extra time on spoken words is essential for creating a polished soundtrack, regardless of the type of project, budget, or size of your crew. You'll also learn new tools and some effective keyboard shortcuts for editing and moving clips between tracks.

Time

This lesson takes approximately 75 minutes to complete.

Goals

NOTE The exercises in this lesson build from the tools and skills you learned in the previous lesson. If you skipped ahead to this lesson, you might need to look back at the previous lesson as a guide for skills and tools already covered.

What Does the Dialogue Editor Do?

As the title suggests, dialogue editors are responsible for all the spoken words in the soundtrack, including dialogue, narration, and voiceover. In many cases, dialogue editors are also responsible for recording automated dialogue replacement (ADR).

However, in addition to dialogue, the dialogue editor is also responsible for all the production sound recorded during the shoot. When the picture editor is finished with a cut, they pass it to the Sound department, where the dialogue editors organize the sounds from the set into appropriate tracks. They also remove unwanted "production" sounds such as camera noise, buzzing lights, and squeaky dolly wheels. The dialogue editor also ensures that every syllable of dialogue is clear and present, even if it requires wading through outtakes to find a better-sounding take. They may also swap the sound in a wide shot with audio from clean close-up takes to improve clarity and presence.

The dialogue editor's "big picture" goal is to improve the clarity and consistency of each word within the context of a scene and create a seamless dialogue experience. So in addition to cleaning up and improving spoken words, they also fill in and smooth the gaps between lines to eliminate any silence or jarring changes in ambience between cuts that could distract from the dialogue-driven performances.

NOTE The exercises in this book use the default DaVinci Resolve Fairlight page keyboard shortcuts. If you are using custom keyboard shortcuts, please set the Keyboard Customization layout on your system to the default DaVinci Resolve preset via the Keyboard Customization window available in the DaVinci Resolve menu.

Opening and Playing the Project

In this exercise, you will restore the TML Audio Post project that contains the clips, scenes, timelines, and media from the film *Too Much Life* that you'll use for Lessons 2 through 11. Then, you'll save a copy of the project.

1 If necessary, open DaVinci Resolve.

2 In the Project Manager, right-click and choose Restore Project Archive.

3 Select R19 Fairlight Audio Guide Media > R19 Fairlight Part 2 > **TML Audio Post.dra** and click Open. Then, double-click the **TML Audio Post** project to open it.
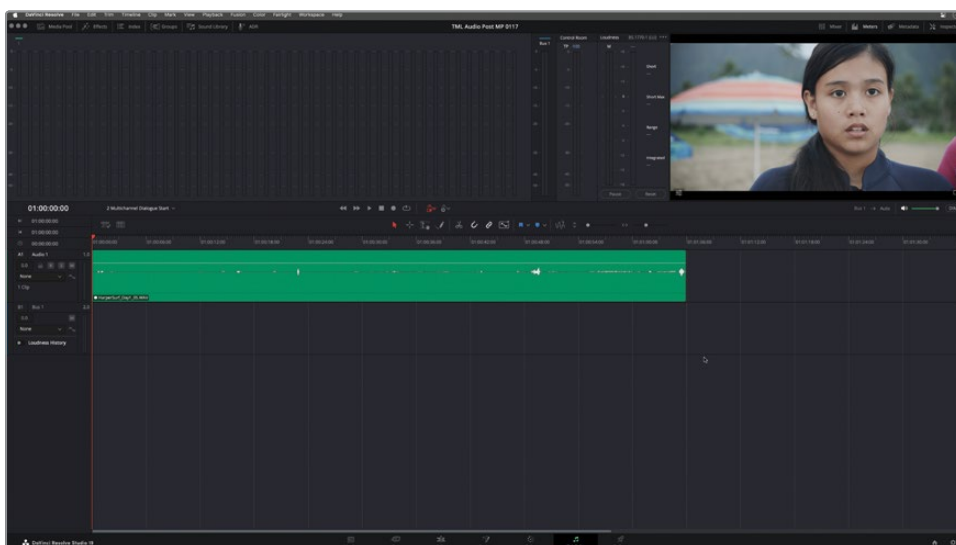
The project opens in the Fairlight page with the 2 Multichannel Dialogue Start visible.

This is a good time to reset the UI layout and save a working copy of the project so that you can keep the unaltered original project for later reference.

4 Choose Workspace > Reset UI Layout.

5 Choose File > Save Project As.

6 In the name field, type your initials after the project name.
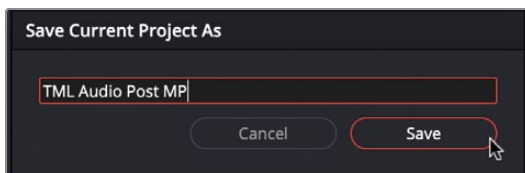
7 Click Save.

Now that you've restored and saved a copy of the project, let's review the project organization in the media pool.

Locating the Lesson Timelines in the Media Pool

You'll work with this project for numerous exercises and lessons throughout this book. Before diving into dialogue editing, let's go to the Lesson Timelines bin in the media pool to see the timeline organization for this project and open the first timeline.

1   Show the media pool. In the media pool bin list, select Lesson Timelines > Lesson 02.

2   If necessary, change the media pool to List view.
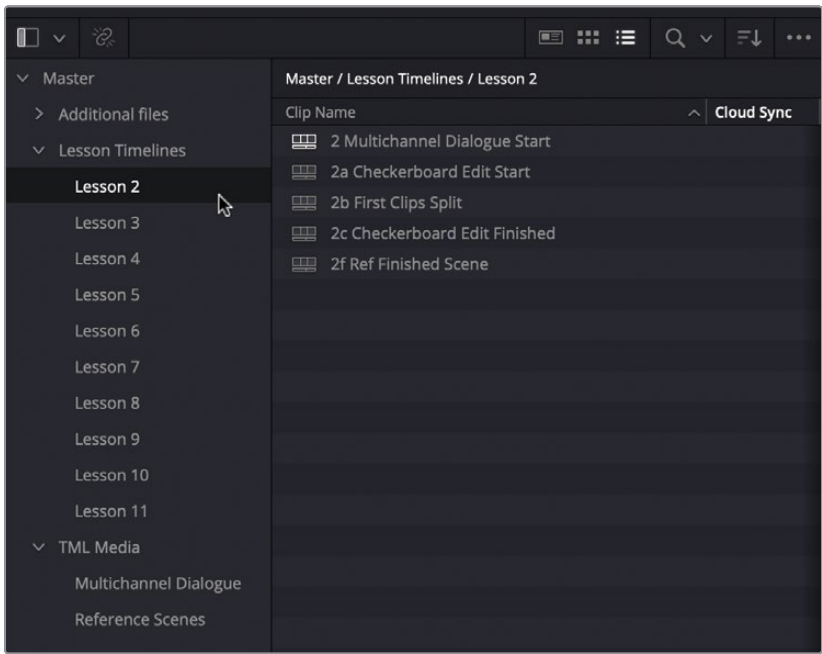
Here, you will see all the timelines for this lesson. Each lesson includes sequential timelines starting with the lesson number. In this case, the first timeline is 2 Multichannel Dialogue Start, which should already be open. You'll work with this timeline shortly. For now, let's open a different timeline that will serve as a reference for the finished scene.

3   Open the timeline **2f Ref Finished Scene**.

For subsequent exercises, you'll simply be instructed to open a specific timeline.

4   Hide the media pool.

Monitoring Video Only

In a traditional audio-post workflow, an audio editor will need a separate reference video to use as a guide when building the soundtrack. In DaVinci Resolve, you do not need a reference video because the Fairlight page includes a handy viewer that shows the timeline's video. For the purposes of this book, there will be reference movies of the film as needed to add context to the various exercises along the way.

As you have already discovered, the viewer is located at the right side of the monitoring panel. You can easily expand the viewer as a separate floating window.

1   Play the first few seconds of the timeline 2f Ref Finished Scene to see the video in the viewer, as well as the audio levels in the mixer and monitoring panel meters.
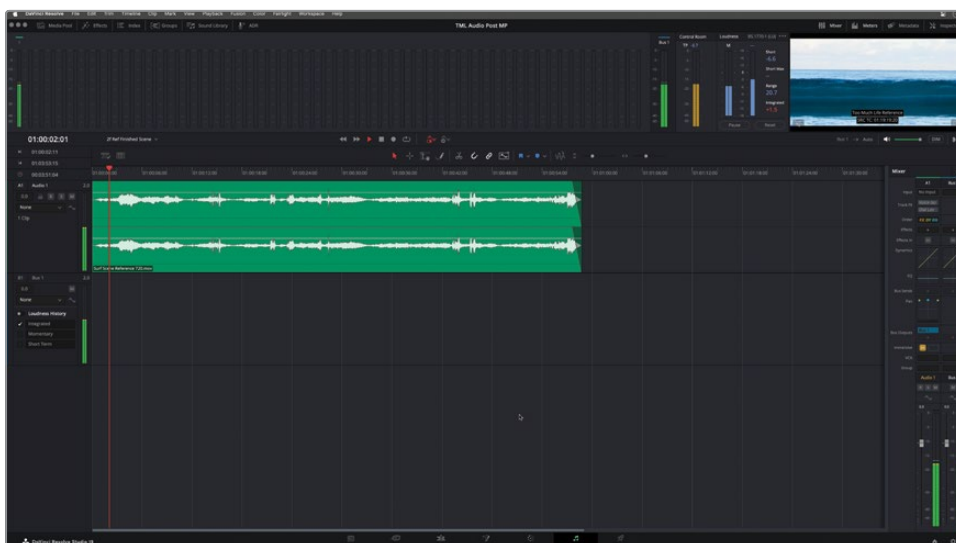
You may have noticed there is only one audio track, so there is no need for the mixer or full monitoring panel at this time.

2 In the lower right corner of the viewer, click the Floating Window button or choose Workspace > Fairlight > Floating to convert the viewer into a floating window.
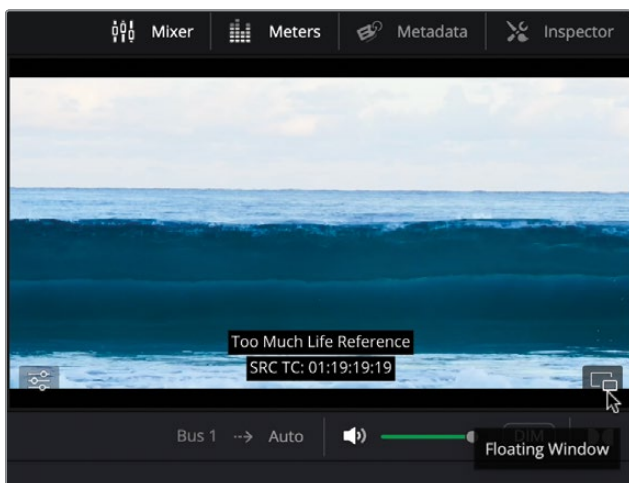
The viewer appears in the middle of the interface. You can drag the top of the viewer to move it, and drag its edges or corners to resize it.

3 Click the Meters button to hide the monitoring panel. Then, hide the mixer.

4 Drag the viewer down to the bottom of the empty tracks area in the timeline. Then, drag the upper right corner of the viewer to resize it to about twice its original size. When you are finished, the viewer should fit nicely in the lower half of the timeline.
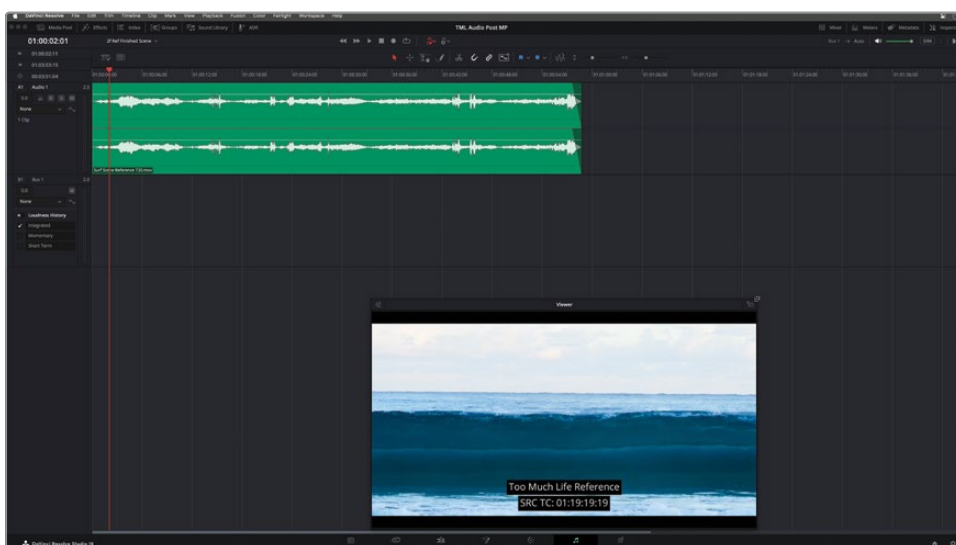
Feel free to resize or move the viewer at any time as you work through these exercises.

To return the viewer to the monitoring panel, you can click the Dock button in the upper right corner of the viewer or press Return/Enter. For now, let's leave the viewer open as a separate window.

> **TIP** If you have a second monitor connected to your system, you can choose the Dual Screen layout in the Workspace menu. You can also assign the video output to a second or third screen via the Workspace > Monitor > Clean Feed option.

Previewing the Scene for Context

You are about to embark on a real-world audio post-production journey through several scenes from the feature film *Too Much Life*, directed by Sawyer Woods. Along the way, you'll use professional tools and features in the Fairlight page to perform various audio post jobs as you turn raw production sound into a fully mixed stereo and 5.1 surround soundtrack.

The film *Too Much Life* explores Kaua'i teenagers dealing with cyberbullying, social media, and online relationships. On the Hawaiian island of Kaua'i, middle schooler Harper Hudson campaigns for student body president. She tries to win the hearts of the students at Garden Island Middle School, but hijinks ensue as a colorful cast of characters must decide whether they will support or sabotage Harper. Will Harper Hudson become president, or will life become too much?

> **MORE INFO** For more information about the film *Too Much Life,*
> click the following links:
> Trailer: *www.youtube.com/watch?v=z8WS6h5mg8Y*
> Kauai Film Academy: *www.kauaifilmacademy.org*

1   Press Shift-Z to zoom the timeline horizontally to fit the visible timeline area.

2   Play the timeline to see and hear the first part of the scene for context. When finished, stop playback.

You just listened to an early pre-mixed version of the scene. Now, let's go back to the original master clip to hear the same part of the scene with the original production sound. This time, instead of finding the timeline in the media pool, you'll use the handy user-defined Timeline menu, which shows recent timelines or all timelines in a project.

3   In the upper left corner of the timeline window, click the Timelines dropdown menu to see the project's recent timelines. In the list of timelines, choose 2 Multichannel Dialogue Start.
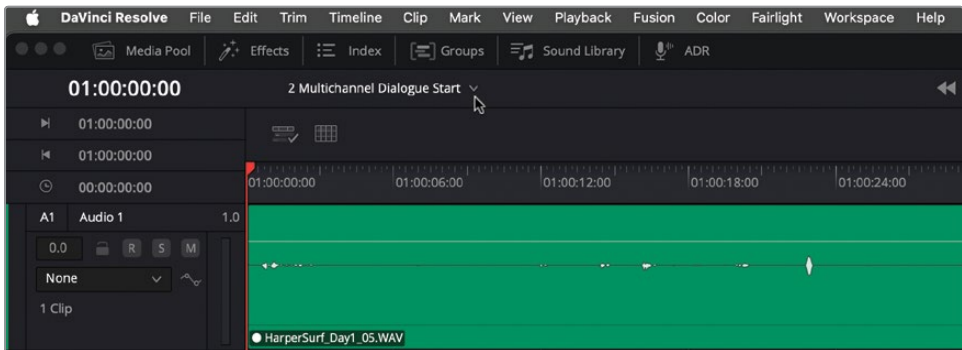
While you are focused on the upper left corner of the timeline window, let's also open the Timeline Options menu and show the video track. As you may have guessed, the Timeline View Options menu is where you'll find options to show or hide additional timeline elements such as the video tracks.

4   In the Timeline View Options menu, click the Display Video Tracks option.
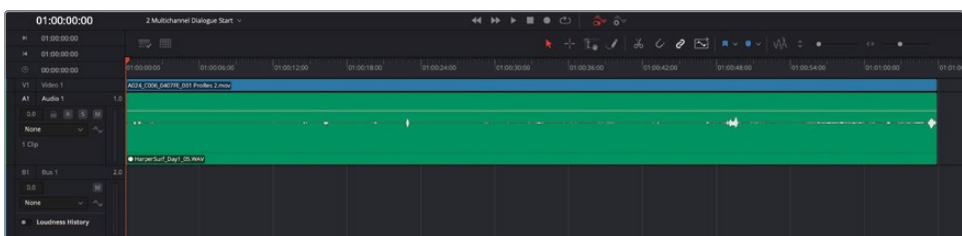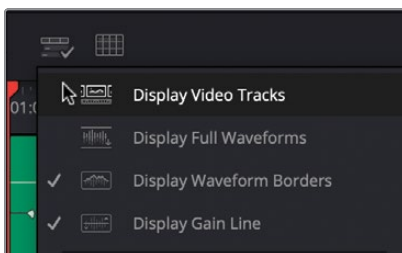
The 1 Video 1 track appears above the A1 Audio 1 track in the timeline. By default, video clips are blue.

5   Play the timeline and listen to the production sound.

Thoughts? It doesn't take long to realize the many challenges ahead for the dialogue editor (you) in this lesson. For example, this scene was shot on location at the beach, so you hear the ocean waves sometimes louder than the voices themselves. You can also hear the director calling the shots during the take. Those issues and many more are easily identified and fixed in the Fairlight page.

If you are wondering where to begin, that's easy. Like any dialogue editor, you'll start by identifying the different recorded microphone sources for the scene and choosing which one to play in the timeline.

Preparing Multichannel Clips for Dialogue Editing

When editing production dialogue recordings, one of the first things you must do is determine how many microphone channels you'll work with and how you want to manage them to simplify the editing process. Fortunately, the Fairlight page allows you to change a clip's audio format and source channels as well as track format at any time. This is incredibly important when dealing with multiple microphone sources and multichannel clips. Understanding how to manage your multichannel clips is crucial for properly setting up your clips and timelines for successful audio editing. In fact, about 80% of all the troubleshooting questions this author receives regarding audio editing in Resolve stems from a lack of understanding about channel mapping. The good news is that once you step through the following exercises, you'll be armed with the skills needed for all future projects, whether you're dealing with multichannel audio, eliminating an unwanted channel, or simply isolating the center channel (dialogue) from a 5.1 surround timeline clip.

Let's start by taking a closer look at the clip in the timeline.

1   Double-click the audio clip in the A1 track to open the Clip Attributes dialog.

2   In the Clip Attributes dialog, click the Audio tab.
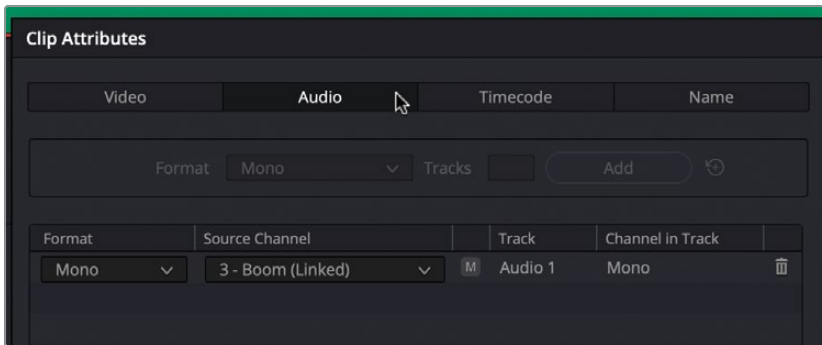
The Audio panel shows the format and source channel(s) for the current timeline clip. As you can see, the clip format is Mono, and the Source Channel is 3-Boom (Linked).

3   Click the Source Channel dropdown menu to see all the available channels for the clip. Leave the channel set to 3 – Boom (Linked).
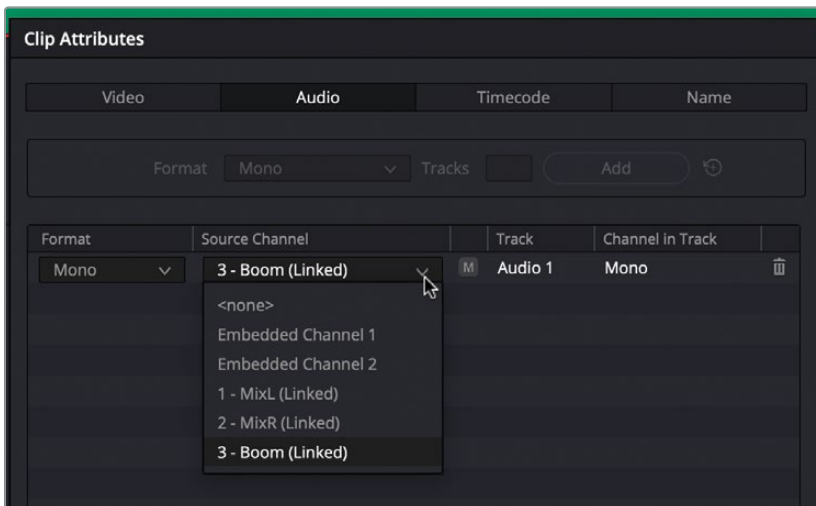
With DaVinci Resolve 19.1 and higher, you can also see and change the clip's source channel directly in the timeline or File tab of the Inspector.

4 Show the Inspector and click the File tab to see that panel.
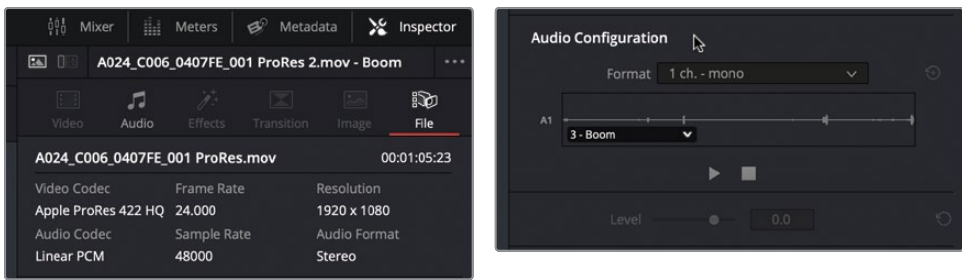
In the Audio Configuration section of the File Inspector, you can clearly see the clip format and current channel.

5 Click the Source dropdown menu in the Audio Configurations area of the File Inspector to see all the channel options for the currently selected clip. Leave the clip source channel set to 3-Boom. Keep the Inspector open.
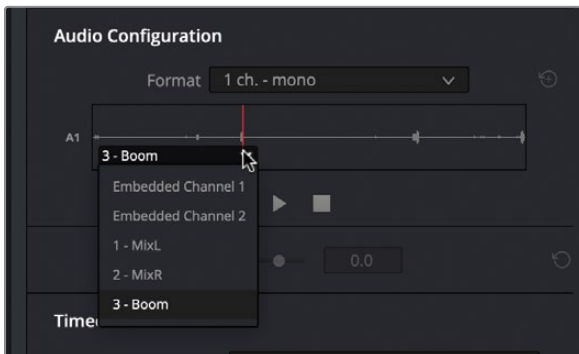
Now that you have seen how to identify and change the current source channel in the Clip Attributes and Inspector, let's see how to set the source clip's audio channel configuration before it is edited to the timeline.

Auto Syncing and Setting Audio Channels in a Source Clip

In this exercise, you'll use DaVinci Resolve's intuitive Auto Sync feature to sync picture with sound and choose which audio channels you want to include in the source clip. Although we are only working with one set of clips for this exercise, you could easily apply this technique to an entire bin filled with source video and audio clips.

1 Show the media pool.

2 In the media pool bin list, select the TML Media > Multichannel Dialogue bin.
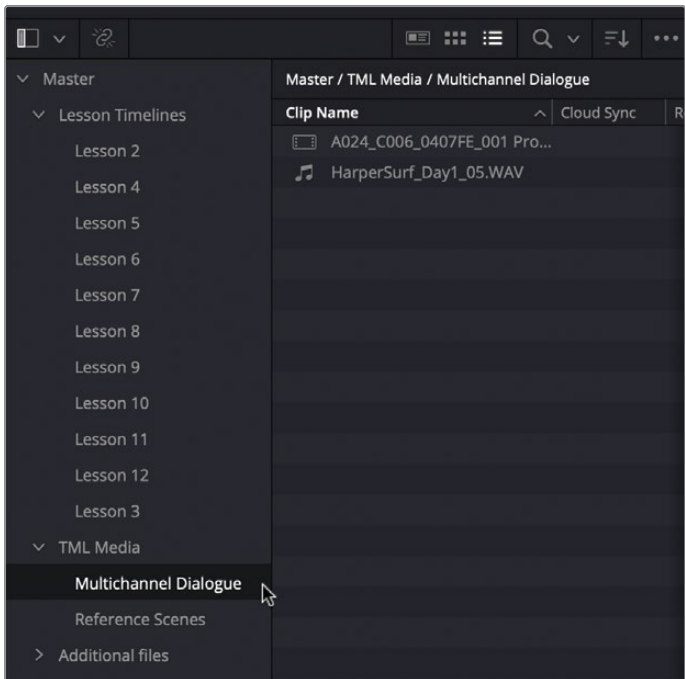
The Multichannel Dialogue bin includes two clips, one video and the other audio. These are the original versions of the source video and audio clips for the current timeline.

3 In the Multichannel Dialogue bin, select the **A024_C006_04047FE_001** video clip.
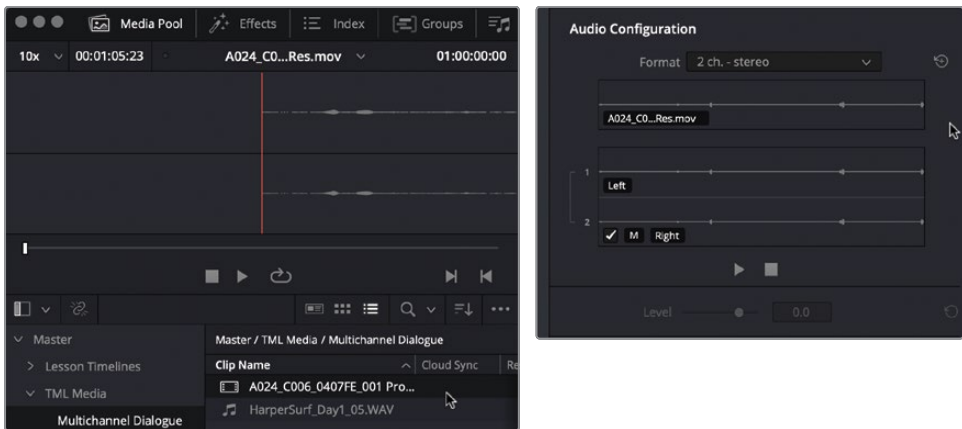
When a source clip is selected, you can see the audio channels in the media pool preview player and the file panel in the Inspector. In this example, the video clip has two audio channels: stereo left and right.

4 Play a few seconds of the clip in the preview player to hear the stereo audio.

It sounds very similar to what is currently in the timeline. You can also play the clip in the Inspector to hear the current audio channels. Next, let's listen to the audio file that was recorded by the location sound mixer.

5 In the media pool, select the **HarperSurf_Day1_05.wav** clip.

In the preview player, you can clearly see three separate channels of audio. To determine what they are, you only need to glance at the File tab of the Inspector.
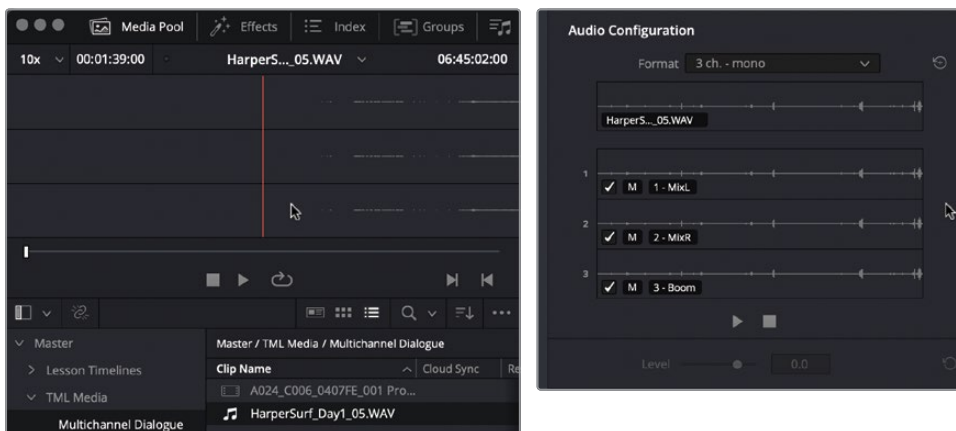
The Inspector shows that the current clip format is 3 ch. – mono, and the channels from top to bottom are 1-MixL, 2-MixR, and 3-Boom. The channel names are part of the embedded audio information that was retained when using the Auto Sync dialog.

> **NOTE** You can also add or change the names of audio channels in the Audio Tracks group in the Metadata panel.

6 Click the Metadata button located to the left of the Inspector button to show the Metadata panel.

7 Click the Format dropdown to see the current choices for the 3 channels.

Whichever clip format you choose will determine how the audio will be formatted when edited to the timeline. For example, 3-ch Mono means the clip will be edited to the timeline with a different mono channel on three separate audio tracks, while 3-ch Adaptive places all three channels into a 3-channel adaptive clip that can be edited to an adaptive 3-channel track. Adaptive clips and tracks can have up to 36 channels to accommodate immersive audio formats.

We aren't quite ready to change the format of the clip. First, let's sync it to the video clip. When you use the Auto Sync feature in DaVinci Resolve, you can choose how you want to sync the video and audio clips, as well as which channel to use and which information to retain.

8 In the Inspector, select the video and audio clips in the Multichannel Dialogue bin.

9 Right-click the selected clips and choose Auto Sync Audio from the contextual menu.

10 In the Automatically Sync Audio dialog, choose the following settings:

— Synchronize using Waveform

— Use channel number 1

— Retain embedded audio

— Retain video metadata
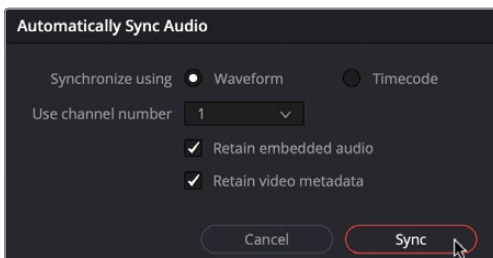
11 Click Sync.

12 In the Inspector, select the video clip in the Multichannel Dialogue bin.
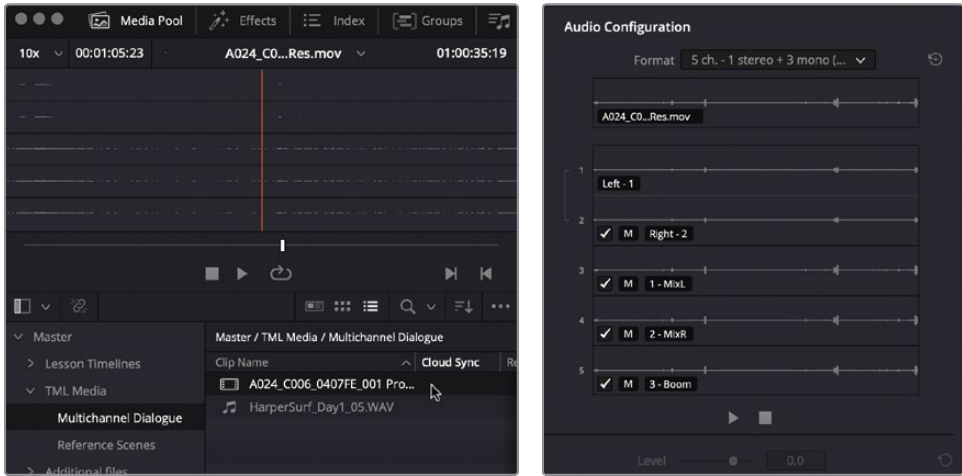
The newly synced clip now includes five audio channels: the original two stereo channels plus the three mono channels from the audio clip. Let's see it in a new timeline.

> **NOTE** In DaVinci Resolve, clips can have up to 36 audio channels.

13 Right-click the **A024_C006_04047FE_001** clip in the media pool and choose Create New Timeline Using Selected Clips.
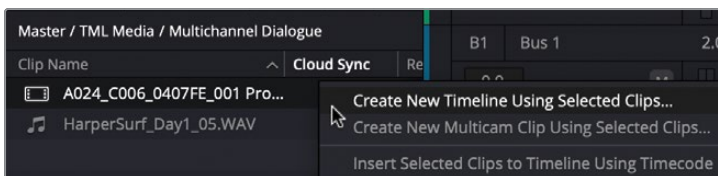
14 In the Create New Timeline dialog, name the timeline **Multichannel Test** and click Create.

As expected, the timeline opens with one stereo and three mono tracks.

15 Select the audio clip in the timeline to see the Audio Configuration in the Inspector.
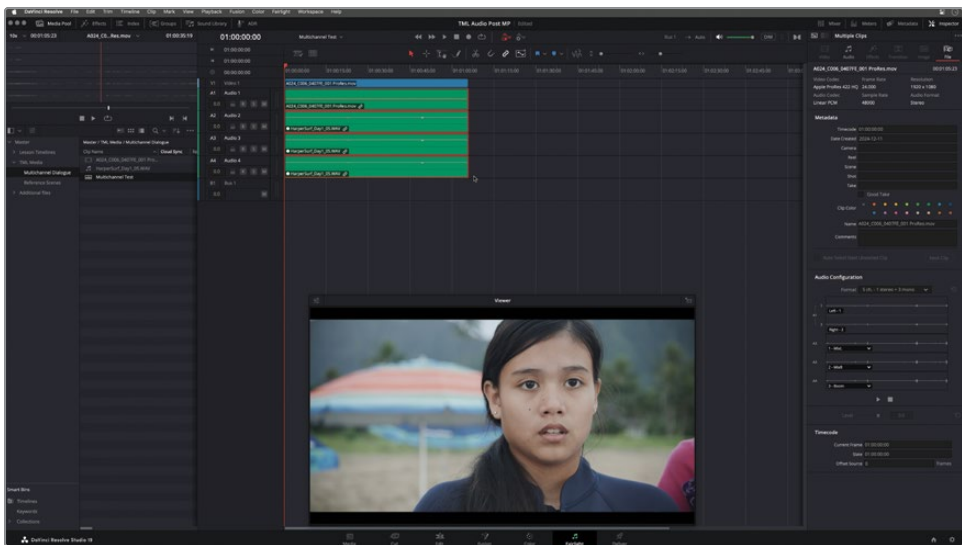
Now, let's modify the source clip's Audio Configuration before adding it to a timeline. Keep in mind that you can always change a clip's format or channel configuration in the Clip Attributes after it is in the timeline.

Changing Source Audio in the Inspector

For this exercise, you'll go back to the synced clip in the media pool and change the Audio Configuration in the Inspector so that it only includes the 3-Boom channel while editing to the timeline. How? The Audio Configuration controls in the Inspector offer options to preview, mute, or deselect channels. Don't worry about limiting your channel options. DaVinci Resolve doesn't delete unused channels; they simply aren't exposed in the timeline.

1 In the media pool, select the **A024_C006_04047FE_001** clip.

2 In the Inspector Audio Configurations, uncheck all the audio channels except for the 3-Boom channel.
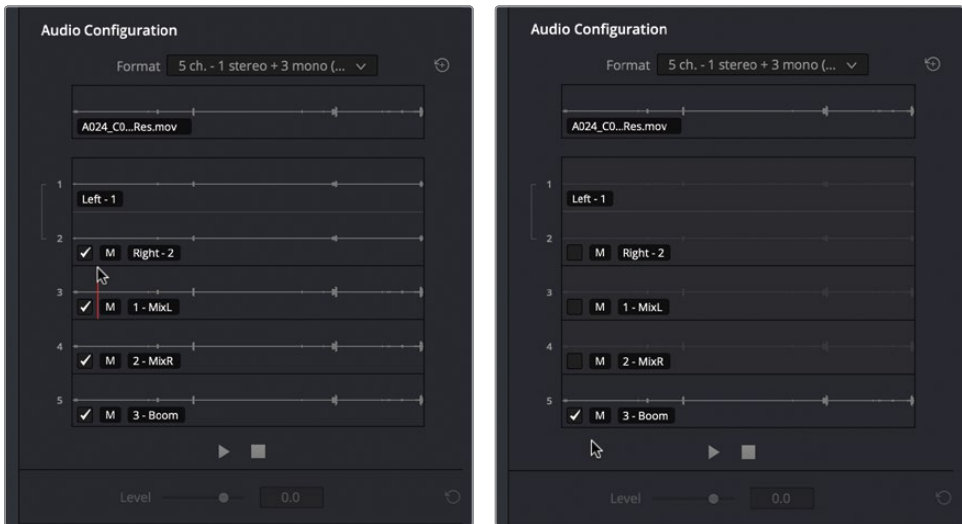
3 Right-click the **A024_C006_04047FE_001** clip in the media pool and choose Create New Timeline Using Selected Clips.

4 In the Create New Timeline dialog, name the timeline **Multichannel Boom Only** and click Create.
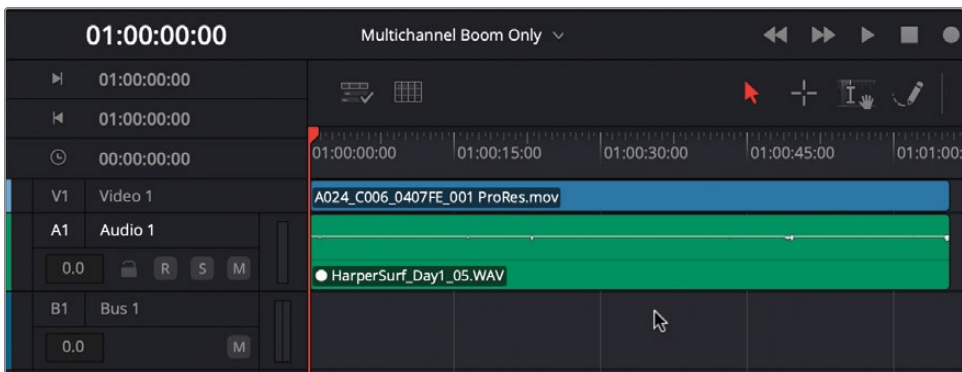
It's the same clip, but a completely different result this time. Mission accomplished! You have narrowed down the five audio channels to one mono track.

5 Select the audio clip in the timeline and look at the Audio Configuration in the Inspector.

Here, you'll see only the channels currently showing in the timeline.

6 In the Audio Configuration controls, click the A1 channel dropdown menu to see the available channels. Leave the channel set to 3-Boom.
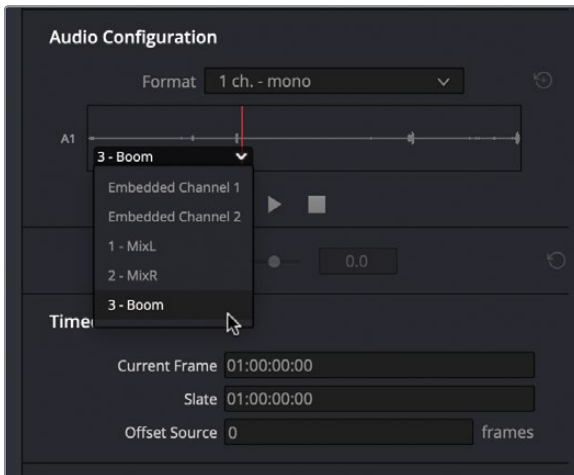
That's it! Now you know how to identify and choose audio channels for dialogue clips before and after they are in the timeline. It's time to move on to dialogue editing.

> **NOTE** You can also change a clip's audio format and switch mono channels directly in the timeline. You'll try that later in this lesson.

Preparing the Timeline for Dialogue Editing

The Fairlight page is loaded with settings and shortcuts designed to enhance and speed up your audio editing experience. Let's set up the timeline before you dive into editing. This will only take a few minutes, and the time it takes to prepare the timeline for dialogue editing is nothing compared to the time you'll save by using the new settings.

First, you'll increase the track height, waveform, and horizontal zoom to increase waveform visibility. Then, you'll enable several timeline view options to keep the playhead in focus and simplify navigation between clips. Finally, you'll engage sample-level scrubbing to help pinpoint where and when to edit the clips.

1   Open the **2 Multichannel Start** timeline. Close any unnecessary panels so that only the timeline and viewer are visible.

2   Drag the lower edge of the A1 track header to increase the height of the A1 Harper track.

3   Choose View > Zoom Audio Waveform > Increase Height or hold Option-Command (macOS) or Alt-Ctrl (Windows) while scrolling the middle mouse wheel to zoom the audio waveform.

4   Repeat step 2 as needed to increase the waveform zoom until you can clearly see the waveform as a guide for splitting the clip into parts.

> **TIP** You'll also find options to Zoom or Reset in the Track Waveform Zoom options available in the (right-click) shortcut menu.

Next, you'll zoom horizontally for a closer view of the waveform as the timeline scrolls beneath the fixed playhead.

5   Zoom the timeline horizontally until the ruler shows only about 4 seconds.
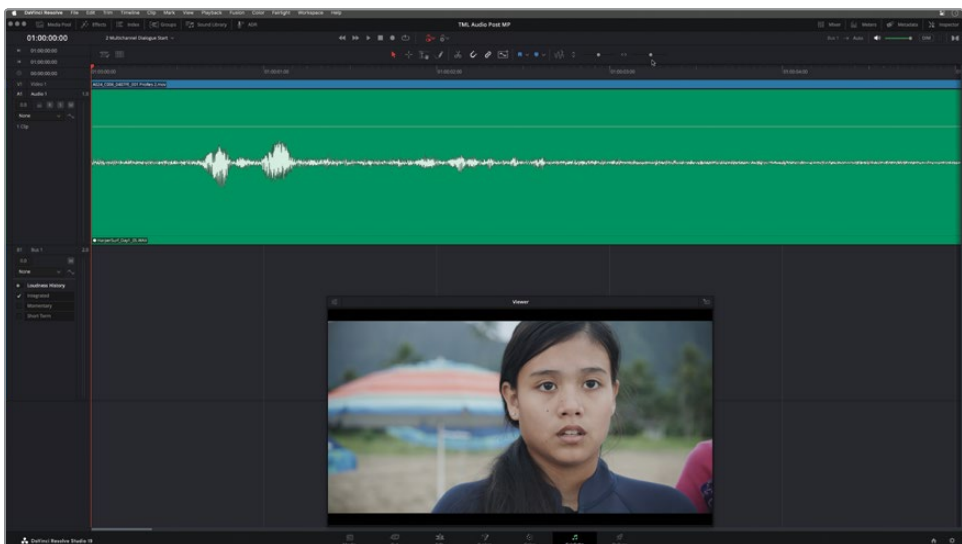
Using Fixed Playhead Mode for Scrolling Playback

Normal page-scrolling playback is highly functional for both picture editing and audio editing. However, at times, you need a seamless playback experience to focus all your attention on the sounds and waveforms of the clips as they scroll beneath the playhead. In that case, you can turn on Fixed Playhead mode. This mode is terrific for listening to and editing clips in part because you can always see ahead to the waveform that is coming up. There is also a No Scrolling option for which the playhead continues moving offscreen without updating the visible portion of the timeline.

1   In the Timeline View Options menu, set the Timeline Scrolling to Fixed Playhead.
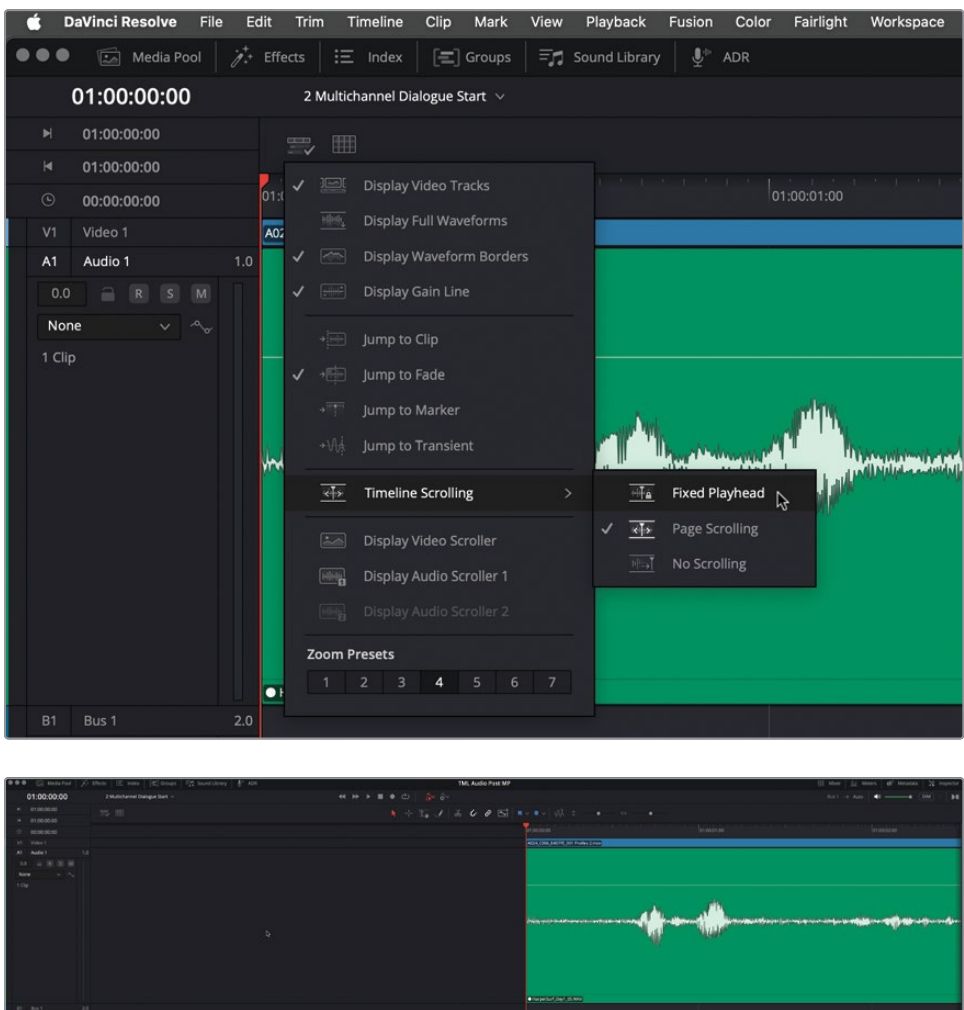
The playhead and the first clip now start in the middle of the timeline. To move the fixed playhead to a different position, drag the top of the playhead where it crosses the ruler. Let's drag the playhead closer to the track header.

2   In the timeline ruler, drag the top of the playhead toward the left as far as you can toward the track header.
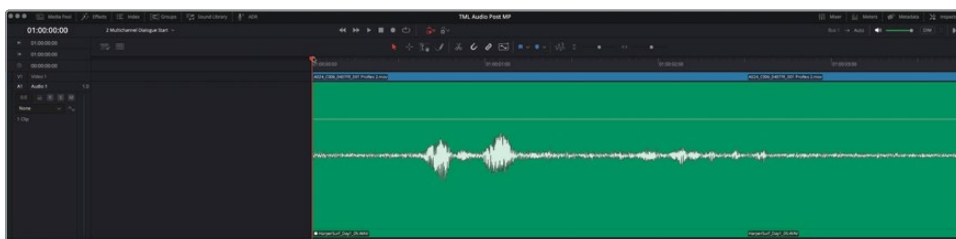
3   Play the first part of the timeline to see and hear the waveform as it passes beneath the fixed playhead. When finished, stop playback and press Home to return the playhead to the beginning of the timeline.

While admiring the Fixed Playhead mode's scrolling playback, you probably noticed that it is easy to focus on the waveform as it scrolls beneath the playhead.

Setting the "Jump to" Options

Another handy setting for dialogue editing is Jump to Clip. Once this feature is enabled, you can jump to the start or end of clips simply by pressing the Up Arrow or Down Arrow keys, respectively. The Jump to options are available in the Timeline View Options menu.

1   Click the Timeline View Options menu button to view the options.
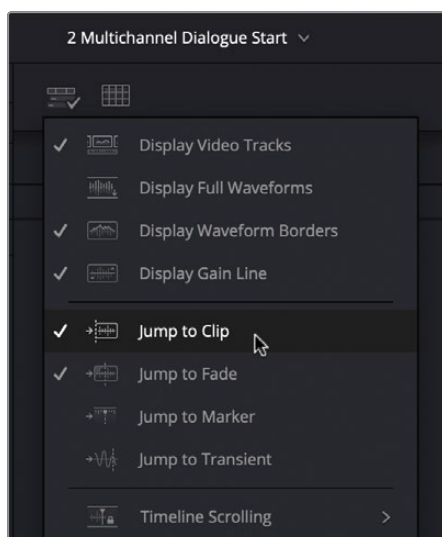
As you can see, there are four Jump to options, including Clip, Fade, Marker, and Transient. You'll work more with the other Jump to options in later lessons. For now, you'll enable the Jump to Clip option, which is controlled by the Up/Down Arrow keys.

2 Click the Jump to Clip option, if necessary, to enable it.

3 Press the Down Arrow key to jump the playhead to the end of the clip. Press the Up Arrow key to jump to the beginning of the clip.

You'll find this more useful once you start adding edits and need to jump from clip to clip in the timeline.

Hiding the Video Track and Busses

As you learned in Lesson 1, using the Razor tool or its shortcut will only cut selected clips or tracks. When nothing is selected, the razor cuts all clips at the playhead. So before you start racing along the timeline splitting audio with the razor shortcut, you should consider putting away the video tracks for safekeeping. You don't *have* to hide the video tracks to edit synced audio. In fact, sometimes it can be useful to see the edited clips in the video track while you edit the audio. However, in this case, while you are learning your way through the shortcuts and lightning-fast editing techniques, it's a good idea to hide any tracks you don't intend to split.

1 Show the Timeline View Options menu again.

2 Click the Display Video Tracks option to disable it.

The video track is no longer visible at the top of the timeline. To streamline the timeline editing, let's also hide the B1 Bus 1 track. Busses only show in the timeline when Automation is toggled on, which is a default setting in the Fairlight page.

3 Click the Toggle Automation button (red) to turn off automation and hide the bus in the timeline.
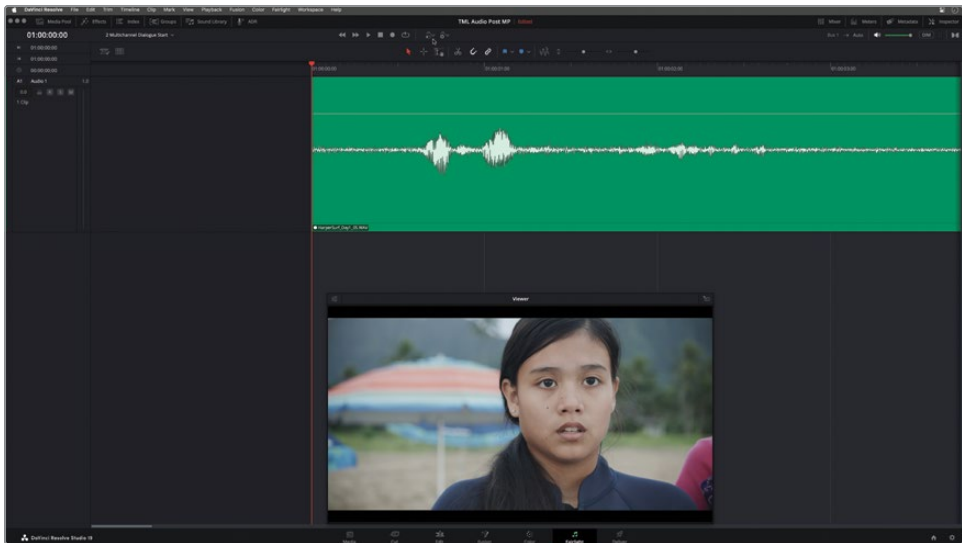
The video and bus tracks no longer show in the timeline.

Scrubbing Audio at the Sample Level Using Loop Jog

DaVinci Resolve offers tape-style scrubbing in the Fairlight timeline for manually controlling the speed and direction of the playhead over the clip. *Scrubbing* is the term used for listening to audio as you move the playhead back and forth over an audio clip in the timeline. Loop jog scrubbing, on the other hand, provides a sample-level preview of the audio while scrubbing the playhead. Both types of scrubbing are available in the Timeline menu. Audio scrubbing is turned on by default, and you can toggle it on and off by pressing Shift-S. In this exercise, you'll enable loop jog scrubbing for precision edits and check the Loop Jog settings in User Preferences.

1 In the Timeline menu, locate the Audio Scrubbing option and make sure it is enabled.

Let's test-drive the audio scrubbing in the timeline. To scrub, drag the playhead back and forth over the clips at whatever speed you choose. Since the playhead is fixed, you'll drag the ruler to scrub the audio beneath the playhead.

2 At the top of the timeline, grab the ruler above the first set of waveform peaks and drag toward the left, passing the playhead. Scrub the ruler back and forth as needed to locate the beginning of the first line of dialogue when Harper says, "It's rough."
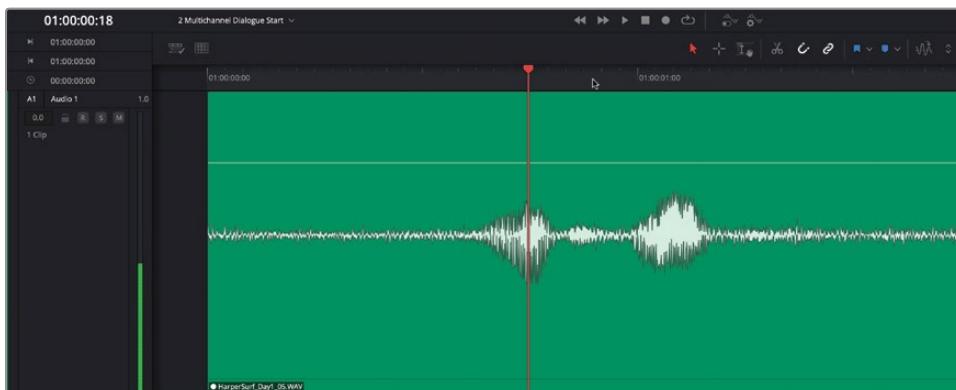
In addition to manual scrubbing, you can use keyboard shortcuts to scrub one frame at a time.

3 Press the Right Arrow key to scrub forward one frame at a time. Then, use the Left Arrow to scrub one frame at a time in reverse.

4 Hold K and tap L to scrub forward one frame at a time. Hold K and tap J to scrub one frame at a time in reverse.

5 Press Shift-S to toggle audio scrubbing off.

6 Scrub the clip again manually and with keyboard shortcuts. This time, you shouldn't hear anything.

> **NOTE** Toggling audio scrubbing off does not affect JKL standard playback, fast forward, reverse, or slow motion. It does prevent you from hearing playback when using keyboard shortcuts to play one frame at a time.

7 Press Shift-S to toggle audio scrubbing on.

Now that you are familiar with standard audio scrubbing, let's enable loop jog scrubbing.

8 In the Timeline menu, choose Loop Jog to enable loop jog mode. If necessary, enable Audio Scrubbing before enabling Loop Jog in the Timeline menu.
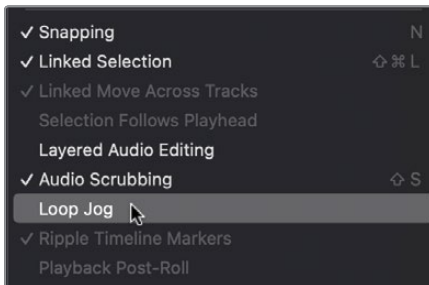
9 Drag the ruler to scrub the playhead over the beginning of the clip once again. When you reach Harper's words, hold the ruler or playhead still.

This time, you could probably hear much more detail as you scrubbed the playhead. The fast-looping sound you hear is an 80-ms (millisecond) sample preview of the sound preceding the playhead. If the Timeline Scrolling option were set to Page Scrolling, you would drag the playhead to scrub and engage loop jog instead of dragging the ruler.

10 Release the ruler. Press the Up Arrow key to move the playhead to the beginning of the clip.

11 Press Command-, (comma) in macOS or Ctrl-, (comma) in Windows to open the Preferences panel.

12 Click the User button to show the User Preferences panel, and in the preferences sidebar, click the Fairlight tab.

In the Fairlight General Settings, you'll see the Loop Jog Alignment dropdown menu and a field in which to set the Loop Jog Width. The default setting is 80 ms (milliseconds).

13 Click the Loop Jog Alignment dropdown menu to see the options.
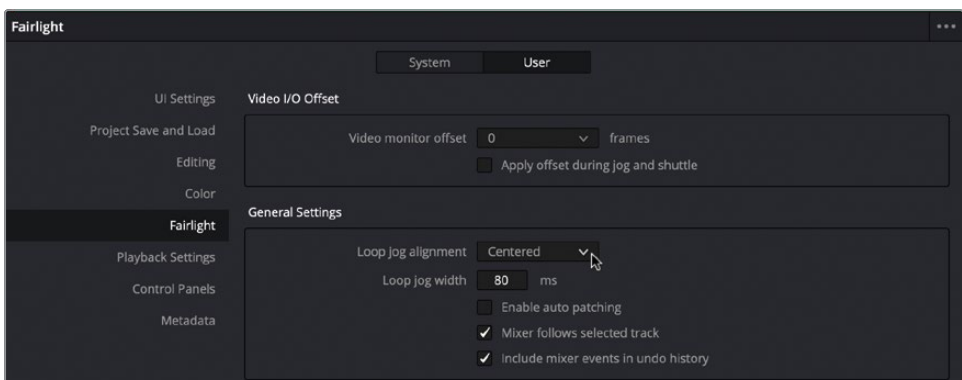
14 If necessary, change the Loop Jog Alignment to Pre and the Loop Jog Width to 80 ms. Click Save.

With this pre-playhead setting, you can scrub forward slowly over a word or phrase and hear exactly when a word starts or ends. This can be useful for identifying dialogue to edit and sounds you may want to eliminate.

> **NOTE** You can set the loop jog with up to 2000 ms. Each second of video equals 1000 ms. So by setting the loop jog amount to 2000 ms and centering it around the playhead, you will hear 1 second before and after the playhead. The default 80 ms setting is good for identifying when a specific sound, such as dialogue, starts or stops.

That's it. You've successfully zoomed the waveform and timeline, enabled fixed playhead scrolling, set the Jump to Clip option, hidden the video and bus tracks, and enabled loop jog scrubbing. The dialogue editor (you) and the timeline are prepped and ready to go.

Checkerboard Editing on Dialogue Tracks

Once a scene is edited and the best audio channels are chosen in the timeline, it's time to split and move all the dialogue clips to separate tracks for each character. This process is referred to as *checkerboard editing* because of the way the tracks look when the process is completed.

The primary reason for separating the dialogue for each character is so that each character has an individual track when you're adjusting volume, equalization, and dynamics processing, and creating the final mix. This editing technique is essential for all projects, whether scripted narrative, unscripted, dramatic, corporate, or documentary.

In the next series of exercises, you'll follow a checkerboard editing workflow that starts with creating tracks for each character plus a production effects (PFX) track to accommodate any non-dialogue sound picked up by the microphones. Many of these steps utilize skills that you have learned in previous exercises.

1 Fast forward through the first part of the clip while looking at the viewer to count how many characters are in this scene. Stop playback at around 01:00:10:18.
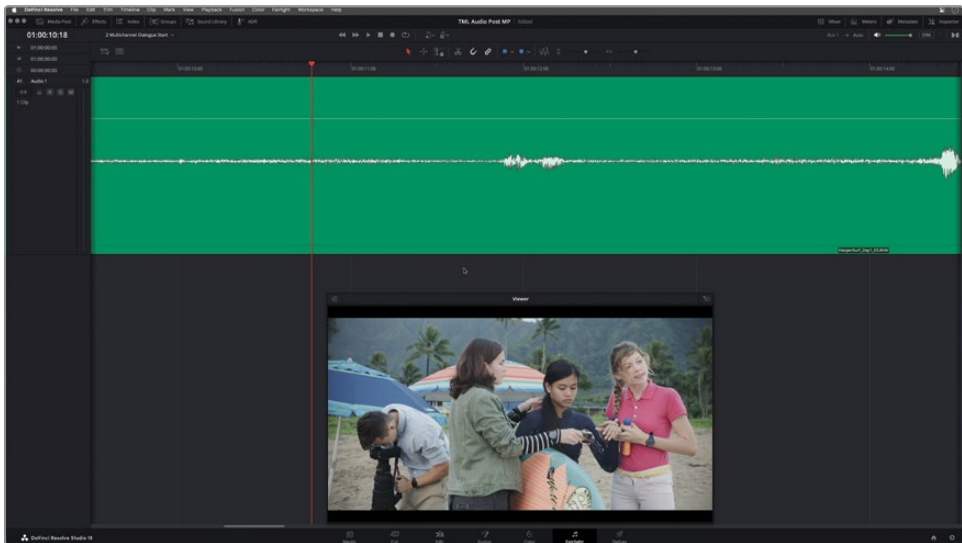
Time for some quick track math. There are four characters, so you will need one track for each character plus two additional tracks to accommodate the director and the production sound between spoken words. Since there is already one track, you will only need to add five more tracks.

2 Right-click the A1 track header and choose Add Tracks.

3 In the Add tracks dialog, use the following settings:

— Number of tracks: 5

— Insert Position: Below Audio 1

— Audio Track Type: Mono
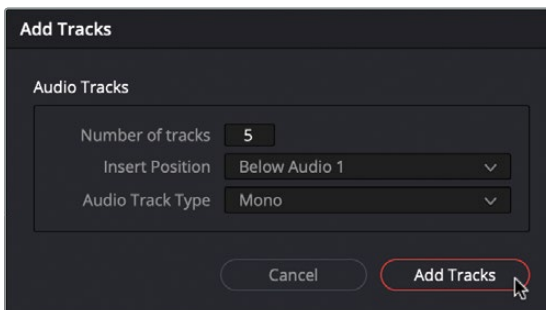
4 Click Add Tracks.

The timeline now has six audio tracks. Next, you'll resize and name the tracks, starting with track A1.

5 Adjust the timeline's vertical zoom level until you can see all six tracks above the viewer.
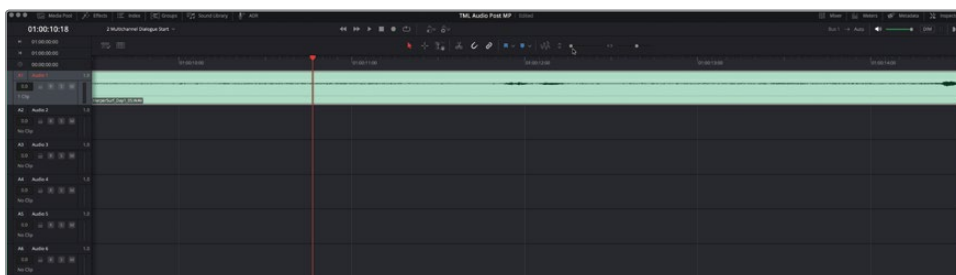
6 Double-click the A1 track name and type **Harper**. Press Tab to select the track name for the next track.

7 Name the other tracks as follows: A2, **Raina**, A3 **Marley**, A4 **Levi**, A5 **Director**, A6 **PFX**.

While setting up the tracks, let's color them as well. For this lesson, since you aren't familiar with the script or characters, you'll color the character's tracks to match their shirt colors onscreen. They wear these colors consistently throughout the film. As you learned in Lesson 1, you can change track colors in the timeline or tracks index.

8 Right-click the A1 Harper track and choose Change Track Color > Navy.

9 Color the remaining tracks from top to bottom as follows: A2 Raina – Pink, A3 Marley – Olive, A4 Levi – Blue, A5 Director – Tan, A6 PFX – Green (no color change).
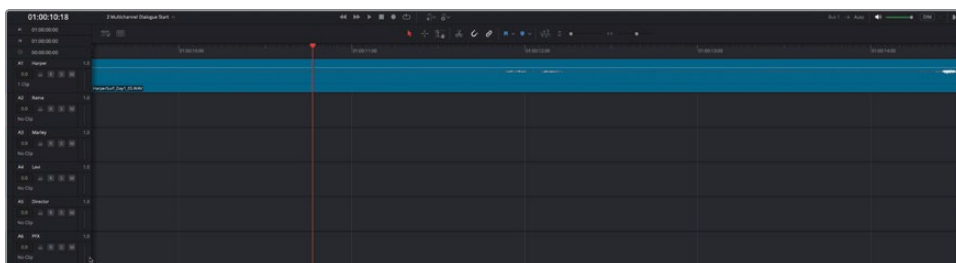
Next, you'll split the clip and move each section to the correct track.

> **NOTE** Whether a scene is edited with many shots, angles, and clips or one long choreographed shot, the dialogue editor still needs to separate each character's dialogue to a track for that character.

Splitting the Clip

In Lesson 1, you learned several methods of splitting an audio clip, including keyboard shortcuts and the Range tool. In this exercise, you'll use the playhead and keyboard shortcuts to navigate and split the clip to separate the dialogue from the production sound. You'll use the JKL keys to navigate the clip, so as a reminder: L plays forward, J plays backward, K stops playback, and tapping the L or J keys multiple times will speed up playback. Holding down L or J will play one frame at a time and stop playing when you release the key. Holding down K while tapping L or J will play forward or backward one frame at a time, whereas pressing K together with L or J will play in slow motion.

To split the clip at the playhead position, you'll use the Razor shortcut and press Command-B (macOS) or Ctrl-B (Windows). First, you'll need to move the playhead to the beginning of the timeline and resize the tracks as needed.

> **NOTE** For the following exercises, you will continue working with the same timeline. If you haven't completed all the previous exercises, feel free to open and continue working with the **2a Checkerboard Edit Start** timeline. You may need to follow the steps in the section "Preparing the Timeline for Dialogue Editing" above to enable the necessary timeline options to follow along with the next steps.

1   Press the Up Arrow key to move the playhead to the beginning of the A1 track.

2   Right-click the A1 Harper track header and choose Lock Track Height to > Large. Then use the Vertical Zoom slider or Shift-scroll the middle mouse wheel to reduce the

vertical height of the remaining tracks until you can see them above the floating viewer.
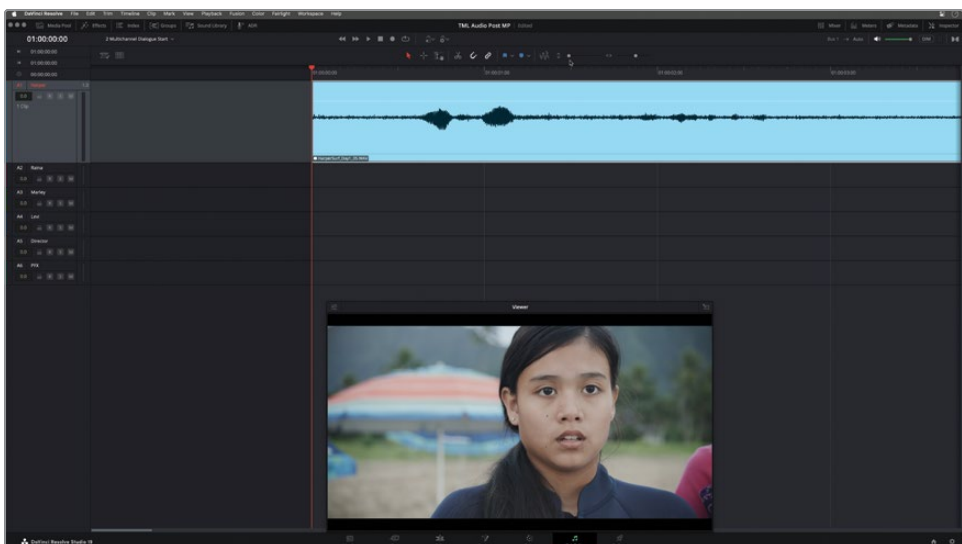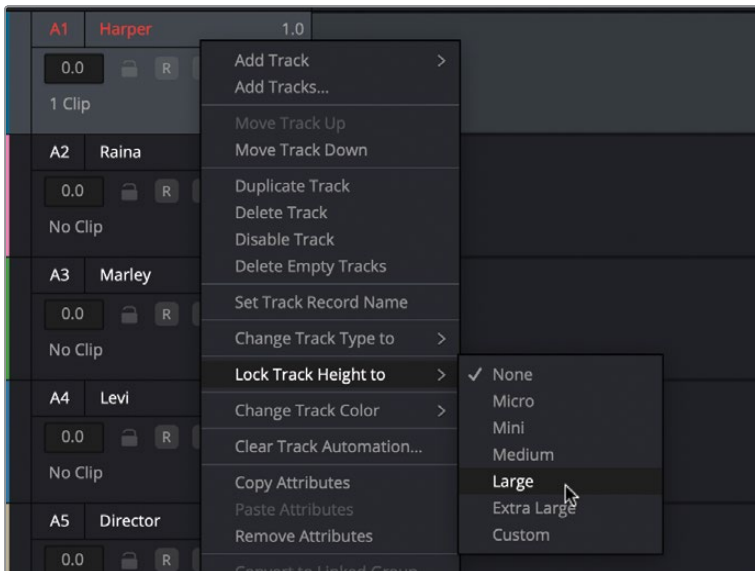
As you can see, locking the height of your primary track allows you to resize the other tracks as needed without affecting the locked track.

3 If necessary, select the A1 track.

When a track is selected, clips beneath the playhead are also selected automatically. This is one of the secrets to fast keyboard editing in the Fairlight page.

4 Using the JKL keys, play the A1 track from the beginning. Stop before the first spoken words, "It looks rough," at around 1:00:00:15.

5 Press Command-B (macOS) or Ctrl-B (Windows) to split the clip at the playhead position.
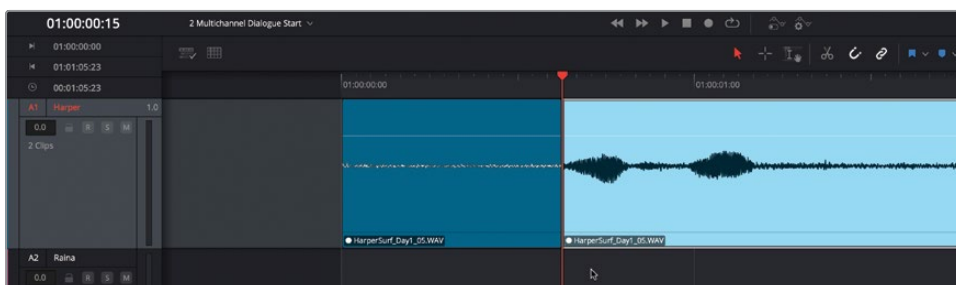
6 There are now two clips in the A1 track. Notice that the second clip starts at the playhead position and is already selected.

Next, you'll move the playhead to the end of the first dialogue line. You can watch the viewer for the character's lip movement to assist in finding the start and end of dialogue.

7 Navigate using the JKL or Arrow keys or by scrubbing to the end of the first phrase, "It looks rough," at around 1:00:1:10.

8 Split the clip.

Harper's first line of dialogue has been separated from the production sound on either side of her first line. Next!

The goal here is to introduce you to one possible dialogue editing workflow in the Fairlight page. So don't worry about making the perfect edit. You can always trim the clips later as needed.

The clip level and waveform in the next section are fairly low compared to the background sound. For the next line, let's increase the clip gain on the remaining unedited clip so you can hear it better as you edit.

9 Drag the gain line on the third clip upward to increase the gain to around 12 dB.
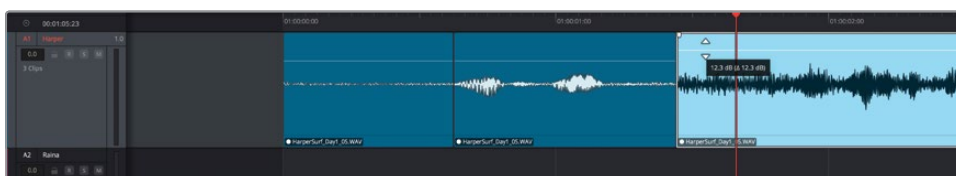
10 Play forward to the next dialogue. This time, it is Marley saying, "It's just a few pictures." Split the clip starting at around 01:00:01:17 and ending at 01:00:03:04.

The next line doesn't happen for a few seconds, so let's decrease the horizontal zoom to see more of what is coming up next in the waveform.

11 Press Command -– (minus) (macOS) or Ctrl -– (minus) (Windows) to reduce the horizontal zoom.

When working with fixed playhead timeline scrolling, changing the horizontal zoom level automatically centers the fixed playhead. If you prefer the playhead farther to the left, you'll need to drag from the ruler area to reposition it.

The Fairlight page is very user friendly, so from this point forward, feel free to adjust the clip level, track height, viewer size, viewer position, and zoom levels to suit your needs while you work.

12 Play the clip forward to the next line, around 01:00:11: 20, where Harper says, "What is this?" Split the clip.

13 Split the next clip where Raina says, "Surf Wax."

14 Split the next clip where Raina says, "You don't need that."

15 Play forward and split the clip where the director says, "Cameras going off."

16 Play forward and split the clip where Harper yells, "Stop."
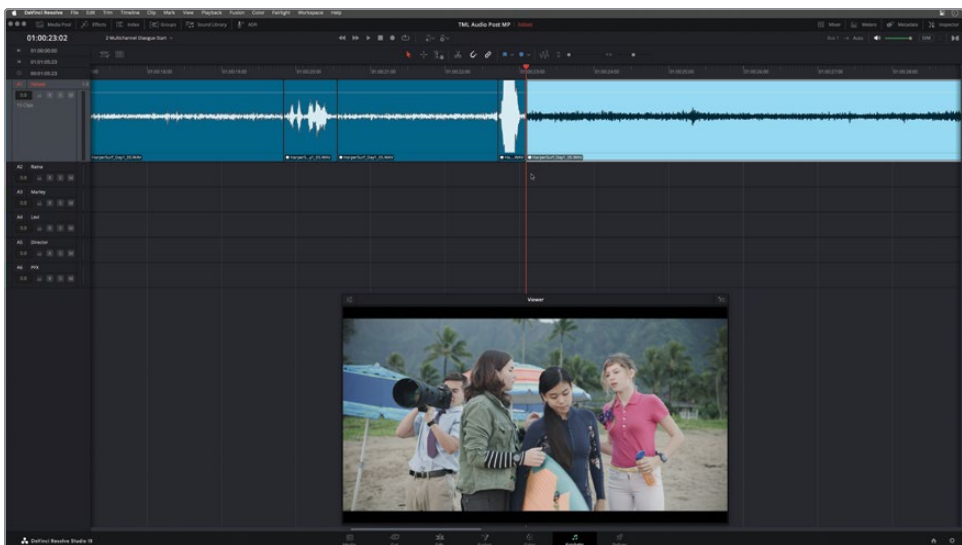
Hopefully, by now, you have a bit of a rhythm with your navigation and editing shortcuts as you play, scrub, listen to, and split the different key dialogue elements in the track. You'll continue splitting the track in a few minutes, but first, let's look at the next part of the workflow, where you move clips to their representative tracks.

> **NOTE** For this exercise, you will continue working with the same timeline. If you didn't complete the previous exercise, feel free to open and continue working with the **2b First Clips Split** timeline.

Using Shortcuts to Move Clips Between Tracks

Sure, you could manually drag clips between tracks using your mouse. But professional audio editing is all about precision editing and shortcut-driven efficient workflows. By design, the Fairlight page is a fully loaded digital audio workstation (DAW) packed with easy shortcuts that enable lightning-fast audio editing. For example, moving clips between tracks using keyboard shortcuts is similar to moving text between lines in a word-processing program. In fact, the shortcuts to cut, copy, and paste are identical to the shortcuts in most word processors.

In this exercise, you'll use shortcuts for everything from selecting tracks to moving the playhead and editing the selected clip to a different track.

The keyboard shortcuts for clip editing are identical in macOS and Windows. Their only differences are the modifier keys. In macOS, you'll use the modifier keys Command and Option, whereas on a Windows system, you'll use the modifier keys Ctrl and Alt.

For the first part of this exercise, you'll use the menu to apply a command. Then, you'll use the keyboard shortcut the next time you use that command. After that, you'll be ready to fly through your workflow using only shortcuts to finish the job. Don't worry about memorizing the shortcuts. You likely already know them, and if not, you'll pick them up after a single use.

1   Press Home to move the playhead to the beginning of the timeline.

2   Choose Timeline > Track Destination Selection > Audio Destination A1 to select the A1 track. While the menu is visible, look at the other Track Destination Selection options and shortcuts.
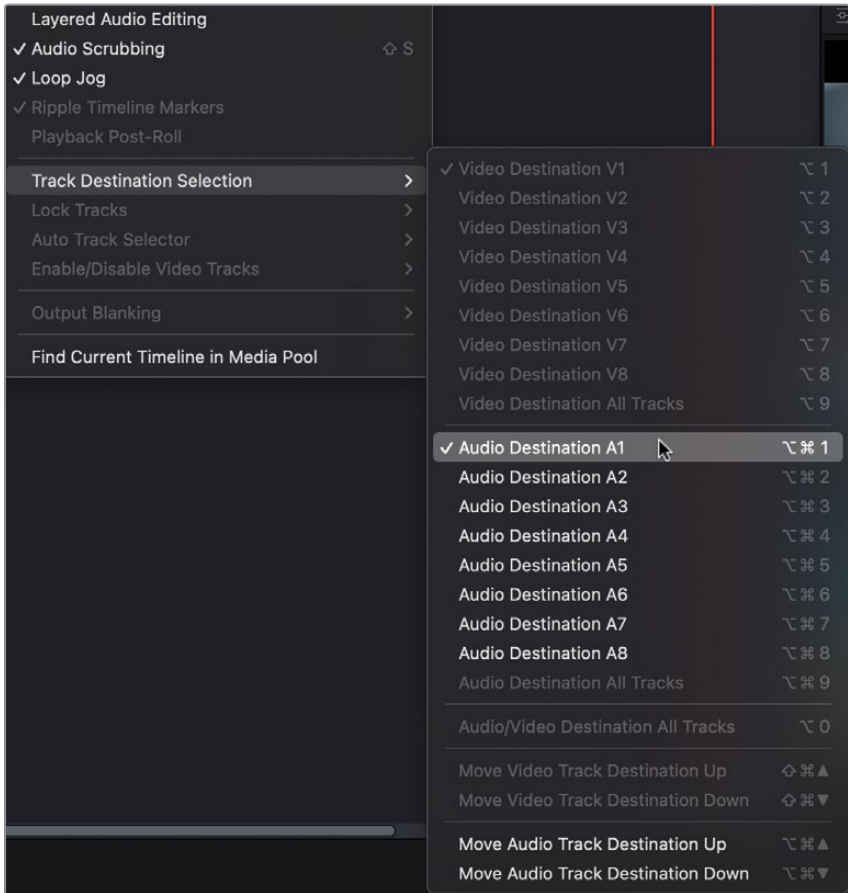
Notice that the keyboard shortcut to select the A1 track is Option-Command-1 (macOS) or Alt-Ctrl-1 (Windows). Also, in the Track Destination Selection options, you'll see that the shortcuts to Move Audio Track Destination Up or Down use the same macOS/Windows modifier keys along with the Up Arrow or Down Arrow keys. Looking closely at the list of shortcuts from Audio Destination downward, you'll see that the Audio shortcuts all use the same two modifier keys. So the good news is that you only need to remember the two modifier keys and track number or the Up and Down Arrows. Easy.

You already use the JKL shortcuts for navigation, so in this exercise, you'll use the Down Arrow or Up Arrow keys to move between clips because when a track is selected, the arrow keys move the playhead to the next clip in the track and select that clip automatically. Let's try it.

As you can see, with the A1 track already selected, the clip touching the playhead in the track is also selected.

3 Scrub the first clip.
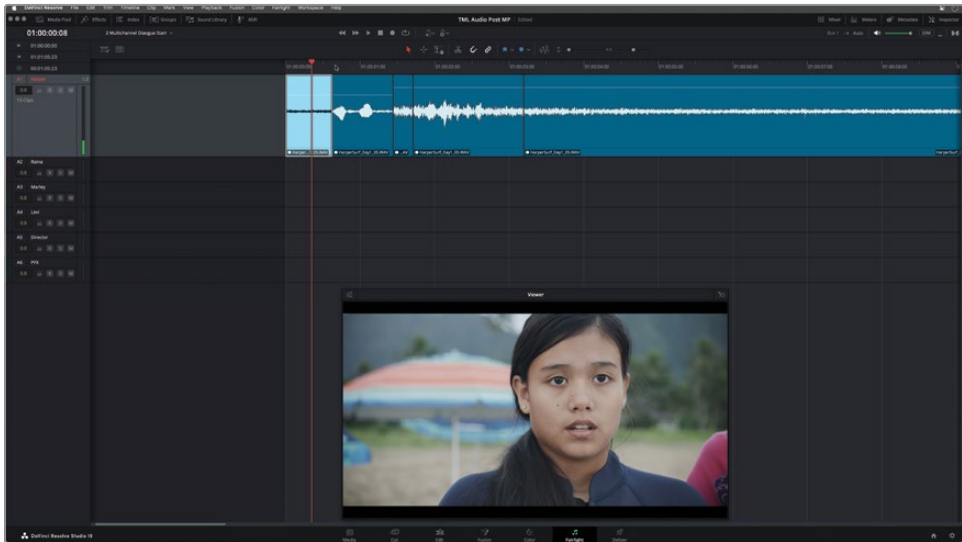
Clearly, this is production sound without dialogue and belongs in the A6 PFX track. So you'll now use a command to cut the clip. Once cut, you can select the A6 track as the destination and paste the clip in the new track. Look at the Edit menu to verify which shortcuts you'll need.

4 Click the Edit menu and look at the common edit commands and shortcuts.

The shortcut for Cut is Command-X (macOS) or Ctrl-X (Windows).

The shortcut for Copy is Command-C (macOS) or Ctrl-C (Windows).

The shortcut for Paste is Command-V (macOS) or Ctrl-V (Windows).

Most likely, these are the same shortcuts you use for text editing as well.

5   Choose Edit > Cut or press Command-X (macOS) or Ctrl-X (Windows).
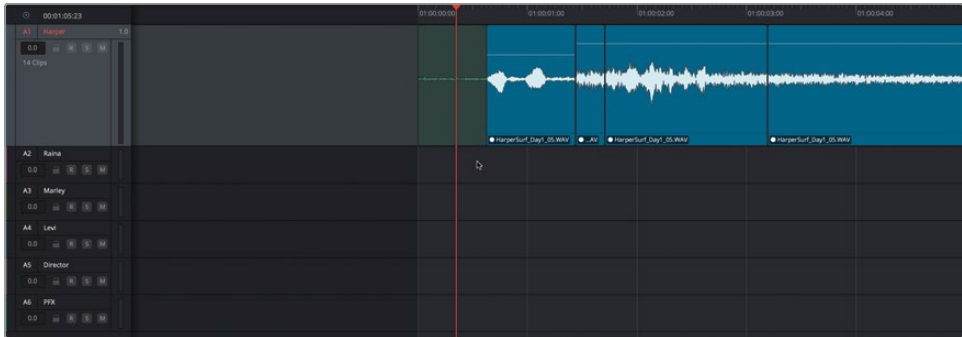
The selected clip turns semitransparent to indicate that it has been cut from its current position and is ready to be moved and pasted elsewhere.

6   Press Command-Option-6 (macOS) or Ctrl-Alt-6 (Windows) to select the A6 track.
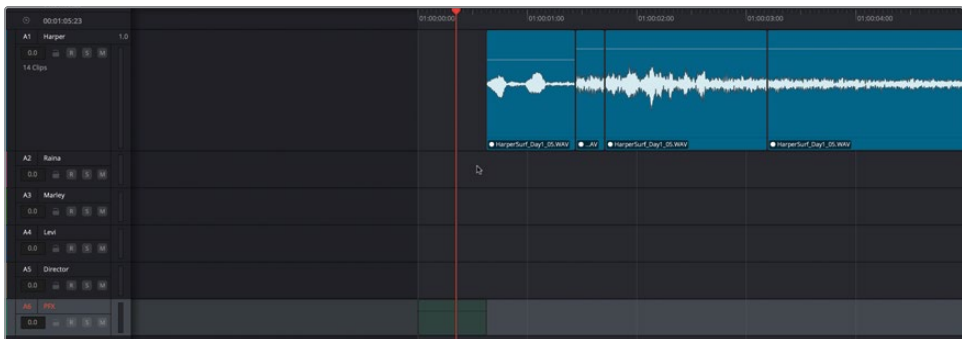
The semitransparent clip appears in the exact same position on the A6 track.

7   Press Command-V (macOS) or Ctrl-V (Windows) to paste the clip into the new track.

The clip is moved. Keep in mind that cutting-and-pasting destinations are actually based on the playhead position. So be careful not to move the playhead after you cut a clip if you are simply moving it to a different track.

8   Press Command-Option-1 (macOS) or Ctrl-Alt-1 (Windows) to select the A1 track.
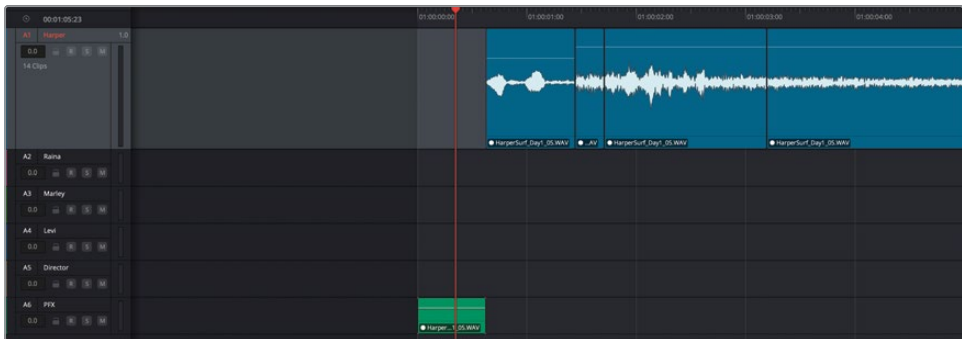
The A1 track is selected and ready for you to select and move the next clips. Notice that the clip you pasted into the A6 PFX track is green to match the track color. All the clips you move will change to the color of their track while on that track.

Let's move on to the next clip. Remember, the Up Arrow and Down Arrow keys jump to the previous or next clip. Pressing the Down Arrow key moves down the timeline, stopping at the head and tail (first and last frame) of each clip as it goes.

9   Press the Down Arrow to move down the timeline to the head of the second clip.

This clip has Harper saying, "It looks rough," so it belongs right where it is in the A1 Harper track.

10 Press the Down Arrow to select the third clip, which is another A6 PFX clip. Cut the clip, select the A6 track, paste the clip, and return to the A1 track. If you need more guidance, repeat steps 5 through 8.

11 Press the Down Arrow to select the next clip.

12 The selected clip is Marley saying, "It's just a few pictures" and belongs on the A3 track.

This time, instead of using the shortcut plus track number to select a track, you'll use the shortcut plus the Down Arrow. Pressing Command-Option-Down Arrow (macOS) or Ctrl-Alt-Down Arrow (Windows) or Command-Option-Up Arrow (macOS) or Ctrl-Alt-Up Arrow (Windows) moves the track selection down or up, respectively, one track at a time. This is an easy way to cut and paste clips between nearby tracks. Let's try it.

13 Cut the selected clip in the A1 track. Press Command-Option-Down Arrow (macOS) or Ctrl-Alt-Down Arrow (Windows) twice to move the track selection down to the A3 track.

14 Paste the clip into the A3 track. Press Command-Option-Up Arrow (macOS) or Ctrl-Alt-Up Arrow (Windows) twice to move the track selection up to the A1 track.
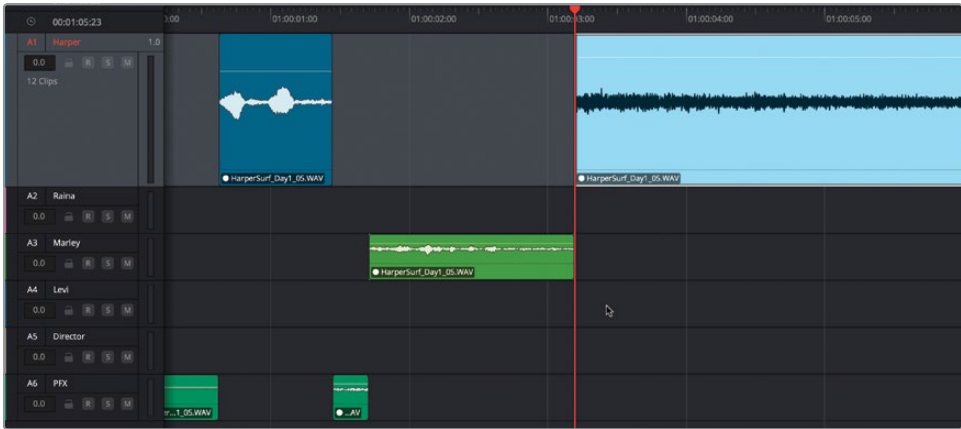
You've got this! Keep it going. Time to get in a groove with these new shortcuts to navigate, select, cut, move, paste, and repeat. Best of all, you can split and move clips to create your checkerboard edit without touching your mouse.

15 Move the remaining clips as follows:

— Clip 5 to A6 PFX

— Clip 6 stays on A1

— Clip 7 to A6 PFX

— Clip 8 to A2 Raina

— Clip 9 to A6 PFX

— Clip 10 to A2 Raina

— Clip 11 to A6 PFX

— Clip 12 to A5 Director

— Clip 13 to A6 PFX

— Clip 14 stays on A1

Once you finish the first 14 clips, stop and check your progress.

16 Press Home to move to the beginning of the timeline.

17 Press Shift-Z to zoom out horizontally to see the checkerboard edit so far.
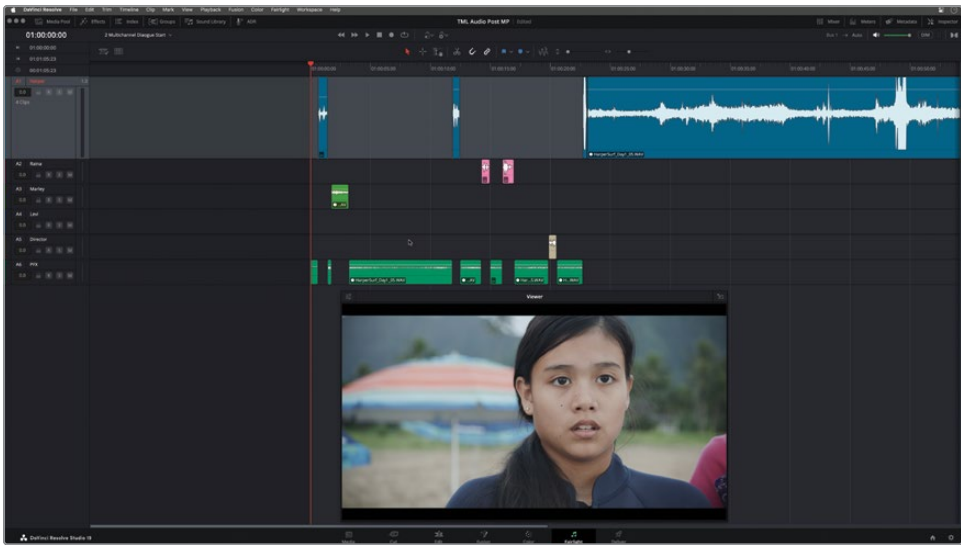
> **NOTE** If you are ready to move on to the next section but want to see the finished checkerboard edit, open the timeline **2c Checkerboard Edit Finished**.

Finishing the Job

You've done excellent work setting up the dialogue tracks, splitting the audio, and moving clips to their designated tracks. You're hired! As an intern. No money, of course, but you'll gain lots of experience and infrequent compliments.

You're now on your own to finish separating out the dialogue tracks. It's up to you to use the same shortcuts to locate, split, and move the remaining dialogue elements to their tracks.

If you make any mistakes, just choose Edit > Undo and try again.

You could go through and split all the clips first and then move them to their tracks in a second pass. Or you can split and move as you go. It's up to you.

You can also select multiple clips, such as PFX sounds, and cut, move, and paste them simultaneously.

There are a few things to consider when it comes to checkerboard editing. Some audio clips include production sounds such as breathing and rustling clothes. Breathing, sighs, snorts, giggles, and so on are considered part of the dialogue performance and should be moved to the associated character's track. If the scene were dubbed in another language, the actor performing the new lines would also need to perform the breaths, sighs, and other vocalized sounds.

Clothing movement, footsteps, and other naturally occurring production sounds *(nat sound)* picked up by the microphones are often replaced with Foley sound recordings. You'll work more with Foley sound effects and other sound design elements in Lessons 3, 5, and 8.

Have fun! When you are finished, you can move on to the next section.

Resetting the Timeline for Balancing Clip Levels

Before moving on to the next dialogue editing exercise, let's take a minute to reset some of the timeline options that were enabled for the checkerboard editing workflow. For this exercise, you'll use a premade timeline with the checkerboard edit finished.

1 Open the timeline **2c Checkerboard Edit Finished**.

2 In the Timeline View Options menu, set Timeline Scrolling to Page Scrolling.

3 Press Shift-Z to fit the clips horizontally in the visible timeline.

4 Right-click the A1 track header and choose Lock Track Height to > None.

5 Adjust the vertical zoom until all six tracks fit the timeline tracks area.

   To reset the clip levels, you can select all the clips at once, and then use the Remove Attributes feature to remove any level changes.

6 Click an empty space in the timeline. Choose Edit > Select All or press Command-A (macOS) or Ctrl-A (Windows) to select all clips in the timeline.

   Clips are outlined in red when they are selected.

7 Right-click any of the selected clips and choose Remove Attributes.

8   In the Remove Attributes dialog, select the Volume option. Click Apply.
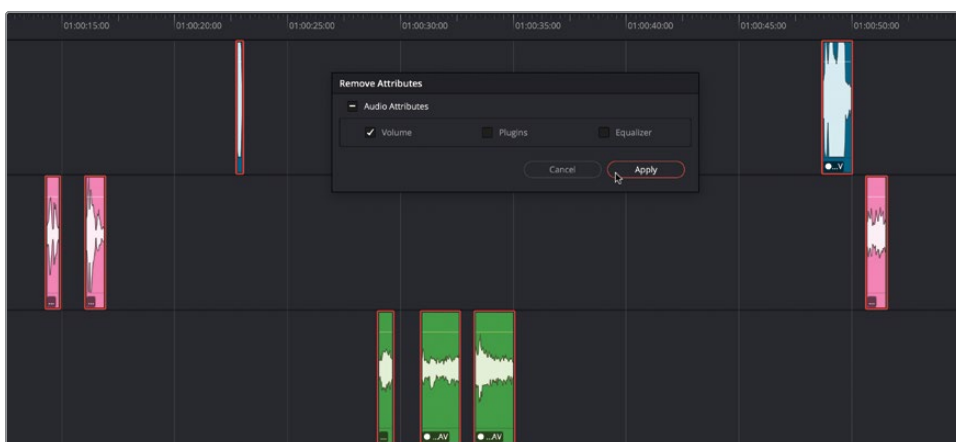
The clip gain for all the selected clips returns to their original levels.

9   Right-click the empty track space and choose Track Waveform Zoom > Reset Zoom All Tracks.

Done! The timeline has been reset for whatever comes next.

> **NOTE** DaVinci Resolve 20 Studio includes new AI-based dialogue editing tools available in the timeline right-click shortcut menu, including Remove Silence and AI Tools > Checkerboard to New Tracks.

Switching Mono Audio Channels in the Timeline

If you recall, prior to creating the checkerboard edit, you set up the channel configuration and source audio channel for the dialogue clip. Now that the dialogue has been edited to different tracks, you may want to switch some of the clips to a different audio channel. Perhaps the sound for one clip is better from a different source channel. Maybe you want to hear the wireless mic versus the boom or the production sound mixer's version of the source audio. Whatever your reason, it's important to know how to access your other audio channels once the clips are in the timeline. For this exercise, you'll work with Harper's last line of dialogue, which is the fourth clip in the A1 track. You'll start by looking at the clip in the Inspector and showing the current audio channel's name in the timeline clip header. Then, you'll mark a clip with the Range tool and start looped playback while you switch between the different channels to hear them. Let's get started.

1   Press R to switch to the Range tool.

2   In the timeline, move the playhead to the beginning of the fourth clip in the A1 track.

3   Select the clip.
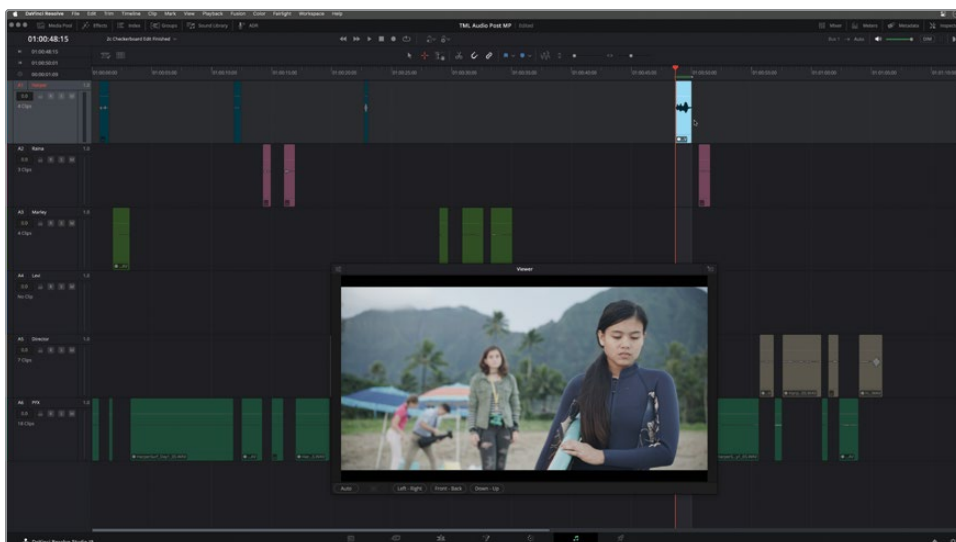
The clip is selected with In and Out points marking the clip.

4   Zoom horizontally and scroll as needed until you can clearly see the entire clip, its waveform, and the clip header.

5   Show the Inspector and in the File panel check the Audio Configuration for the selected clip.
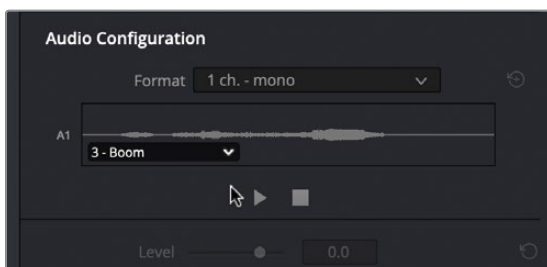
As expected, the clip is currently set to the 3 – Boom channel.

Next, you'll show the source audio channel in the timeline clip headers.

6 Choose Fairlight > View Clip Info Display to open that dialog.

7 In the Clip Info Display dialog, enable the Channel Name option. Then click OK.
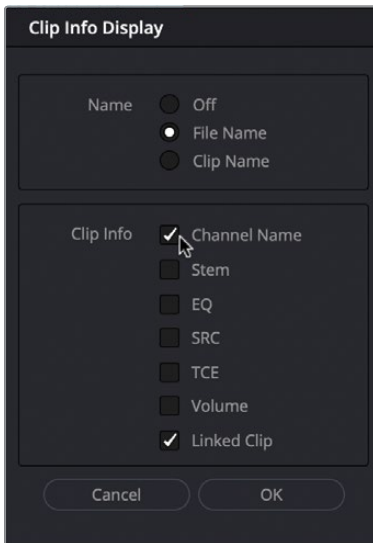
The channel name now appears in the timeline clip header, and just as with the Inspector, you can see that the mono channel in the timeline is 3 – Boom. Now you can turn on looped playback to repeatedly play from the In to Out points, which, in this case, is the selected clip.

> **NOTE** Looped playback is a great way to focus on a specific clip or section of the timeline between the In and Out points. To engage looped playback, turn on the Loop button and move the playhead within the selected range before starting playback.

8 Choose Playback > Loop or click the Loop button in the Transport controls to enable looped playback.
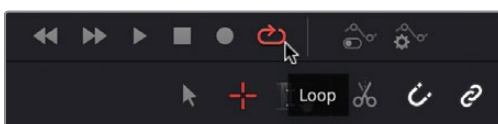
9 If necessary, move the playhead to the selected clip. Press the Spacebar to start looped playback.

10 During looped playback, right-click the selected clip and select Audio Channel > Embedded Channel 1.
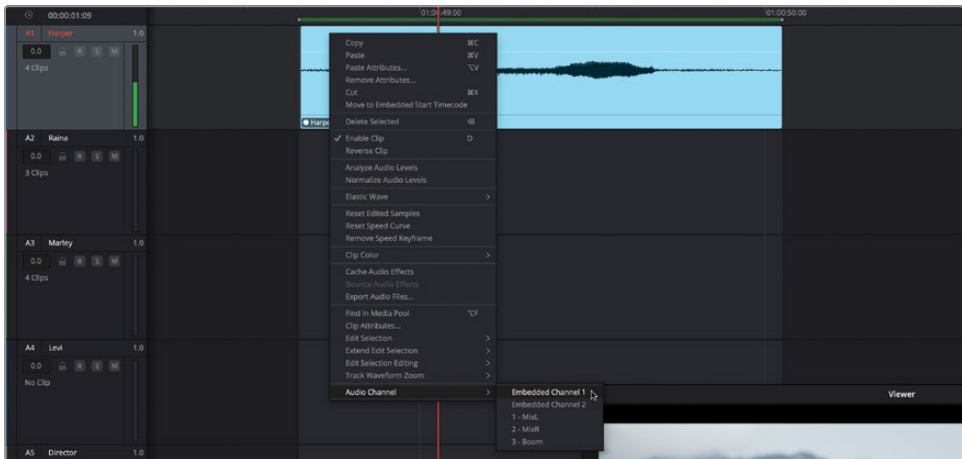
With DaVinci Resolve 19.1 and higher, you can also switch audio channels on mono clips in the timeline with a simple Command-Control click. If you have a two-button mouse, you can Command-right-click (macOS) or Ctrl-right-click (Windows). If you don't have a two-button mouse, press Command/Ctrl and click for the same result.

11 Continue looped playback. Command/Ctrl-click the clip to see the audio channel shortcut menu. Choose the 3-Boom channel.
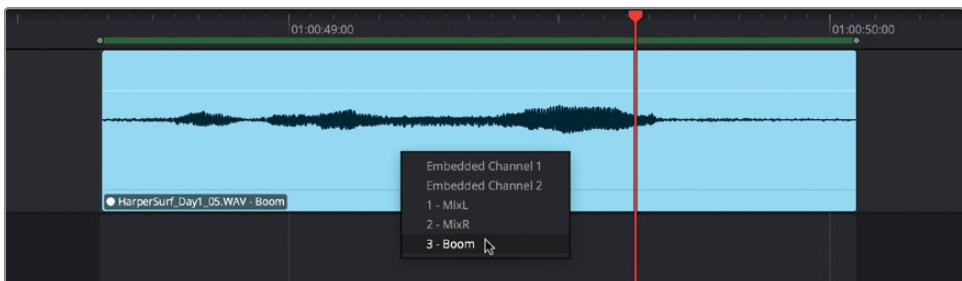
12 Stop playback. Click any empty space to clear the range.

13 Press Shift-Z to fit the clips horizontally.

14 Press A for the Pointer mode selection tool.

15 Hide the Inspector.

That's all the tools and techniques you need to select audio channels, split clips, create tracks, create a checkerboard edit, and even change audio channels after they are edited. Not bad for a single lesson. But wait, there's more...

> **NOTE** If you did not complete the project in Lesson 1, follow the steps at the beginning of Lesson 1 to create and name a new project. Then open the project and choose File > Import > Timeline. On your system, navigate to the Lesson 1 back timelines folder in the Part 1 media that you downloaded for the book and import the **Podcast Intro v1.drt** timeline.

Preparing the Project

For the remainder of the lesson, you'll continue working with the Post Park Normal Intro project you created in Lesson 1. Before diving into the exercises, you'll need to open the project and import a timeline.

1   In the Project Manager, open the Post Park Normal Intro project.

2   Choose File > Save Project As.

3   In the name field, type your initials after the project name.

4   Click Save.

5   Choose Workspace > Reset UI Layout.

6   Hide the mixer and meters.

7   Show the media pool and Tracks index. Change the media pool to List view.
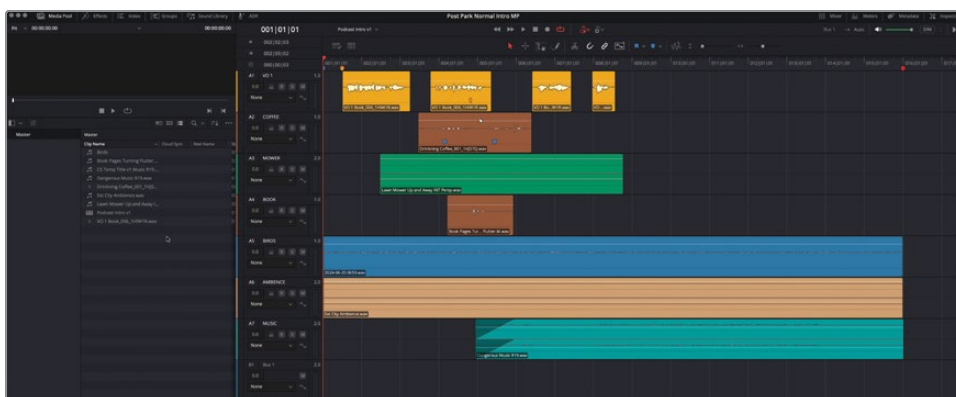
The project currently includes one timeline Podcast Intro v1 and eight audio clips.

For the next exercises, you'll import a timeline that includes tracks and various editing stages of a new voiceover clip.

8 Choose File > Import > Timeline, and then in the Finder window, navigate to R19 Fairlight Part 1 > Lesson Timelines > Lesson 2 > **VO6 Runner to Edit.drt**.

9 Click Import.
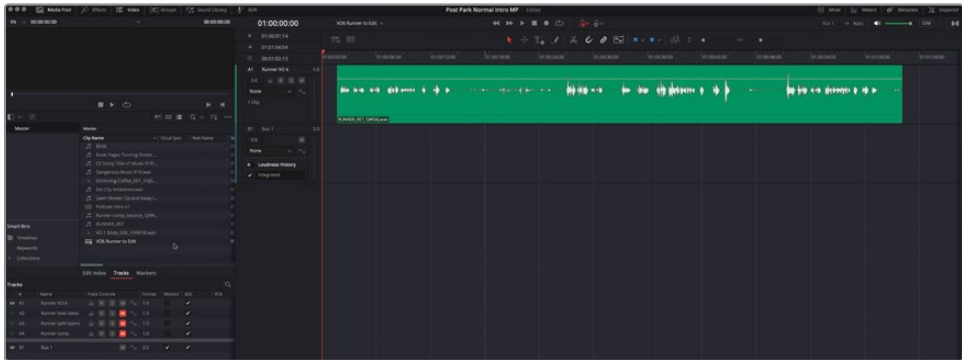
The **VO6 Runner to Edit** timeline opens with one track showing. Tracks A2–A4 have been muted and hidden for now. They are available in the index if needed as a reference showing the various editing stages. Let's locate the hidden tracks and new elements in the media pool before moving on to the next exercise.

10 Locate the four tracks A1–A4 in the Tracks index. Hide the index.

Over in the media pool, there is a new timeline and two additional clips, **RUNNER_007** and **Runner comp_bounce**.

11 Locate the **VO6 Runner to Edit** timeline and the **RUNNER_007** clip in the media pool. Then, hide the media pool.

Let's also hide the B1 Bus 1 track to streamline the timeline for editing.

12 Click the Toggle Automation button (red) to turn off automation and hide the bus in the timeline.

Now that the project is ready, it's time to move on to the next method of dialogue editing.

> **TIP** You can quickly open recent projects by choosing them from File > Open Recent Project. Here, you'll find a list of the 10 most recent projects.

Editing Consecutive Voiceover Takes in the Timeline

Another common dialogue editing technique involves editing voiceover or narration recorded as consecutive takes. In this case, these audio-only files need to be edited, combined, and refined to create the best composite take to be added to the master timeline. One advantage of audio editing over video editing is that you can cut together the best phrases, words, or even syllables without the audience being aware of your edits. The methods you'll explore in the next series of exercises apply to any voice recordings with consecutive takes in the same clip, such as voiceovers, audio books, podcasts, or offscreen wild lines.

When editing consecutive takes in the timeline, there are three primary steps to achieve the final composite take, and many ways to get there. The first step is to identify the best takes and separate them. Once the best two or three takes have been separated, you can stack and align them on neighboring tracks or in track layers for easy comparison. Finally, you split them into words or phrases and mix and match as needed to build the best composite version. After you've built the best composite performance, you can keep it as edited clips or render it into a new one.

All these steps are easy to achieve in the Fairlight page in DaVinci Resolve. Let's try it!

Separating the Best Takes in the Timeline

In Lesson 1, you used duration markers in the media pool to mark takes and create separate subclips that could be edited to the timeline. In this exercise, rather than marking each take, you'll use the Range tool to select and delete unwanted material. At this point, you are no stranger to the Range Tool. In fact, you've used it to perform a variety of editing tasks. However, one thing you haven't tried is using a ripple delete to remove a selected range and the gap. For this set of exercises, you'll work with a different character and voiceover recording for the Post Park Normal intro. In this case, there are three takes, and you'll narrow it down to the best.

1   Play the clip in the A1 track and listen to all three takes of the Runner's voiceover.
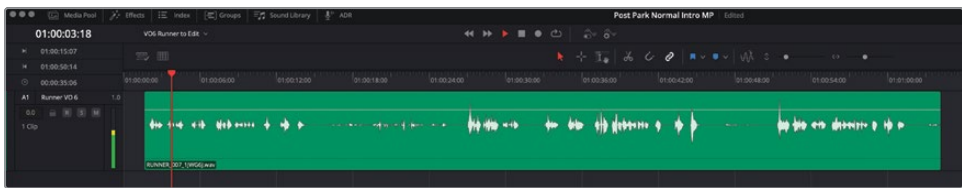
Any favorite takes? The client notes say that they really like takes 1 and 3. So your job is to eliminate the middle take along with the production chatter before and after that take. No problem. You can do that maneuver in a few seconds using the Range tool and Ripple delete.

2   Press R for the Range tool.

3   Using the waveform as a guide, drag a selection that starts after the first take and ends before the third take. Don't worry about making it perfect; it's easy to trim later as needed.
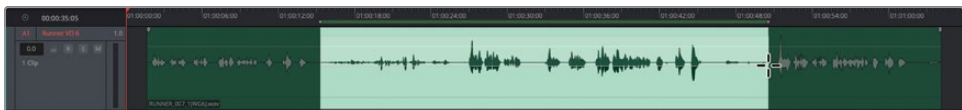
4   Choose Edit > Ripple Cut or press Shift-Delete (macOS) or Shift-Backspace (Windows) to delete the selection and remove the gap.
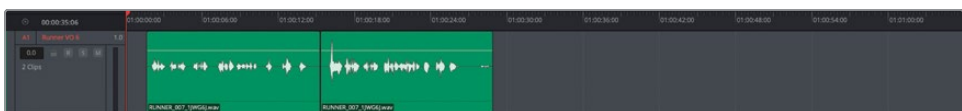
Done! The unwanted material in the middle of the clip is gone, and you are left with the two best takes.

5   Press A to return to the Pointer mode Arrow tool.

6   With the Arrow tool, trim the end of the second clip to remove the director saying, "That was awesome."

> **NOTE** DaVinci Resolve Studio offers an AI-based speech-to-text editing toolset, including transcription, plus text-based search, playback, duration markers, timeline editing, and more. You'll learn more about this at the end of the chapter.

Aligning Takes in Separate Tracks

To align takes, you can move them to separate neighboring tracks or layers within the same track. For this exercise, you'll align and compare the takes on separate tracks. You'll work with audio track layers next.

1 Right-click the A1 Runner VO6 track header and choose Add Track > Mono.

2 With the Arrow tool, select the second clip in the A1 track.
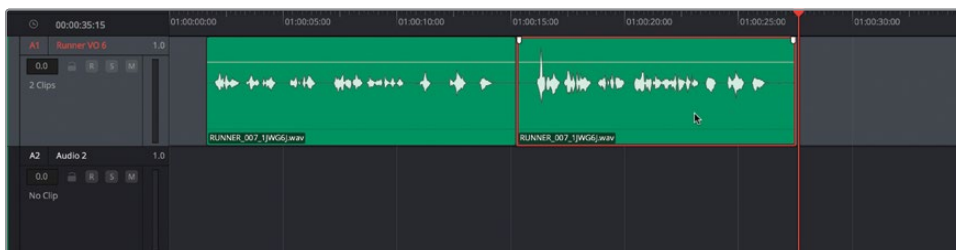
3 Press Option-Down Arrow (macOS) or Alt-Down Arrow (Windows) to move the selected clip down to the next track. Then, drag the clip toward the left to align the waveforms for the first words. Do your best using the waveform as a guide.
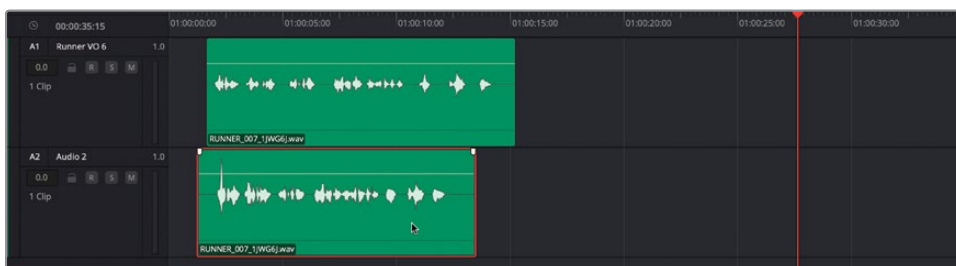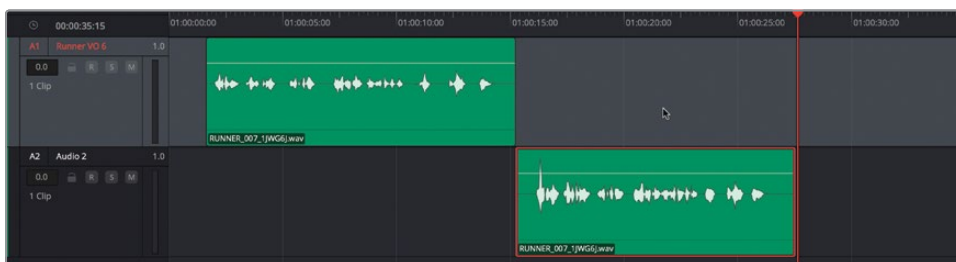
> **TIP** Zooming clips horizontally gives you a better view of the waveform to make visual alignment easier.

4 Use the Horizontal Zoom slider until the two clips fit more than half of the timeline.

5 Play the first part of the timeline to hear how well you aligned the "The last day of normal" part of the clips.
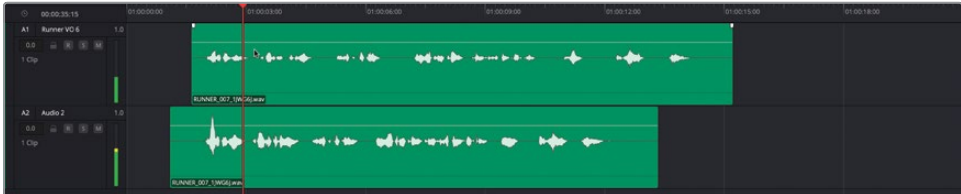
Chances are, it's close. Now, let's try a unique Fairlight method of visual alignment where you move the clip in the lower track atop the clip in the upper track and align the waveforms while you can see them both simultaneously, and then Shift-drag the upper clip back down to the lower track. This only takes a few seconds but will give you much more accurate waveform alignment. Let's try it.

6 Drag the clip in the A2 track up to the A1 track until you see the transparent waveform.
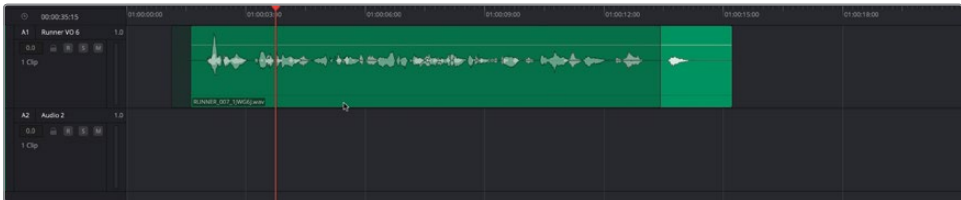
7 Continue holding the clip and move it left or right as needed to align the first part of the waveform. Then, hold Shift to constrain the clip movement and drag it back down to the A2 track.

8   Play the first phrase and listen to the revised alignment of the runner character saying, "The last day of normal."

Great! The first part is aligned, but what about the rest? As you may have guessed, you'll need to split the different phrases on A2 and align them with the A1 track. You already know how to split and nudge clips to align them, so you should be able to make quick work of this exercise. Let's do the first one together.

9   Solo the A2 track. Then, select the clip in the A2 track and navigate to the end of the first phrase, "The last day of normal."

10   Press Command-B (macOS) or Ctrl-B (Windows) to split the selected clip at the playhead position.

11   Select the clip in the A2 track and navigate to the end of the first phrase, "The last day of normal." Press Command-B (macOS) or Ctrl-B (Windows) to split the selected clip at the playhead position.
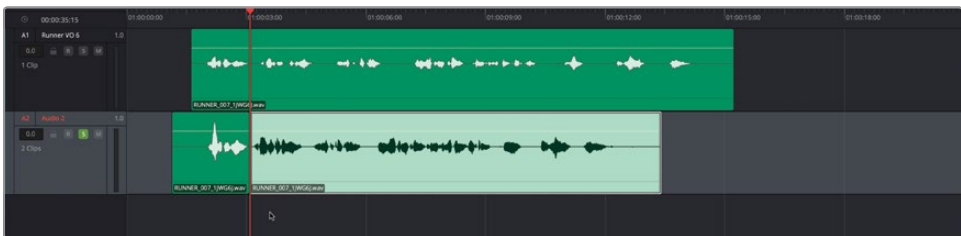
12   Select the split clip to the right of the playhead that needs to be aligned.

13   Press . (period) to nudge the selected clip right as many frames as necessary to align the next phrase.
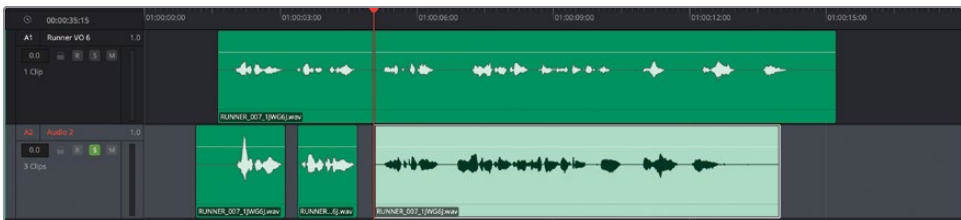
You could easily repeat these steps to finish splitting and aligning the clip in the A2 track. Instead, let's try a more advanced technique that doesn't require mouse selection.

Using JKL and Edit Shortcuts to Split and Align Clips

In this exercise, you'll apply the skills you learned for checkerboard editing to splitting and aligning the clip. The primary difference is that instead of cutting and moving clips to other tracks, you'll cut and move the playhead with the JKL keys to align the semitransparent clipboard clip into position and then paste. This technique works well with either a keyboard or Fairlight Console and with practice can be a very fast and effective way to edit audio.

1   Click an empty space to deselect all clips.

2   Press Option-Command-2 (macOS) or Alt-Ctrl-2 (Windows) to select the A2 track.

3   Play to the end of the phrase "started like every morning." Split the selected clip at the playhead.
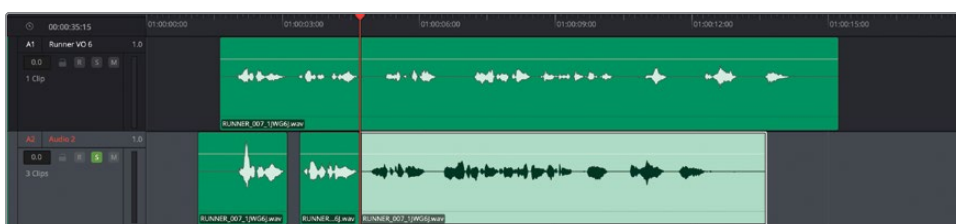
4   Press Command-X (macOS) or Ctrl-X (Windows) to cut the newly split section of the clip to the right of the playhead.

5   Use JKL or nudge command combinations to align the next phrase based on the waveform. Once aligned, press Command-V (macOS) or Ctrl-V (Windows) to paste.
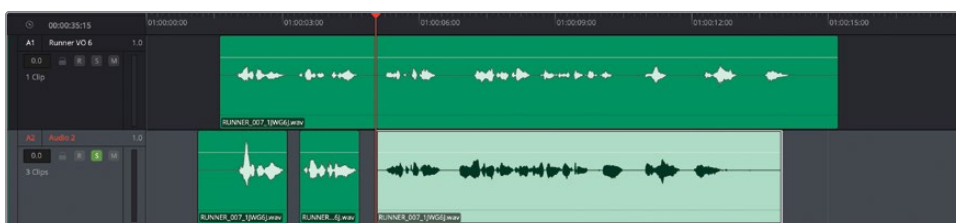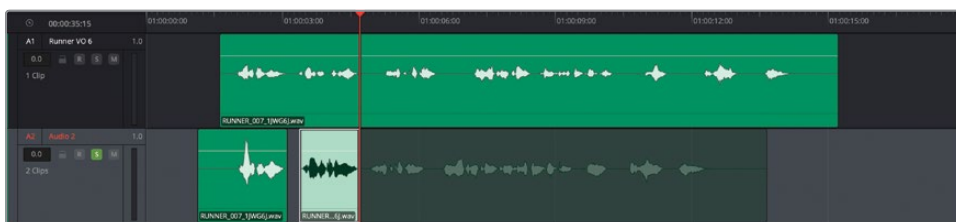
6   You've got this! Keep it going.

> **NOTE** This technique of splitting a clip and cutting the remaining section to move can be expedited with the Cut Head or Cut Tail option in the Edit menu. However, since that option does not have a pre-assigned keyboard shortcut, you'll continue using the two-step split and then the cut method for this exercise. You can create custom keyboard shortcuts for any menu option in the Keyboard Customization window available in the DaVinci Resolve menu. Fairlight consoles include a full set of audio editing keys including Cut Head and Cut Tail.

Finish Splitting and Aligning the Clips

It's time to put your new dialogue editing skills to work. This should only take a minute or so to complete. In this self-guided exercise, you'll finish splitting and aligning the clips in the A1 and A2 tracks. That's right. You also need to split the phrases in the A1 track because you'll soon discover that the timing is very different between the takes, and it's much easier to control the timing and alignment if you split the words and phrases in both tracks. Try using the JKL keys and edit shortcuts to split, cut, move, and paste the clips as needed so you can compare the sections as needed. For this exercise, leave the last phrase, "and then out of nowhere they arrived," as a single clip in each take.
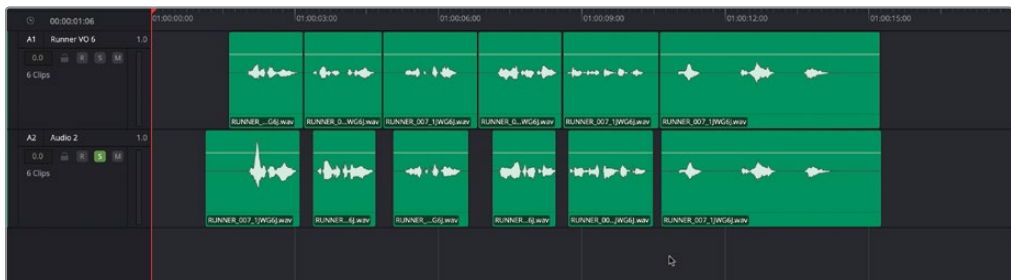
> **NOTE** If you didn't complete the previous exercises, feel free to import the backup timeline **2 VO6 Split 2 Tracks** to catch up.

Disabling Timeline Clips to Create a Multi-Track Composite

The next step is to choose the best take of each voiceover section and disable the other to reveal the composite's best performance. To do this, you'll use the Disable clip shortcut, D. Disabling a clip is the same as muting a clip within the timeline. You'll also enable the Exclusive Solo option that you worked with in Lesson 1 so you can quickly listen to only one track at a time to evaluate the different sections and choose your favorite.

First, let's duplicate the timeline so it will be available to use in the next exercise as well.

1   In the media pool, select the **VO6 Runner to Edit** timeline, or the backup timeline **2 VO6 Split 2 Tracks**, and choose Edit > Duplicate Timeline.
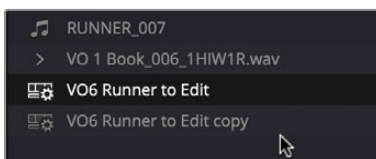
A duplicate timeline with the same name plus "copy" appears below the original timeline in the media pool.

2   Rename the duplicate timeline **2 Runner Split Stacks**.
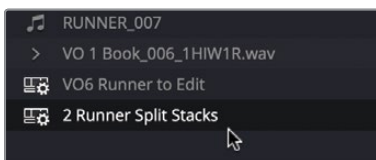
You'll work more with that version of the timeline. For now, you'll continue working with the **VO6 Runner to Edit** timeline or the **2 VO6 Split 2 Tracks** backup timeline. Let's audition the different takes in the current timeline and disable any clip that isn't your first choice.

3   Hide the media pool. Then, choose Fairlight > Exclusive Solo to enable that option. Solo the A1 track.

4   Press R to switch to the Range tool. With the Range tool, select the first clip in the A1 track.
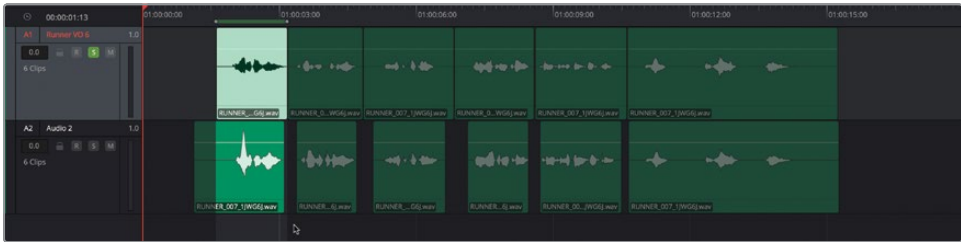
A range appears with the width of the first clip in the A1 track that should also include the aligned waveform in the A2 clip.

5   In the Transport controls, click the Loop button to turn on looped playback.

6   Move the playhead to the first clip and start playback. Listen to the take in A1 and then Solo A2 to listen to the same phrase in the A2 track. Repeat as many times as necessary until you can choose which take you want to keep and which you want to disable.

For this example, the clients like the more energetic take in A2 a little better, so you'll disable the clip on the A1 track.

7   Select the first clip on the A1 track and press D to disable the clip.

The first clip in the A1 track turns gray to indicate it has been disabled or muted within the track. Keep in mind that by disabling clips instead of deleting them, you can select and enable them again anytime with the same shortcut. You could easily go clip by clip and disable whichever takes you don't choose. To finish this exercise, you'll follow the client's notes regarding their favorite takes.

> **TIP** With the Range tool, you can select multiple consecutive clips by selecting the first clip and then Shift-selecting the last clip. You can also select noncontiguous clips by Command-selecting (macOS) or Ctrl-selecting (Windows).

8 Unsolo the track and disable the following clips as requested by the clients:

— Clip 1, "The last day of normal," disable A1.

— Clip 2, "started like every morning," disable A1.

— Clip 3, "I was at the park early," disable A1.

— Clip 4, "running laps on the trail," disable A2.

— Clip 5, "training for the spring 5K," disable A2.

— Clip 6, "and then, out of nowhere, they arrived!" disable A1.
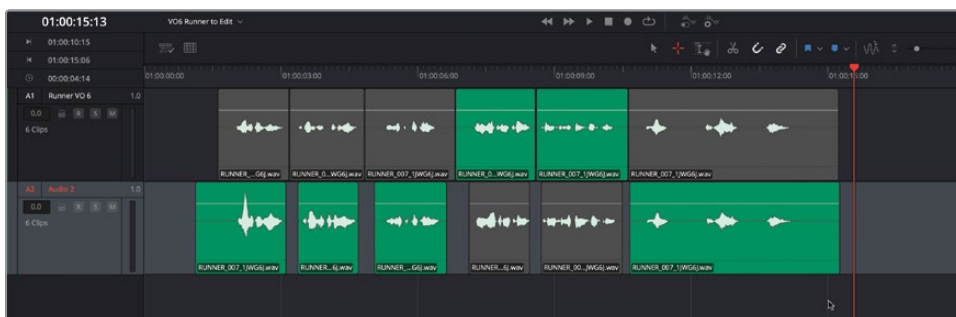
9 Press A to return to the Pointer mode arrow tool.

10 Play the timeline to hear the best takes all together.

Nice. The timing between the clips can use a little tightening, but overall, it's a good first composite. Rather than spend more time on this technique, let's try a comparable workflow using the unique Fairlight audio track layers to build a composite within a single track.

Working with Audio Track Layers

Audio track layers are a powerful device for editing multiple takes together to realize the best performance. You can stack multiple dialogue takes, sound effects, or music selections in several layers in the same track, enabling you to experiment with alternative versions and then store those versions in lower layers for later access. In this lesson, you'll work with audio track layers to build a comp voiceover. You'll turn on layered audio editing, move the clips from the A2 track to the A1 track, and show the audio track layers. Once you're comfortable moving clips between layers, you'll arrange the clips so that the best takes are on the top layer. Finally, you'll tighten the edit and play the final comp.

Preparing the Project

To simplify the process, let's work in the same timeline and start by naming and duplicating the A1 and A2 tracks. Then you'll mute and hide the A1 and A2 tracks so they will be available later if needed for comparison. Finally, you'll rename the new tracks, enable all clips in the timeline, and color the clips in the A4 track. This should only take a minute or so.

1 Name the A1 track **Runner VO6 t1** and name the A2 track **Runner VO6 t3**.

In this example, t1 and t3 represent the voiceover takes within the different tracks.

2 Select both the A1 and A2 tracks, right-click anywhere on the selected track headers, and choose Duplicate from the shortcut menu.
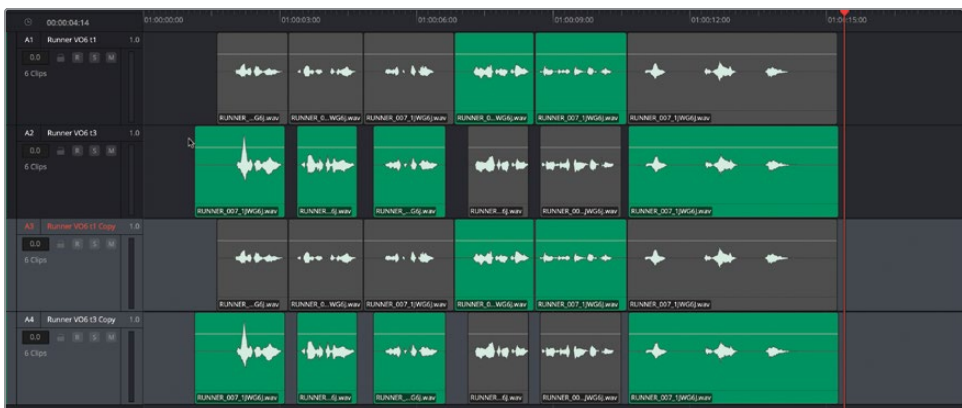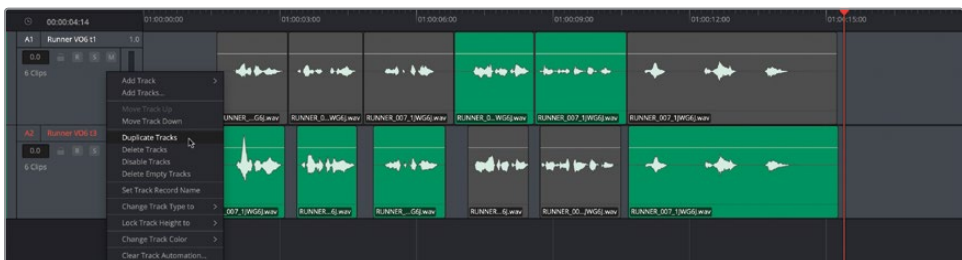
The duplicate tracks appear directly below the original tracks as A3 and A4, with the word "Copy" appended to the end of the track names.

You are finished with the A1 and A2 tracks, so they can be muted and hidden.

3 Show the Tracks Index.

4 In the Tracks Index, mute the A1 and A2 tracks and click the Visibility button (eye icon) to hide those two tracks.
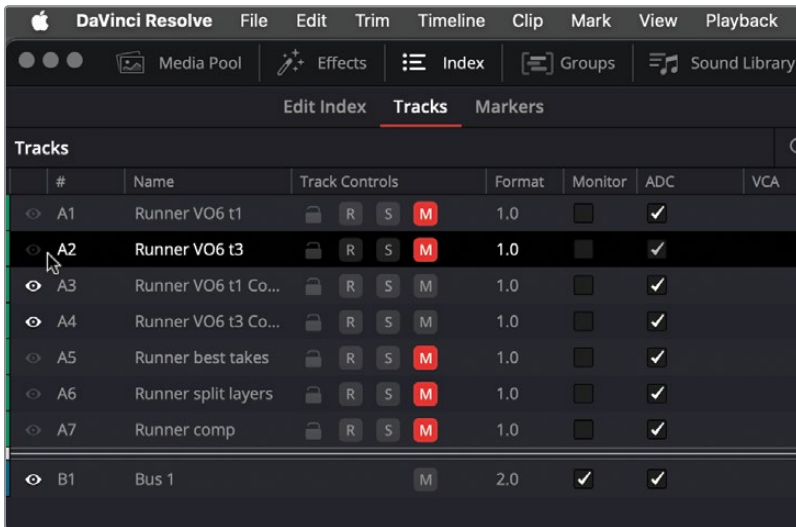
These tracks are no longer visible in the timeline.

5 Hide the index.

6 In the timeline, press Command-A (macOS) or Ctrl-A (Windows) to select all clips in the visible timeline tracks.

7 Press D to enable all selected clips. Click any empty space in the timeline to deselect the clips.

8 Rename the A3 track **Runner VO6 Layers**.

You don't need to rename A4 because you will delete it shortly. For the last step, you'll change the clip color for the clips in the A4 track so you can easily identify the different takes as you mix and match them in track layers.

9 Select the A4 track and press Command-A (macOS) or Ctrl-A (Windows) to select all clips in the selected track.

10 Right-click any of the selected clips in the A4 track and choose Clip Color > Yellow.
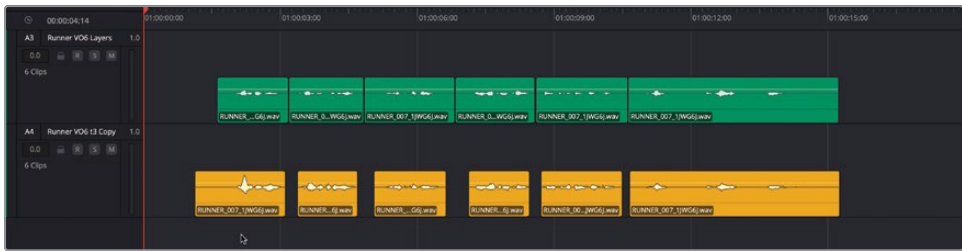
The timeline is prepped and ready for working in audio track layers.

> **NOTE** If you didn't complete the previous exercise, feel free to import the backup timeline **2 VO6 Runner Layers Start** to catch up.

Showing Audio Track Layers

Track layers are a powerful way to record and edit multiple clips in a single track. You can show or hide audio track layers in the View menu. With audio track layers showing, you can freely move clips from one track to another and place them on a separate layer within the track. The most important thing to remember when working with track layers is that you hear only the uppermost clip at any given time. You'll work with recording audio track layers in Lesson 4. For now, let's show the track layers to see what they look like. Then, you'll move the clips from the A4 track to the upper layer in the A3 track. An advantage of working in audio layers is that you can easily align the waveforms of clips with other clips as you move them up and down between layers.

1 Choose View > Show Audio track Layers.

Each track has a single layer of mono clips, and an empty, clip-sized space appears in the track above the clips. The height of each clip and layer is based on the track height and the number of clips in the track.

When starting playback, only the uppermost clip exposed to the playhead is played.

2 If necessary, press A to switch to the Pointer mode arrow tool.

3 Select all the yellow clips in the A4 track. Drag the yellow clips up to the A3 track.
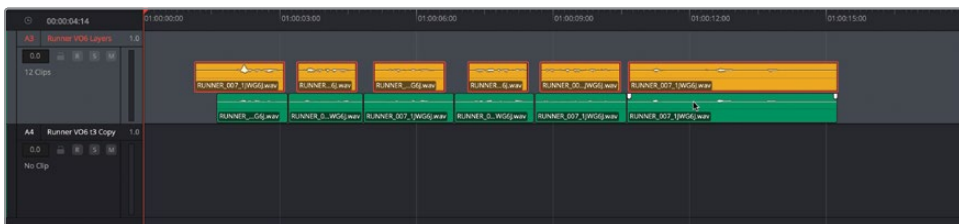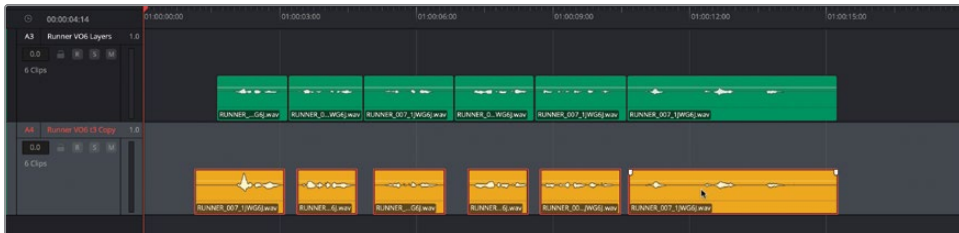
The yellow clips appear in a layer above the green clips in the A3 track. Before proceeding, let's delete the A4 track.

4 Right-click the A4 track header and choose Delete Track.

5 Drag the bottom edge of the A3 track header downward to increase the vertical height of the track as much as needed for a clear view of each clip in the timeline.
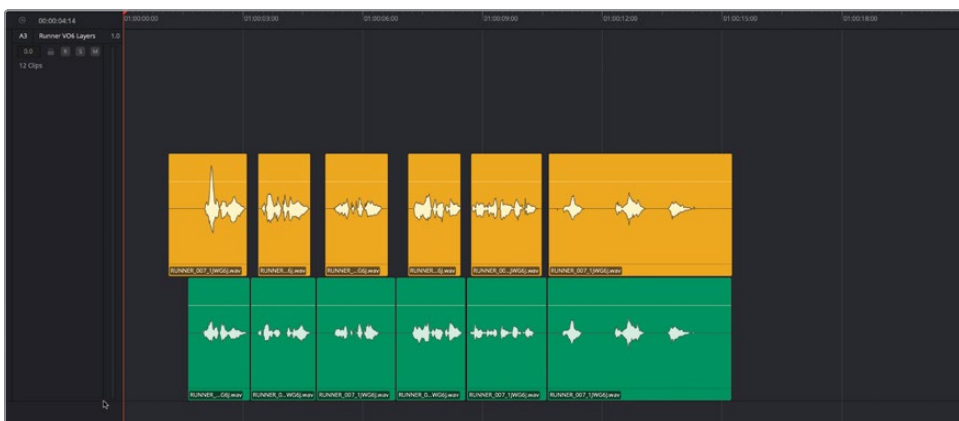
Now, you can clearly see the audio track layers to edit the multiple voiceover takes.

Trimming and Moving Clips to Different Layers

When working with audio track layers, an empty clip-sized space will always appear at the top of the track so you have room to drag clips up or down to change their priority. When you drag a clip to the top layer, the other clips shuffle down. Your goal in this exercise is to trim the heads and tails of some of the clips and move the best take of each phrase to the uppermost layer. Let's try it.

1 Start playback and listen to the first yellow clip.

2 Drag the first green clip atop the first yellow clip.

The yellow clip moves down to the lower layer.

3 Play the first clip stack again. This time, you'll hear only the green clip.

4 Drag the first yellow clip atop the first green clip to move the green clip down and the yellow clip back to the upper layer.

Now that you've tried moving clips between layers, let's try trimming a clip. Let's also toggle off snapping so you can freely trim the heads and tails of the clips without them trying to snap to align with other clips.

5 Choose Timeline > Snapping or press N to toggle off snapping.

6 Trim the beginning of the first yellow clip so it starts closer to the beginning of the waveform.

7 Trim the beginning of the first green clip.
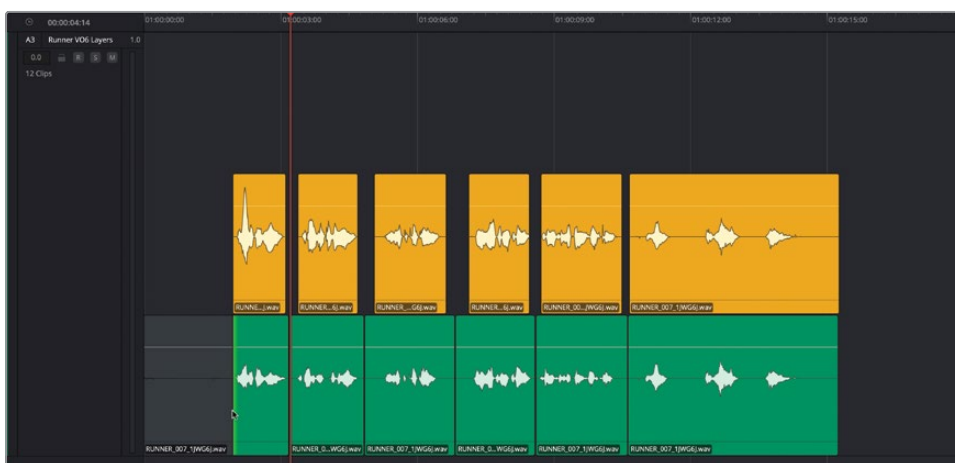
When trimming toward another clip in the same layer, the clip will automatically appear in a new empty layer while you trim to accommodate your edits. Moving or extending one clip above another in the same layer will result in the overlapping clip in a new layer.

8   Trim the beginning and end (head and tail) of the third green clip.

This time, a new layer appeared while you trimmed to keep the other clips in view as a guide.

9   Trim excess heads or tails of the other clips to tidy them up if needed to make them easier to swap between layers.

Next, you'll move the best takes to the upper track based on the client's notes. This is the same thing you did in the previous exercise by disabling the unwanted take in the timeline. However, instead of referring to takes by track, you'll focus on their color. In this case, your choices will be take 1 green or take 3 yellow.

> **TIP** Holding Shift while dragging clips up and down between layers constrains the vertical alignment. This is helpful when you are quickly auditioning different takes because you don't have to worry about accidentally moving the clips out of sync horizontally.

10   Move clips as needed so the upper layer is as follows:

— Clip 1, "The last day of normal," yellow.

— Clip 2, "started like every morning," yellow.

— Clip 3, "I was at the park early," yellow.

— Clip 4, "running laps on the trail," green.

— Clip 5, "training for the spring 5K," green.

— Clip 6, "and then, out of nowhere, they arrived!" yellow.
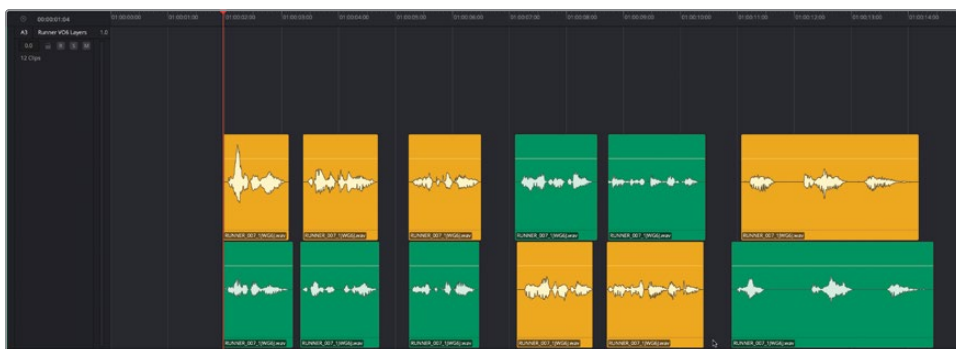
11 Play the timeline to hear the best takes.

You may have noticed on the last clip stack that the words "and then, out of nowhere, they arrived" don't align very well between the takes. Also, you can hear some of the green clip before the yellow starts. No worries. You'll fix both issues in the next exercise.

Splitting Clips in Layers

Splitting audio clips in track layers is almost the same as splitting them in separate tracks. The difference is when splitting clips in layers, only the uppermost clip will split. To split multiple clips simultaneously, you first need to select the clips. In this exercise, you'll select and split the last clip stack into three separate stacks. Then, you'll trim and align the clips in each stack. Finally, you'll switch takes for the first and last section because it turns out the clients want take 1 for "and then" and "they arrived" and take 3 for "out of nowhere."

1 Select both clips in the last clip stack.

2 Move the playhead between the first and second phrases in the clip. Press Command-B (macOS) or Ctrl-B (Windows) to split the selected clips at the playhead position.

3 Select the remaining last clip stack. Move the playhead between the last two phrases. Split the selected clips. Deselect the clips.

Next, you'll trim and align the clips. As you align the clips, drag the clip in the lower layer to the upper clip for precision alignment of the two waveforms, and then hold Shift to constrain the clip's horizontal position as you drag it back down to the lower layer.

4　Trim and align the clips.

In the last three clip stacks, the upper layer should be green, yellow, green.
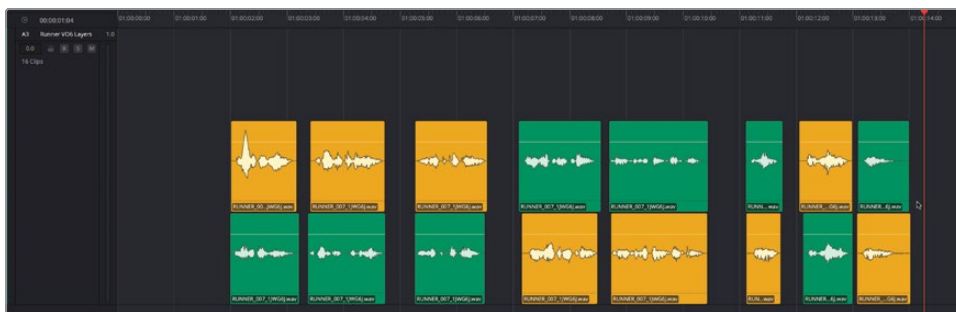
> **NOTE**　If you did not complete the previous exercises, feel free to import the backup timeline **2 VO6 Layers to Tighten** to catch up.

Tightening the Edit

Now that the best takes have been selected and moved to the upper layer, you can hide audio track layers and tighten the edit to remove the excess space between words. The goal is for the composite performance to sound natural. Remember, the audience only hears the results and has no idea what you've done to get there. Whether you're working with audio track layers or clips on separate tracks, you'll follow the same basic steps to tighten the gaps between words. This technique uses the range and nudge commands to rein in the gaps between words. You'll also turn on the "stop and go to last position" option in the transport controls so the playhead will always start where you want it while you finesse the pauses between words.
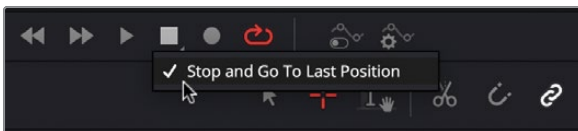
1　Choose View > Show Audio Track Layers to hide the layers.

You can show the audio track layers to edit or change clip order anytime.

2 Use the Vertical Zoom slider or drag the A3 track header to decrease the track's height.

3 In the transport controls, right-click the Stop button and enable the Stop and Go To Last Position option.

4 Move the playhead before the first clip stack.

> **NOTE** When nudging or dragging a stack of layered clips in the timeline, it is important to drag a selection across the stack to include all clips in the stack. If you only select the visible clip from the top layer, that will be the only clip you will nudge or move.

5 Press R for the Range tool. Drag a range that selects all clips to the right of the first clip.
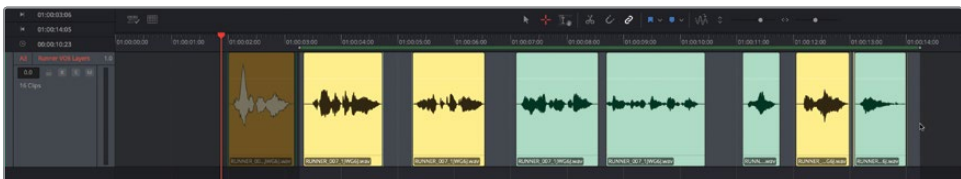
Next, you'll start playback and use the nudge commands to move the selected clips toward the first clip to tighten the first gap. Anytime you stop playback, the playhead will return to the starting point so you can listen from the beginning again. Let's try it.

6 Start playback and listen to the pause between the first and second phrases.

7 Press , (comma) twice to nudge all the selected clips to the left by two frames.

8 Play the section again.

9 Press , (comma) two more times to nudge left two more frames.

10 Play the section. If satisfied, move on to the next section. If you want to adjust the gap more, use the , (comma) or . (period) to nudge left or right one frame at a time.

11 Select all the clips to the right of the second clip. Start playback at the beginning and nudge the clips to tighten the gap between the second and third clip.

12 Finish tightening the edit until you are satisfied with the composite voiceover. As you go, you can continue with the playhead at the beginning or move it to the section you are working on. Be careful not to tighten the edit too much since some pauses between words are part of the performance and necessary for a more natural sound.

Don't worry about getting it perfect. Also, some clips could benefit from a micro fade at the beginning or end of the clip. You'll work with those in a later lesson.

13 When finished, play the timeline to hear your composite draft.

> **NOTE** If you did not complete the previous exercises, show the tracks index and unhide the A6 Runner comp track to see and hear a finished version of the composite draft.

Bouncing a Selection to a New Layer

The composite voiceover you created from multiple clips will play back fine; however, it will become a bit cumbersome to move around and work with later in the podcast. Fortunately, you can simplify that process by bouncing the track to a new layer.

Bouncing is the audio equivalent of flattening a layered image or rendering a composite video. In this case, bouncing creates a new audio file in your capture location and media pool. In the Fairlight page, you can bounce a selected play range to a new layer or bounce your output to a new track in the timeline. For this exercise, you'll set a range around the clips in the A3 track and bounce them to a new layer.

Your bounced files will appear in the selected bin in the media pool. In this case, let's make a bin and then bounce the composite.

1 In the media pool, right-click the bin list and choose New Bin.

2 Name the bin **Bounced VO Comps**.

3 Select the Bounced VO Comps bin.
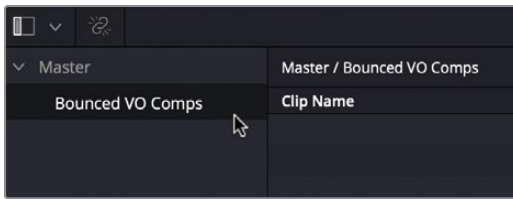
4 In the A3 track, drag a range that includes all the clips.
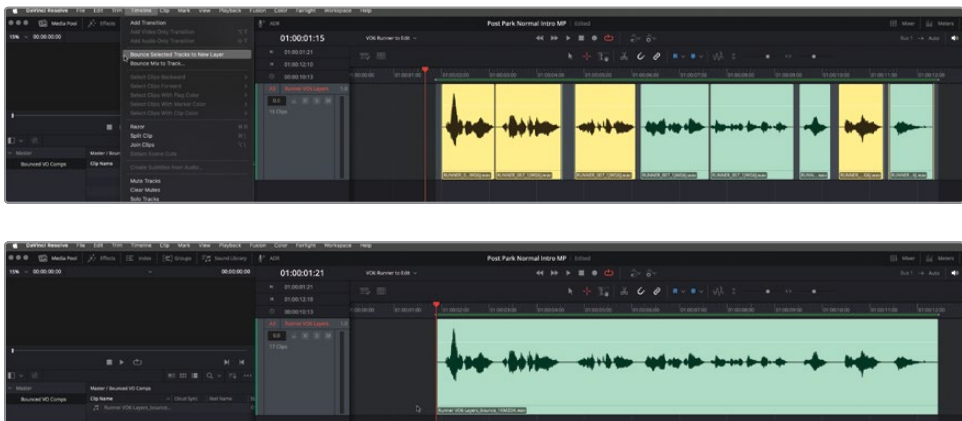
5 Make sure the A3 track is selected and you have marked a range. This is a necessary step for bouncing to a new layer in the same track.

6 Choose Timeline > Bounce Selected Tracks to New Layer.

Voilà! A new bounced clip the length of the play range appears above the other clips in the selected track. The new source clip is also visible in the selected bin in the media pool. The bounced clip's name starts with the track name Runner VO6 Layers and continues with "bounce" to indicate that it is a bounced file.

7 Choose View > Show Audio Track Layers to see the bounced clip in a layer above the original clips.

8 Choose View > Show Audio Track Layers to hide them.

Before proceeding to the last dialogue editing example, let's rename the current timeline to reflect its contents.

9 If necessary, in the media pool, select the Master bin to see all the clips and timelines.

10 Locate the current timeline containing the bounced clip and comp. Change the timeline name to **VO6 Runner Comp v1**.
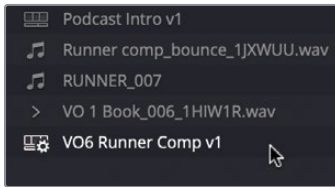
You can keep the original clips in the timeline beneath the bounced layer, disable them, or delete them from the track. For educational purposes, and to preserve any sentimental attachment you might have to your first layered composite voiceover track, let's keep it as is. Besides, it's good practice to keep the originals beneath the bounced clip handy in case the clients change their mind and want to try a different take combination.

> **TIP** If you plan to do a lot of work with audio track layers, you can save time by creating a custom keyboard shortcut to show/hide audio track layers. In fact, any menu option can be assigned to a custom keyboard shortcut via the Keyboard Customization window accessed from the DaVinci Resolve menu.

Finishing a Patchwork Quilt Edit

As you may have guessed, dialogue editing isn't a one-size-fits-all workflow, and the editing method you choose for your projects may vary as much as the projects themselves. Luckily, the Fairlight page editing tools, techniques, and shortcuts are extremely flexible and can be mixed and matched to suit your needs. In this dialogue editing example, the podcast clients had a brilliant, last-minute, late-night, over-caffeinated, wildly creative idea they wanted to try for the podcast intro. The idea is to try intercutting the intros of all six characters as a combo intro. "Sure! Let's go for it."

Editing together a composite of many people's voices would be more of a patchwork quilt than a standard checkerboard edit. The techniques are similar, with more cutting between words and voices along the way. This type of edit is sometimes referred to as a blender cut, patchwork quilt, or Franken-edit, which is an homage to Frankenstein's monster, who was also patched together from different people's parts.

Preparing the Project

To save time, you'll open a project with the combo intro already built. You'll be invited to create your own patchwork edit of the intro at the end of the lesson. First, you'll need to import the project and reconnect the media.

1   Choose File > Import Project. Navigate to the R19 Fairlight Part 2 media folder and select the Podcast Intro Combo project.

The Podcast Intro Combo project opens with the **2 Intro Combo Finished** timeline open and all the media offline (red).

2   In the media pool, right-click the Master bin and choose Relink Clips for Selected Bin.

3   Navigate to the R19 Fairlight Book Media > R19 Fairlight Part 2 folder and click Open.
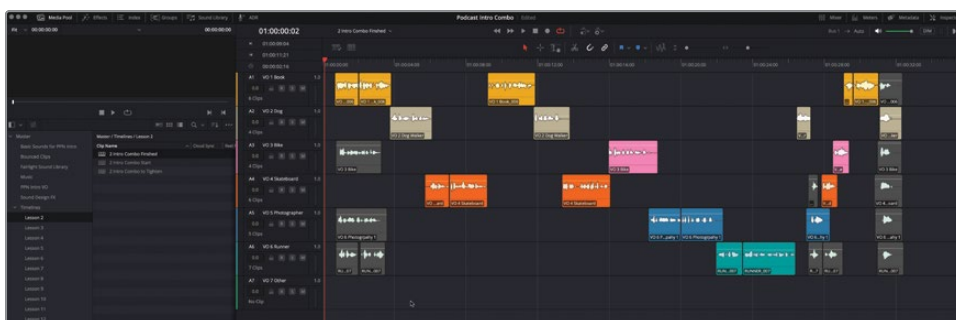
The clips relink, and the project is ready to go.

> **NOTE** If you can't relink the media, go to the "Getting Started" section at the beginning of this book and follow the instructions to download the media. Once downloaded, try steps 2 and 3 again.

4   The Podcast Intro Combo project opens with the **2 Intro Combo Finished** timeline open.

5   Choose File > Save Project As, add your initials to the end of the project name, and then click Save.

6   Play the **2 Intro Combo Finished** timeline once and listen to the experimental combo intro.

Wow! It turns out the clients had a great idea, even if it was in the middle of the night. Now that you've seen the finished patchwork dialogue edit and heard the results, let's go back and see how it all started.

7   In the media pool, locate the timelines in the Lesson 2 bin. Then open the timeline
   **2 Intro Combo Start**.
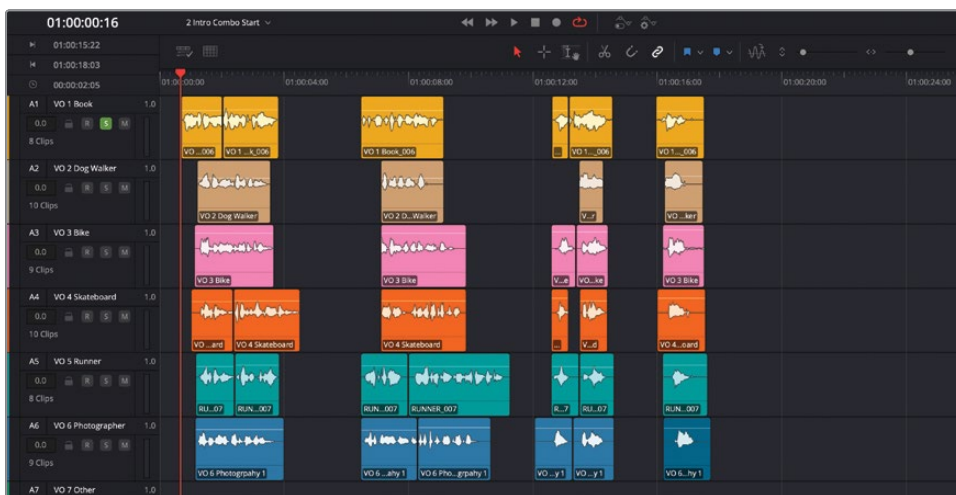
8   Click the Fairlight menu and make sure the Exclusive Solo option is enabled (checked).

9   Solo the A2 track and play the first few clips.

10 Using the Solo button one track at a time, play the beginning of each track
     sequentially, starting with A3 and ending with A6.

Now, you have heard each character and a little about what they were doing at the park
that fateful morning.

Tighten the Patchwork Edit

You've already heard the final edit, so you know what you are aiming for. In this exercise,
you'll implement the range selection and nudge skills you used previously. This time,
instead of selecting layered clips within a track, you'll select multiple clips on numerous
tracks. The workflow is the same, just more tracks. Your goal is to select clips to the right of
a gap and use the nudge commands to tighten the gap as needed before moving on to the
next gap. Just as before, you'll listen as you go to determine whether you have nudged
enough or too much and adjust the edit accordingly.

1   Open the timeline **2 Intro Combo to Tighten**.
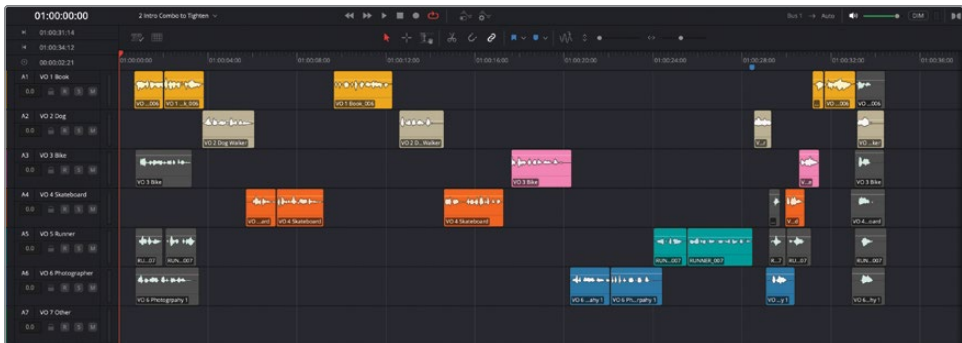

2   If necessary, enable Stop and Go to Last Position in the Playback menu. (It should still be on from the previous exercises.)

3   Play the timeline to hear the unnatural-sounding gaps starting after the first set of skateboard clips on A4: "The last day of normal started like every other morning."

4   With the Range tool, select all the clips from the third yellow clip on the A1 track, "at the park, with my coffee, reading my book," to the end of the timeline.

5   Start playback at the beginning of the timeline.

6   Use the nudge commands to tighten the space between the orange skateboard clips, "The last day of normal stared like every other morning" and the third yellow clip, "at the park, with my coffee, reading my book."

   When you're satisfied with the timing between those clips, move on to the next set of clips.

7   Continue tightening the spaces between the sections until you like the timing and flow of the patchwork intro.

If you think the dialogue seems rushed at any time, select all clips to the right of the issue and nudge right to add a little breathing room. If the pauses seem too long and unnatural, select all clips to the right of the issue and nudge left to reduce the extra space between clips. Trust your ears and your guts. You've got this!

Using Enable to Audition Stacked Clips in the Timeline

There are countless creative editing choices for this character combo podcast intro. One final dilemma is determining which character's voice will be used for the last phrase, "they arrived." In this short exercise, you'll audition the same final phrase from each character and choose a favorite. To do this, you'll use the Enable/Disable shortcut "D" to systematically enable only one clip in the stack at a time.

1   In the timeline, move the playhead to the blue marker.
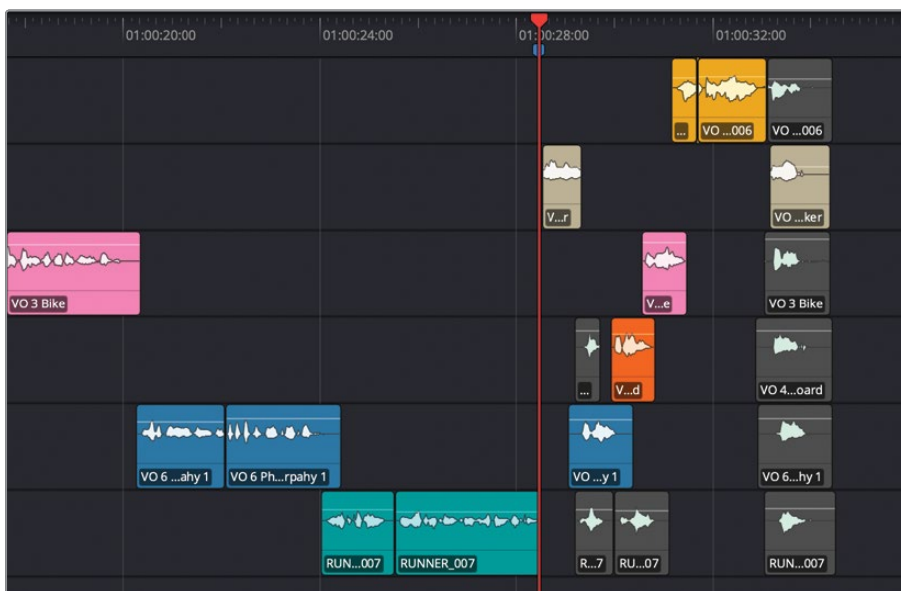
2   Play the last series of clips and listen to how it sounds with the A2 track version of the "they arrived."

3   Stop playback. Select the last clip in the A2 track and press D to disable the clip. Select the last clip in the A3 track and press D to enable it.

4   Play the last series of clips again, this time listening to the final phrase from the A3 track.

5   Repeat the previous steps, but this time disable the last clip in the A3 track and enable the last clip in the A4 track.

6   Repeat the previous steps until you have auditioned the endings from each character.

7   When you are finished, enable whichever version you like.

8   In the transport controls, right-click the Stop button and choose Stop and Go to Last Position to disable that option.

Mission accomplished. You have completed the first level of dialogue editing! But cutting the tracks together is only the first part of your job. Dialogue editing is complete when the clip levels are balanced, distracting noises are removed, and the tracks are strong enough to stand on their own. Don't worry; you'll work with balancing levels and cleaning up tracks in Lessons 5 and 6.

Patchwork Challenge: Edit Your Own Intro

If you have enjoyed the dialogue editing exercises and want to create your own multi-character patchwork intro, here is your chance! This is optional, but it is a great way to test your new skills and creativity. For this self-guided exercise, open the **2 Intro Combo Start** timeline with four stacks of clips representing each character's rendition of the intro broken into sections. Duplicate the timeline and rename it to include your initials. Take it from here and have fun!

Using AI Speech–to–Text Transcription (Studio Only)

This section requires DaVinci Resolve Studio to follow along. DaVinci Resolve Studio offers a full set of powerful AI-based tools, including speech-to-text transcription from audio clips. Once transcribed, you can search the text to mark clips, audition takes, set duration markers, and more. In this exercise, you'll transcribe two voiceover clips and use search and selection options in the Transcription window to preview, audition, and mark the best takes for editing.

1   If necessary, open the Podcast Intro Combo project.

2   Open the **2 Intro Combo Finished** timeline.

3   In the media pool, select the PPN Intro VO bin to see a list of all six voiceover clips.

    For this exercise, you'll start with VO 6 Runner, which you are already familiar with, and run audio transcription to see the transcript and search takes. Then you'll move on to a more challenging clip, the VO 4 Skateboard clip, which has numerous takes, ongoing direction between takes, and even changes in accent.

4   In the media pool, select the VO 6 Runner clip to see it in the preview player.

5 Change the preview player Zoom menu to 1x. Then, move the playhead to the middle of the clip for a better view of the entire waveform.


6 Right-click the **VO 6 Runner** clip and choose Audio Transcription > Transcribe.
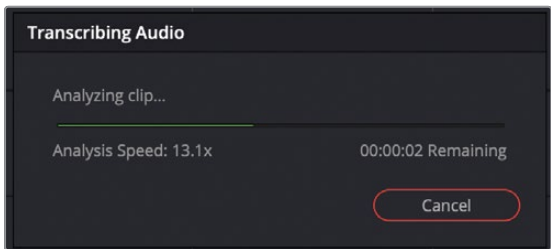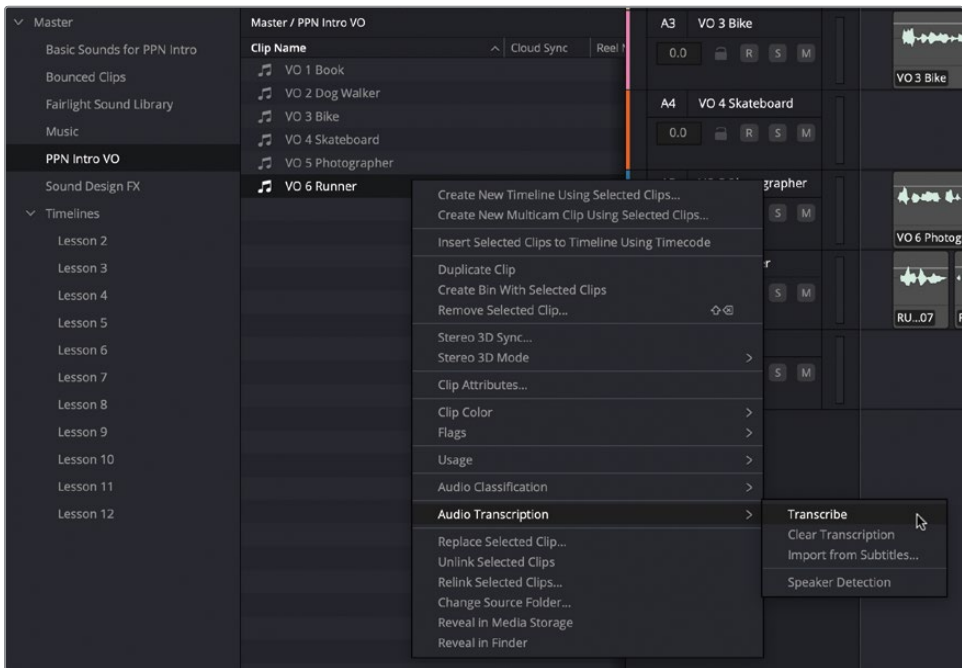
A Transcribing Audio progress dialog indicates that the clip is being analyzed. Once analyzed, the Transcription window opens, showing all the clip's dialogue as text in a single paragraph. Clips with multiple speakers or pauses between spoken words can be transcribed accordingly.

7   In the upper right corner of the Transcription window, click the Increase Font Size (A+) button to increase the size of the text.

8   Click the Search button to show the Search field. In the Search field, type **The last day of normal** and then press Return or Enter.
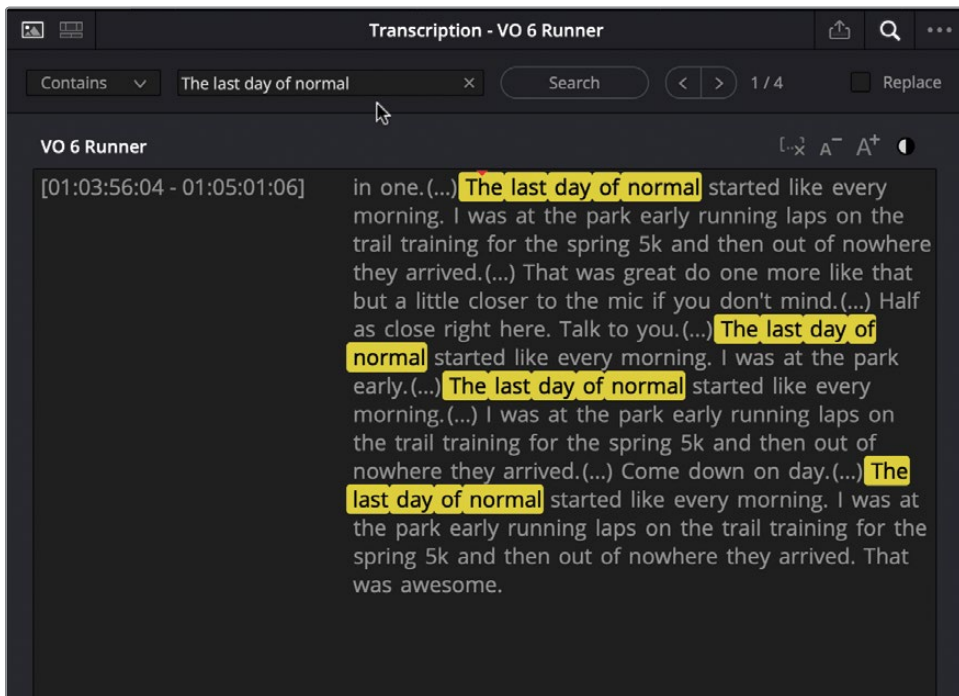
The Transcription window highlights four instances of "The last day of normal" in the clip. Not only can you see the highlighted text, but you can use it to quickly audition each take. Let's try it.

9   Click the Play button at the bottom of the Transcription window or press Spacebar to play the first take starting with the highlighted "The last day of normal…."

10 To the right of the Search button, click the Next button (>) to advance to the next selected text. Play the first part of the second take.
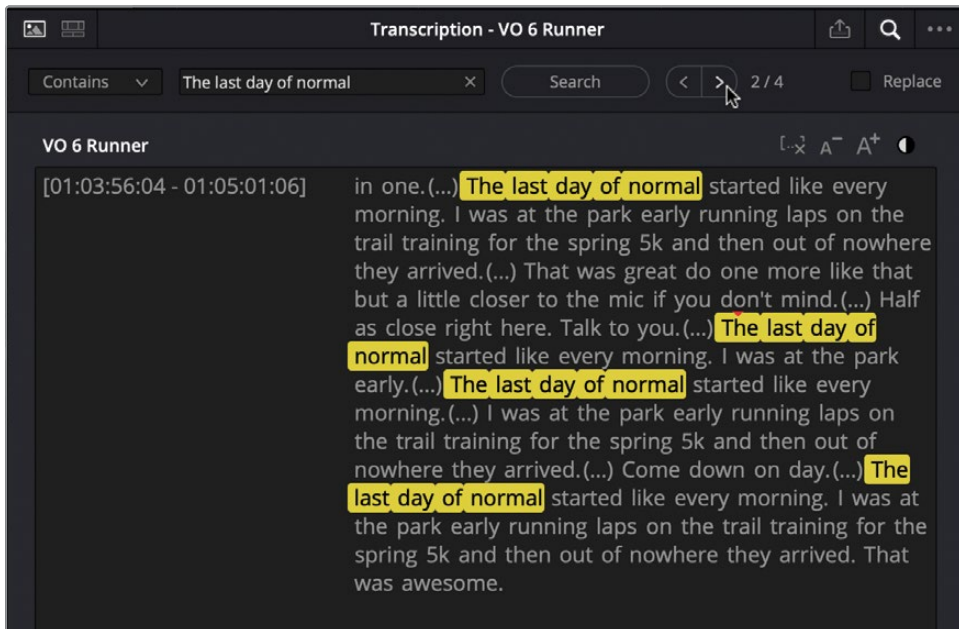
A small red arrow points down to the first word in the current selection.

11 Continue advancing the search to the next take and play to hear each take. When finished, stop playback and clear the Search field.

12 In the transcription text, locate the beginning of the last take starting with "The last day of normal" and ending with "they arrived." Drag a selection in the text field that includes the entire take.

In the media pool preview player, you can see that the same portion of selected text has also been marked with In and Out points.

13 In the media pool, play the marked selection of the clip.

Next, you'll mark the selection with a duration marker, just as you marked takes in Lesson 1.

14 In the lower left corner of the Transcription window, click the Marker button to mark the selected clip with a duration marker.
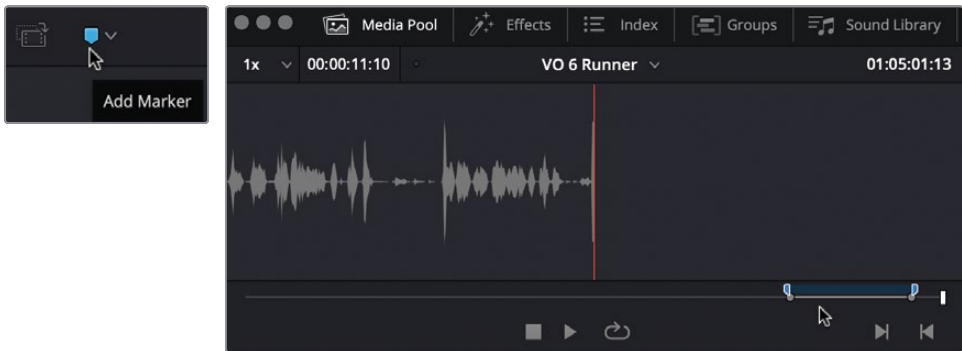
A duration marker appears in the preview player for the duration of the In and Out points. In the media pool, the VO 6 Runner clip includes a disclosure arrow to open the contents to see the duration marker.

15 Click the arrow to the left of the VO 6 Runner clip to see the duration marker. Name the marker Take 3 and then select the marker to see it in the preview player.
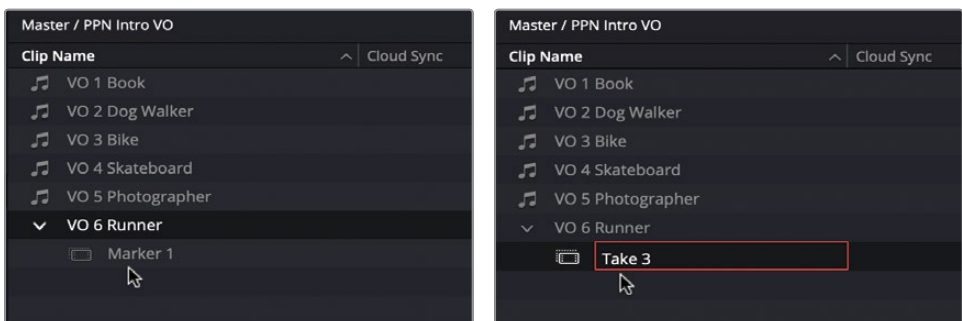

As you can clearly see, using transcription can be a real timesaver when working with dialogue source clips. Now that you have a feel for how the speech-to-text transcription works in the Fairlight page, let's transcribe a more complex example for comparison.

16 In the media pool, right-click the **VO 4 Skateboard clip** and choose Audio Transcription > Transcribe.

As you can see by the Transcription window, this clip has more takes accompanied by directions from the two companions who also recorded voiceovers for this project.

> **NOTE** The three voices you hear in this recording are Jack, Vicente, and Kathryn, who are film students recruited by this author to record themselves as VO 4 Skateboard, VO 5 Photographer, and VO 3 Bike, respectively.

17 In the Transcription window, search for the phrase "then out of nowhere."
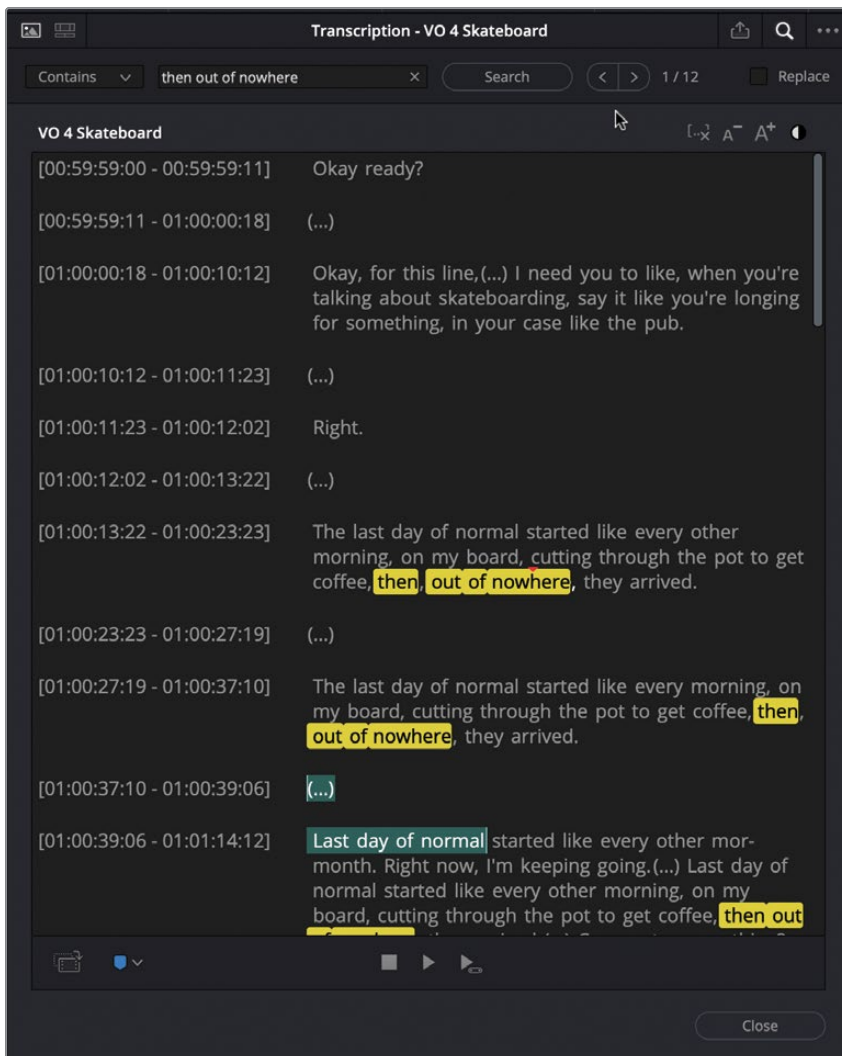
This time, there are 12 takes because the talent tried numerous performance intensities and accents. This example also demonstrates that DaVinci Resolve's transcription is powerful enough to decipher accents as well. The only word the transcription missed in this example was "pot" instead of "park."

18 Using the Transcription window, listen to some of the selected takes and choose a favorite. Feel free to experiment with the transcription before closing the window.

19 Save the project.

In the next lesson, you'll explore new editing tools and techniques for editing sound effects and music.

Lesson Review

1   How do you separate the viewer from the monitoring panel so that you can use it as a floating window? (Choose all that apply.)

   a) Double-click the viewer.

   b) In the Workspace menu, choose Fairlight Viewer > Floating.

   c) Click the Floating Window button on the viewer.

   d) Right-click the viewer and choose Floating.

2   When would you use Loop Jog?

   a) To get a little exercise after a long day of dialogue editing.

   b) To hear a sample-level preview of the audio while scrubbing the playhead.

   c) To start looped playback of a selected range in the timeline.

   d) To copy and paste multiple copies of the selected clip in the timeline.

3   In audio post-production, what name is given to describe editing dialogue where you split each character's dialogue to a separate one?

   a) Split dialogue editing

   b) Character mapping

   c) Checkerboard editing

   d) Character-layered editing

4   True or False? During playback, the lowest audio track layer will always be audible.

5   True or False? Changing a track from a multichannel format to a mono format permanently deletes any unexposed channels in the clip.

6   Which keyboard shortcuts allow you to quickly edit clips from one track to another?

   a) Track number plus I or O for Insert and Overwrite edits.

   b) Hold D (for dialogue) while using the Up Arrow and Down Arrow keys.

   c) Option/Alt track number plus the Up Arrow and Down Arrow keys.

   d) Common Cut, Copy, Paste Keyboard shortcuts plus Option-Command-Up/Down Arrow (macOS) or Alt-Ctrl-Up/Down Arrow (Windows).

Answers

1 b, c

2 b

3 c

4 False. The uppermost track layer is always audible.

5 False. Changing a track's format never deletes the unexposed channels of the timeline clips.

6 d

Editing Sound Effects and Music

Editing sound effects and music involves creativity, flexibility, and precision. In this lesson, you'll explore additional editing tools, features, and timeline options as you edit sound effects and music in a variety of projects, including the Post Park Normal podcast intro, scenes from the film *Too Much Life*, and a 3D Fusion VFX clip.

Time

This lesson takes approximately 75 minutes to complete.

Goals

# Finishing a Spotting List in the Markers Index

So far, you've learned how to build a soundtrack from scratch and edit dialogue using the basic tools and shortcuts necessary for most of your editing needs. In this exercise, you'll finish a spotting list for the Podcast Intro Combo project you started in the previous lesson. A *spotting list* is like a to-do list of sound elements that need to be added, enhanced, or replaced by the sound team. In the Fairlight page, you can create a spotting list right in the timeline and Markers index.

1   If necessary, open the Podcast Intro Combo project with your initials added to the project name.

2   Open the timeline **3 Intro Combo FX Start**.

    This is a version of the timeline you worked on at the end of Lesson 2.

3   Hide all panels except the timeline. Adjust the vertical and horizontal zoom as needed to clearly see all the tracks and clips in the timeline.
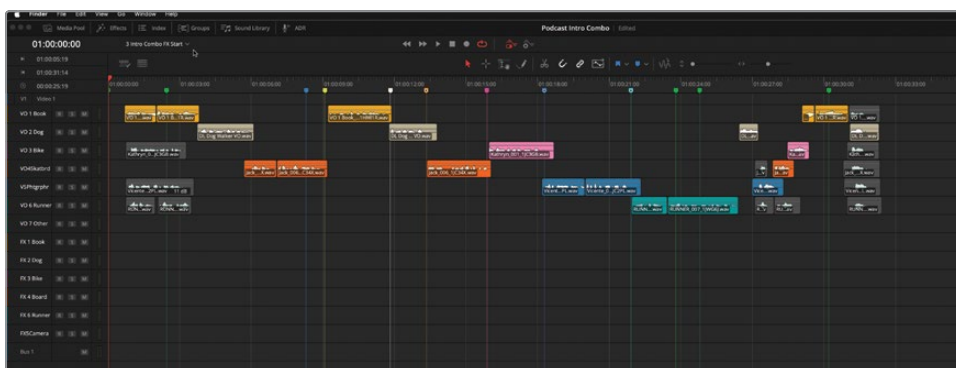
At a glance, you can see that colored markers have been added to the timeline ruler, as well as a set of empty tracks that correspond to the different characters. The colored markers correspond to production notes from a spotting session that indicate where sound effects or music cues should be added. You'll find an interactive list of the markers and notes in the Markers index.

4 In the upper left corner of the interface toolbar, click the Index button to open the Index panel. Then, at the top of the Index panel, click the Markers button to show the Markers index.
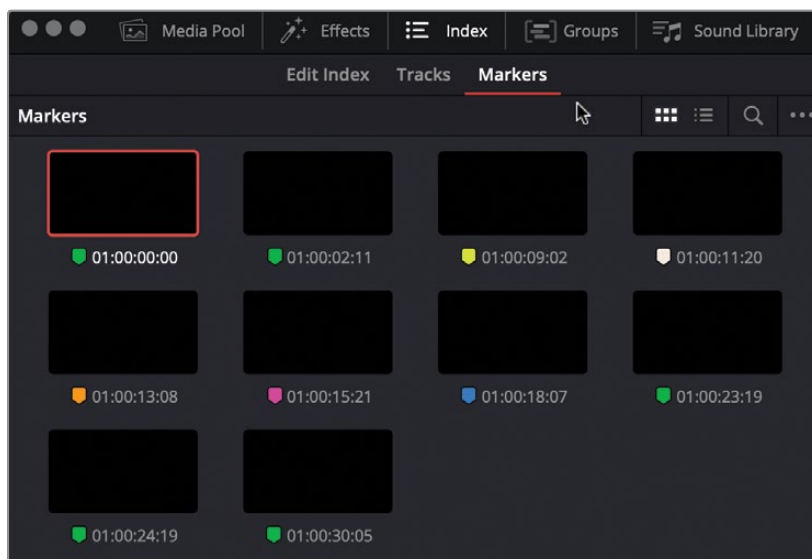
The Markers index opens on the left side of the page. Here, you can see the current timeline markers and a corresponding thumbnail frame for each marker. As with the media pool, you can view the markers in either Thumbnail or List view.

> **NOTE** Since this is an audio-only project, the thumbnail for each marker frame is black.

5 In the Markers index toolbar, click the List View button to change the index to List view.

In List view, you can see columns that show each marker's number, name, and other information. You can select a marker by clicking any empty space in a marker's row. Selecting a marker in the index also moves the playhead to the selected marker. If you look at the markers again, you'll notice a colored marker for each voiceover character except VO 6 Runner.

6 In the Markers index, select Marker 6, which is #7 in the # column and the only blue marker in the color column.

This marker represents the photographer's voiceover, which comprises the two blue clips on the VO 5 track. As you may have noticed, Marker 6 is the only unnamed marker. Let's give it a name.

7   In the Name column of the Markers index, select Marker 6 and type **Photographer**. Then press Return or Enter.

Let's take a moment to streamline the information in the Markers index columns.

8   Right-click the column headers and deselect Start TC, End TC, Duration, and Keyword. Now you can clearly see the Name, Color, and Notes for each marker in the list.
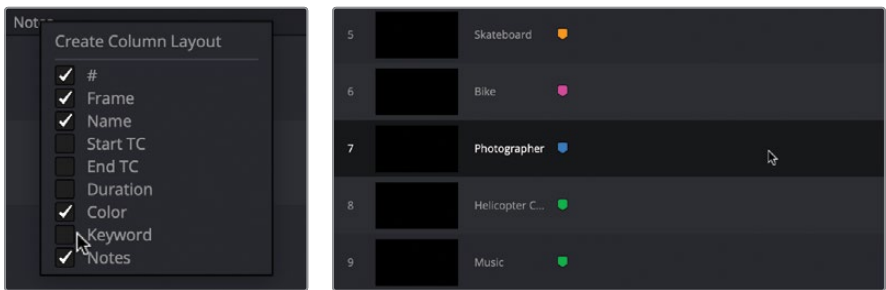
The Notes column is useful for adding instructions to accompany a marker. In this example, during the spotting session, the director requested the sounds of a camera bag and camera clicks to accompany the photographer's voiceover.

9   In the Notes column for the Photographer marker, type **Add FX for bag and camera clicks.** Press Return or Enter.
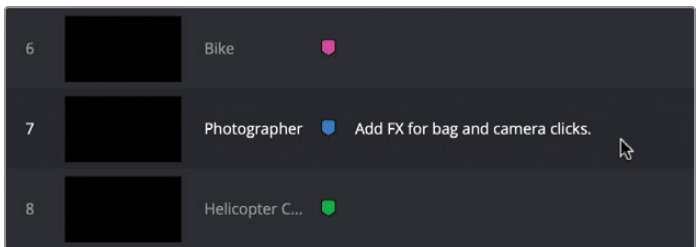

> **NOTE** You can sort the marker list by any column header and move the columns to a different order by dragging the column header to a new position.

If you look carefully at the markers in the middle area of the timeline, you'll see a colored marker that corresponds with each character except the Runner on the VO 6 Runner track. In the next section, you'll use these markers as a guide to add a sound effect for each character as they describe what they are doing at the park. First, let's add a marker for the runner to complete the marker list.

10 In the timeline, if necessary, click an empty space to deselect all clips and tracks. Then, navigate to the beginning of the first teal clip in the VO 6 runner track.

> **NOTE** If a clip is selected beneath the playhead when you press M to set a marker, a marker will appear on the selected clip. If you want to set a timeline marker, be sure to deselect all clips first.

11 Press M to add a timeline marker at the playhead position. Press M again to open the Markers panel and enter the information as follows:

— In the Name field, type **Runner**.

— In the Notes field, type **Extend head and tail by one second with fade.**

— Change the marker color to teal.
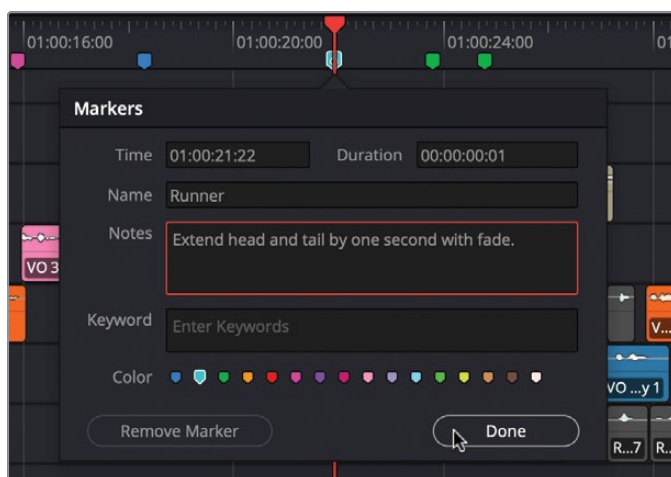
12 Click Done.

The new Runner marker appears in the timeline and Markers index.

The spotting list is complete, the timeline is ready for action, and you have a road map in the marker index to help you navigate as you add sound FX to the different tracks. For the next set of exercises, you'll work in Focus mode, which offers enhanced editing options, speed, and precision.

> **NOTE** The Focus mode multi-tool behavior combines many of the selection, editing, and playback features you're already familiar with so that you can continue working as you have previously without needing to switch tools or selection modes.

Editing with the Focus Mode Multi–Tool

There are two primary options for editing audio quickly: physical hardware or mouse and keyboard shortcuts. For editors who prefer physical controls with lightning-fast results, there are the Fairlight Audio Editor, Fairlight Studio Console, and Fairlight Desktop Console. Each model includes dozens of specialized controls for nearly every function on the Fairlight page interface. For mouse and keyboard editors who work fast and fluid with their mouse-du-jour, the Fairlight page Focus mode works as a multipurpose tool with a powerful multifunctional cursor that changes function based on where and how you click. Additionally, the multi-tool offers a robust array of focused, pointer-based advanced editing options using simple mouse clicks and the occasional modifier key or user-defined keyboard shortcut. As you work through the following exercises, you'll explore new tools and techniques.

> **NOTE** The Focus mode multi-tool includes the Selection tool (I-beam cursor), the Grabber tool (hand cursor), and the Trim tool (various trim arrow cursors), depending on the cursor position.

The secret to mastering the Focus mode multi-tool is learning how it changes based on where and how you click. Another consideration is whether the playhead is moving. When stationary, playback will always start at the new edit selection whenever you press the Spacebar. So you can click anywhere in the timeline and instantly preview the audio from that point without moving the playhead. During playback, the multi-tool is completely uncoupled from the playhead, so you can continue editing while listening to playback or even while recording.

In the next series of exercises, you'll explore some of the nuances of the Focus mode multi-tool and additional Fairlight functionality available in Focus mode while you edit sound effects into the timeline.
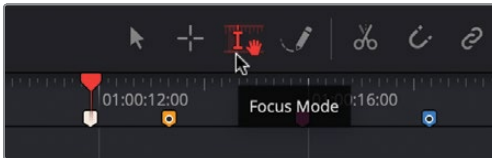
1 Show the media pool.

The media pool appears above the Markers index on the left side of the page.

2 In the media pool, select the Basic Sounds for PPN Intro bin to see the sound effect clips listed in the media pool library.
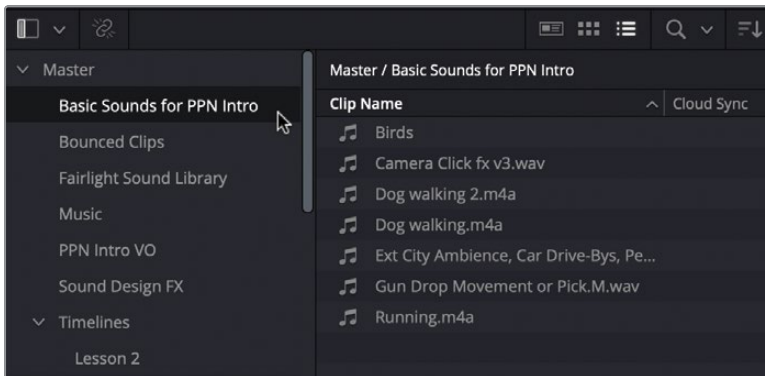
3 In the Markers index, select the Dog Walk marker to move the playhead to that position.

4 In the toolbar, click the Focus Mode button.

The timeline no longer extends vertically below the ruler. However, you can still see the top of the playhead in the ruler, and you will see the full vertical playhead during playback.

5 With the multi-tool, click anywhere in the A9 FX 2 Dog track to see the flashing I-beam cursor.

In Focus mode, clicking anywhere on a track selects the track, just like the Range mode tool. Let's add the **Dog walking** clip to the corresponding track.

6 In the media pool, drag the **Dog walking.m4a** clip to the beginning of the A9 track.

**7** Increase the height of the A9 track as needed for a clear view of the clip, waveform, and pointer.

The clip is clearly longer than necessary. No problem. You can scrub, select a range, and remove unwanted material in seconds with the Focus mode multi-tool. Let's listen to the middle section of the clip.

8 In the A9 track, locate the loudest section of the waveform near the middle of the clip. Move the cursor over the lower half of the clip to see it change to a hand (grabber) tool. Click the lower half of the clip to select the entire clip.


9 Move the cursor to the upper half of the clip to change the multi-tool to the I-beam cursor. Click to set a single frame edit point with the I-beam cursor.

10 Start playback to hear a few seconds of the clip from the edit point and see the full playhead as it moves along the timeline. Stop playback.
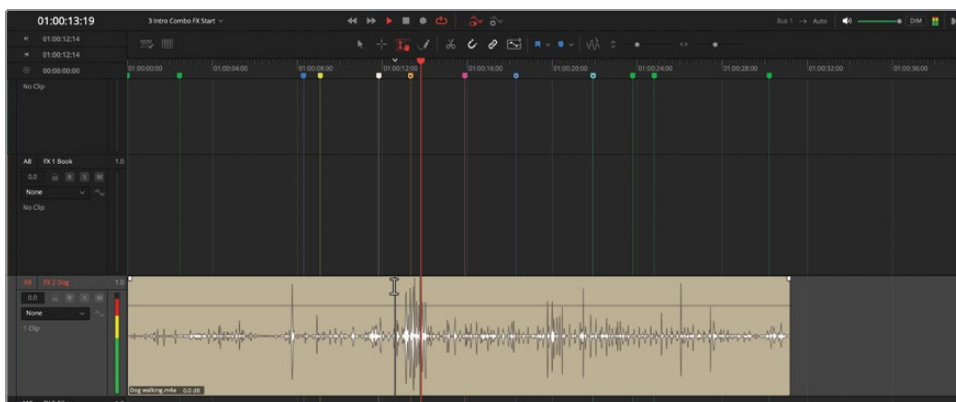
A new edit point I-beam flashes on the clip wherever you stopped playback. Before you scrub and choose a section of the clip to use, let's see the duration of the dog walker's voiceover.

11 Scroll up to the A2 VO 2 Dog track. Click the lower half of the second clip in the A2 track to select the entire clip.
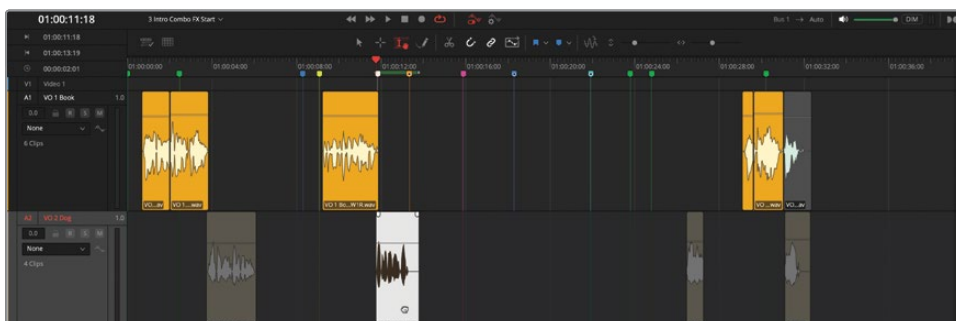
Selecting the clip with the multi-tool sets a range with In and Out points in the ruler to mark the clip. You can easily see the marked clip's duration in the upper left corner of the timeline. In this case, the clip duration is 00:00:02:01, or 2 seconds and 1 frame in length. This gives you a clear idea of the length of the dog walking sound effect you'll need to create from the full clip.

> **NOTE** Many of the sound effects for this project were recorded by this author, including the dog-walking sounds, which I recorded while walking my dog, Lexie.

Solo-Scrubbing a Clip with the Multi-Tool

Now that you know how long the dog-walking sound effect is, you can go about finding which section of the sound effect to use. Luckily, with the Focus mode multi-tool, you can scrub the playhead over any clip by holding Shift-Command (macOS) or Shift-Ctrl (Windows) while you drag the pointer over the clip. As a bonus, Shift-Command scrubbing the multi-tool temporarily solos the clip's track so you can focus on the sound of that track. In this exercise, you'll listen to the entire clip while the track is soloed. Then, you'll unsolo the track and use the solo-scrub method to listen to a specific section of the clip.

1   If necessary, scroll down to the A9 track.

2   Solo the A9 track. Select the entire clip. Start playback and listen for a good section to use for this intro.

As a sound effects editor in training, what are your thoughts about the clip? Listening from the beginning, it takes a while before the dog and walker have a good cadence that really "sells" the idea of dog walking. You probably also figured out that the loudest section in the middle of the clip is where the dog shakes her head before the nice rhythmic walk begins. Let's look and listen for a good 2.5-second range in the second half of the clip.

It's time to try solo-scrubbing the clip. With this technique, scrubbing forward or backward will play at normal playback speed.

3   Unsolo the A9 track. Press Shift-Command (macOS) or Shift-Ctrl (Windows) to scrub the cursor starting in the middle of the clip to hear only the clip and track you are scrubbing. As you scrub the clip, focus on the section after the dog shakes her head and before the next louder section in the waveform.

Feel free to scrub other clip areas before moving on to the next section.

Working with an Edit Selection Range

You've used the Focus mode multi-tool to select an entire clip, set an edit point, and solo-scrub a clip. In this exercise, you'll drag the I-beam cursor across the top half of a clip to create an edit selection range. Your goal is to drag a 2.5-second range that includes the portion of the dog-walking sound you want to use. Look at the duration in the upper left of the timeline to see the duration of your edit selection as you drag. You'll try to keep the duration to around 2:10–2:15. Don't worry about getting it perfect; you can always trim the clip later if needed.

1   In the A9 track, drag the I-beam cursor in the upper half of the dog-walking clip until you have an edit selection range with a duration of around 2:15.

The part of the clip within the edit selection range brightens. You can extend or reduce the range by Shift-dragging the start or end of the range in the upper half of the clip.

2   Shift-drag the start or end of the range as needed to clean up the selection so it starts and ends between peaks in the waveform.

> **NOTE** If you accidentally click the lower half of the clip, you'll clear the range. If that happens, you can simply draw the range again.

3   Choose Trim > Trim to Selection or right-click the clip and choose Edit Selection Editing > Trim to Selection.

All that remains in the A9 track is the clip within the edit selection range. Next, you'll move the clip to the Dog Walk marker. For this, you'll use the Markers index to locate the Dog Walk marker and then drag the clip to that position in the timeline.

4   In the Markers index, select the Dog Walk marker.

The playhead and I-beam cursor jump to that marker in the timeline. Make a mental note of where that marker is in the timeline ruler. Instead of moving the clip so that it starts exactly at the Dog Walk marker, you'll move it slightly before the marker. Remember, you only needed to fill a 2-second section with the sound effect. The extra half-second of sound gives you room to fade the clip in and out.

5   In the A9 track, drag the clip (from the lower half) toward the left until it starts before the beige Dog Walk marker and ends after the orange Skateboard marker. Use the range in the timeline ruler as a guide while you move the clip.
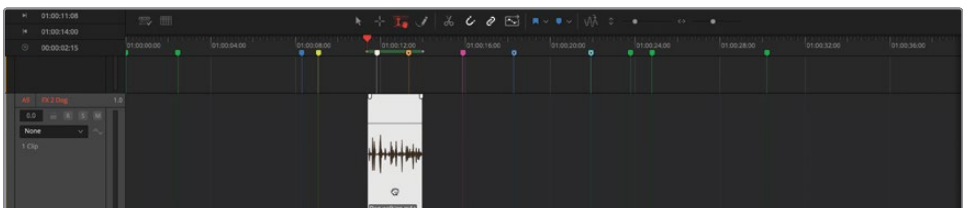
6 Using the Dog Walk marker as a guide, drag the fade handle in the upper left corner of the clip to create a fade-in that starts at the beginning of the clip and ends at the Dog Walk marker. Then drag a Fade Out from the end of the clip to the Skateboard marker.
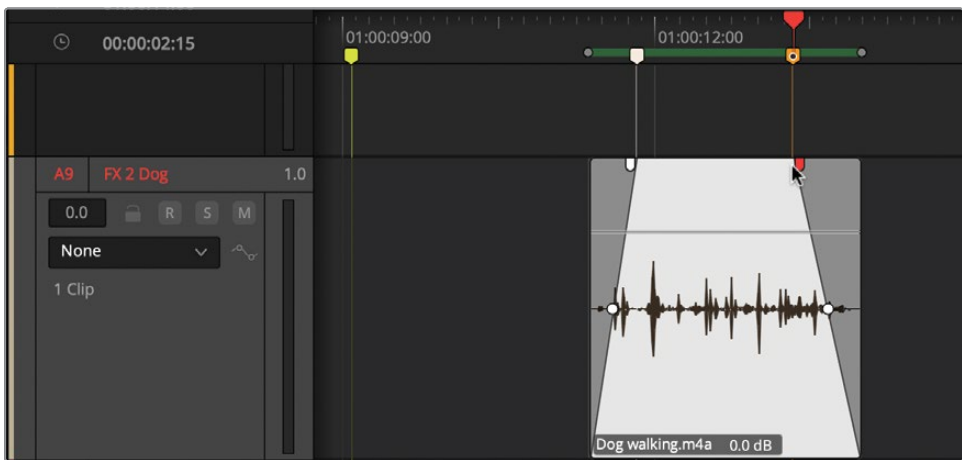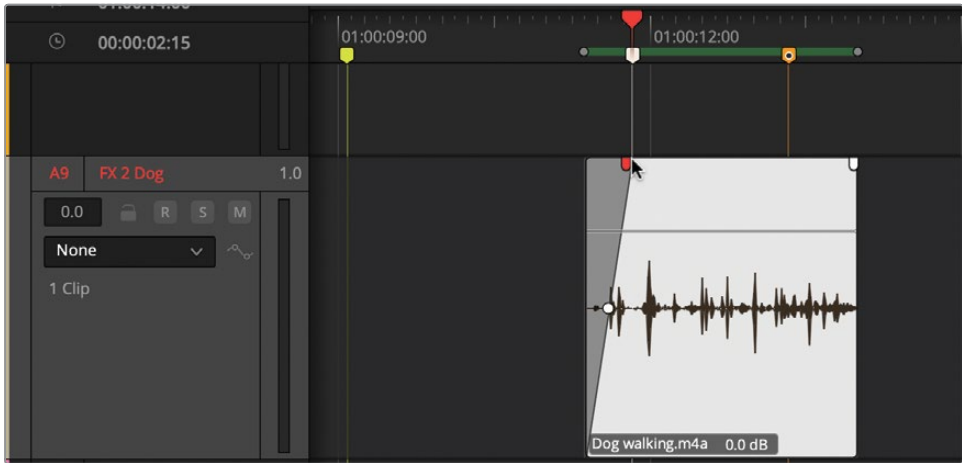
7 Click any empty space to clear the range. Zoom the timeline as needed until you can see all the tracks and clips in the visible timeline area.

8 Play the timeline from the beginning and listen to how the dog-walking sound effect works with the voiceover. It should sound great.

Feel free to make any adjustments to the clip before moving on to the next section, where you'll use a different technique to edit and align the next two sound effects.

Using Multi-Tool Snapping to Head or Tail

There are many methods for adding and syncing sound effects. In the previous exercises, you added an entire clip to the timeline, trimmed the clip, and then moved it into position. In this exercise, you'll preload sound effects tracks with clips that have already been marked with In and Out points. This method works if you know which sound effects you want to use in each track. You'll start by marking sections of source clips you want to use in the media pool and dragging the clips to a random area of the tracks, such as the beginning. When you're ready to place the sound effect, you'll use a modified click to instantly snap the clip into position. This handy editing snap-to-playhead feature requires the Focus mode multi-tool. In this exercise, you'll preload three tracks with sound effects. Then, you'll use markers to navigate to the location where you want the clips and move them into position with a single modified click.

> **NOTE** When snapping to the head or tail of a clip, only one clip can be snapped at a time. Clips can only snap within their own track, and Range/clip selections (head) count as snap targets.

1   In the media pool, select the Basic Sounds for PPN Intro bin. Select the **Running** clip.

    As you can see, the clip already has In and Out points marked.

2   In the preview player, click the Loop button to turn on looped playback. Click the preview player Play button to play the marked section of the clip.
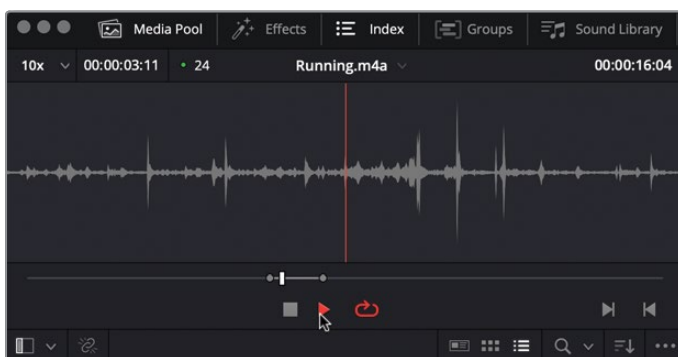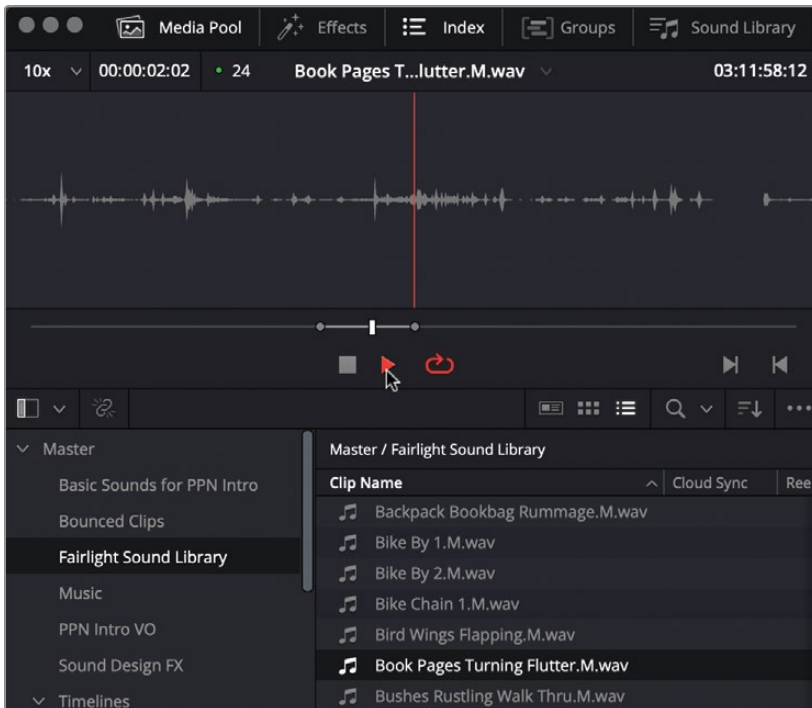

3   Drag the **Running** clip to the beginning of the A12 FX 6 Runner track.

4   In the media pool, select and play the **Camera Click fx v3** clip. Drag the clip to the beginning of the A13 FX 5 Camera track.
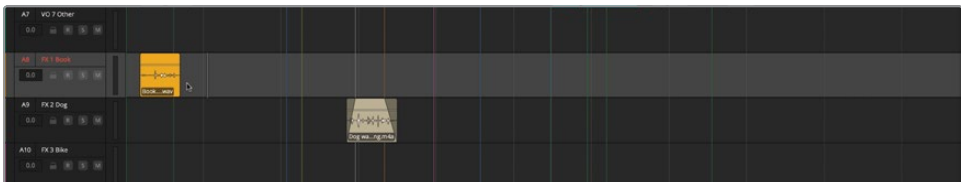
5   In the media pool, select the Fairlight Sound Library bin to see a sample of sound effects that come with the Fairlight Sound Library.

You'll work with the Fairlight Sound Library later in this lesson.

6   Select and play the **Book Pages Turning Flutter** clip.

7   Drag the **Book Pages Turning Flutter** clip to the beginning of the A8 FX 1 Book track.


The clips have been added to the timeline. Next, you'll use a modified click to move the book and runner effects into position. Let's start with the book clip. You can use the Markers index or Shift-Up/Down arrow to move the playhead to the corresponding marker in the timeline. Then, you'll snap the head of the book clip to the playhead.

**8**   Ensure you're in Focus mode.

9   Select the A8 track.

Selecting the track isn't necessary, but it allows you to see the I-beam cursor in the track.

10 In the Markers index, select the Book marker.

11 Hold Option-Command (macOS) or Alt-Ctrl (Windows) and click the yellow clip in the A8 track.
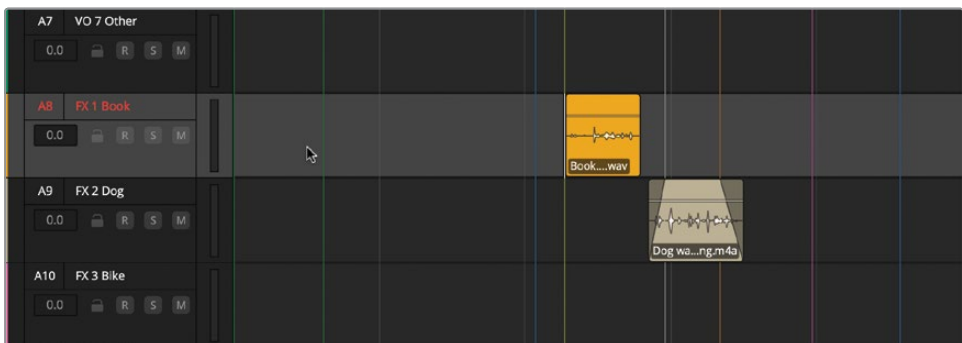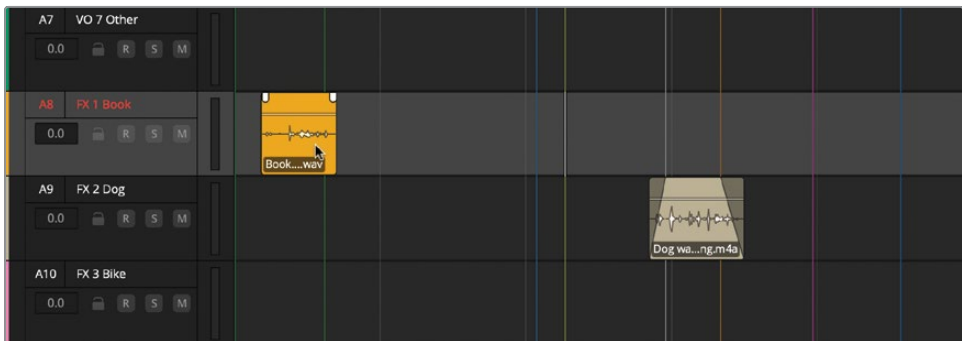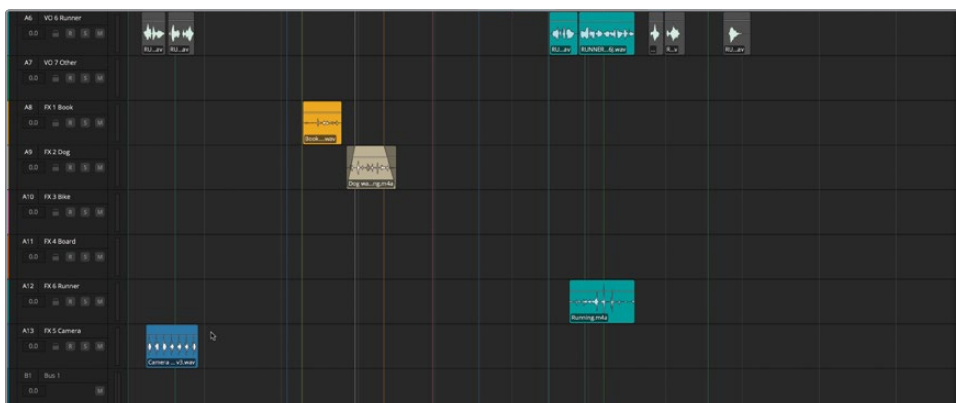

The clip snaps to position, with the head perfectly aligned with the playhead. Let's do it again. This time, you'll snap the tail of the runner clip, and you won't select the track first.

12 In the timeline ruler, scrub the playhead near the end of the second teal RUNNER_007 clip to set the playhead at the end of the clip (approximately 01:00:26:09).
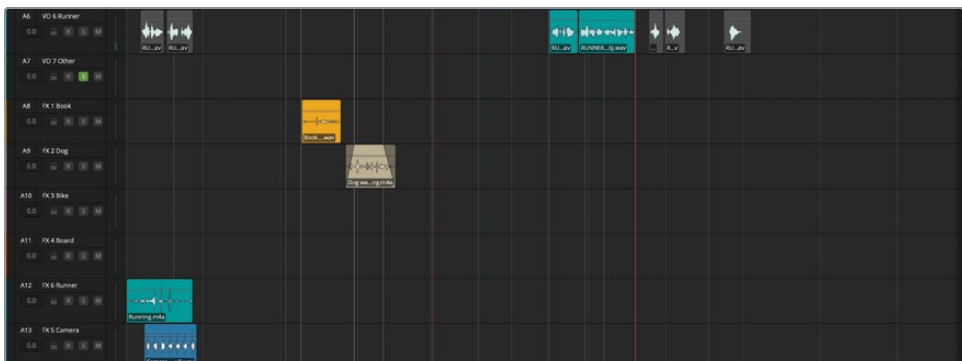
13 Hold Command-Option-Control (macOS) or Command-Alt-Ctrl (Windows) and click the teal clip in the A12 track.

The clip snaps into position with the tail of the clip aligned with the playhead position in the ruler. Let's snap the tail of the camera clip to the Runner marker so it ends just as the runner clip begins.

14 Move the playhead to the teal Runner marker.

15 Hold Command-Option-Control (macOS) or Command-Alt-Ctrl (Windows) and click the blue clip in the A13 track.
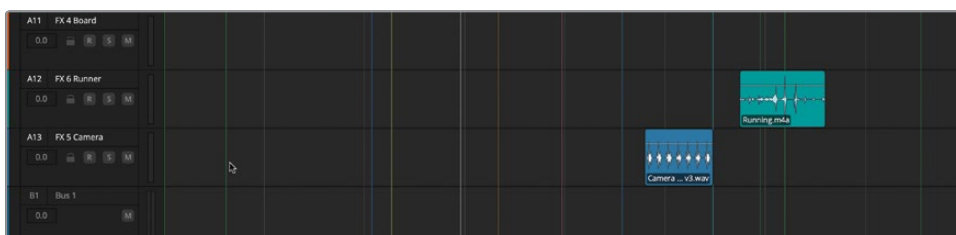

The tail of the blue clip aligns with the teal Runner marker.

**16** Play the timeline from the beginning to hear your progress.

What a difference a few sound effects can make, especially in an audio-only project like this podcast intro, where the entire audience experience is based on sound. You probably noticed that the runner sound effect starts a little late and there are far too many camera clicks. Let's take a moment to extend the Running clip and fix the camera clicks.

The Focus mode multi-tool can also be used to trim clips and adjust the clip gain levels, just as you can with the Arrow and Range tools. The Fairlight page includes helpful visual guides you can use as you trim and fade clips in Focus mode—for example, the timecode field updates as you resize a clip, and the playhead in the ruler moves along with your trims and fades.

17 In the A12 track, drag the left edge of the Running clip toward the left about 2 seconds until it starts at 01:00:20:20. Use the timecode field as a guide while you extend the beginning of the clip.
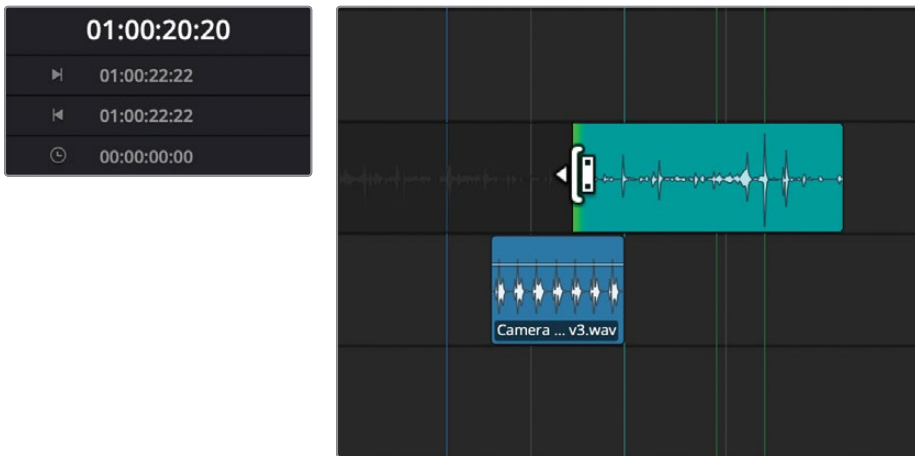
18 Drag the Fade handle at the beginning of the Runner clip to the teal runner marker to create a 1-second fade-in. Use the playhead in the ruler as a guide while you drag the fade handle to see when it reaches the teal marker.
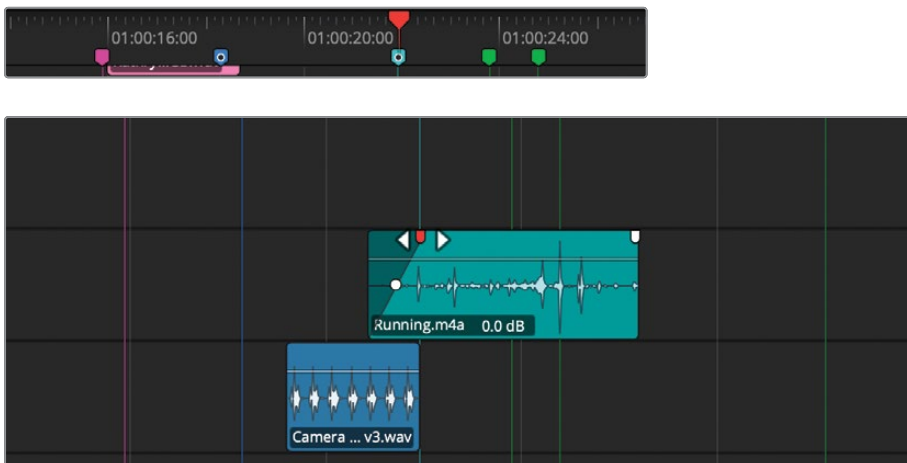

Excellent. Now that you have some hands-on experience with the Focus mode multi-tool, let's explore a new feature that is perfect for splitting up the camera-clicks clip.

> **NOTE** If you did not complete the previous sound effects editing exercises, you can open the timeline **3a Intro Combo 3 fx added** to catch up. This timeline is in the media pool in the Timelines > Lesson 3 bin.

Using Transients to Split Clips Quickly

Transients are the abrupt changes in a waveform that let you quickly see where sounds begin. DaVinci Resolve includes transient detection, so you can easily split clips into smaller segments based on transients. In this exercise, you'll combine transients, the multi-tool, and keyboard shortcuts to trim and dice up the camera clip on the A13 track into separate audible clicks.

1   Solo the A13 FX 5 Camera track.

2   Zoom and scroll as much as necessary to clearly see the Camera clip and its waveform in the timeline.
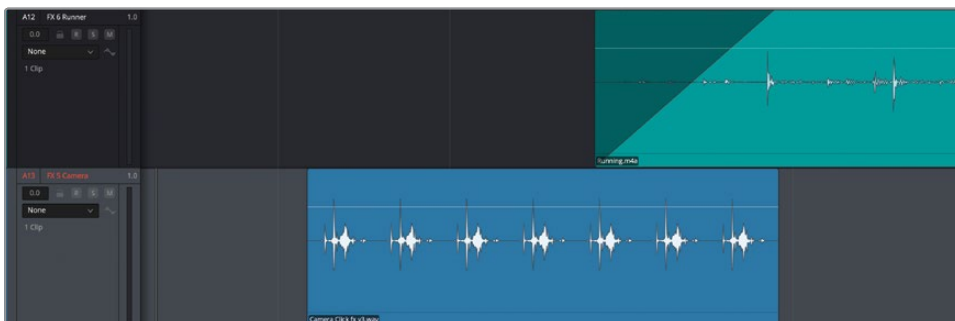

3   In the A13 track, trim the head and tail of the Camera Click fx v3 clip to remove the first and last click sound.

When finished, there should still be five camera click sounds.

Next, let's check the "Jump to" navigation options in the Timeline View Options menu.

4   In the Timeline View Options menu, deselect all the Navigation options except Jump to Clip and Jump to Transient.
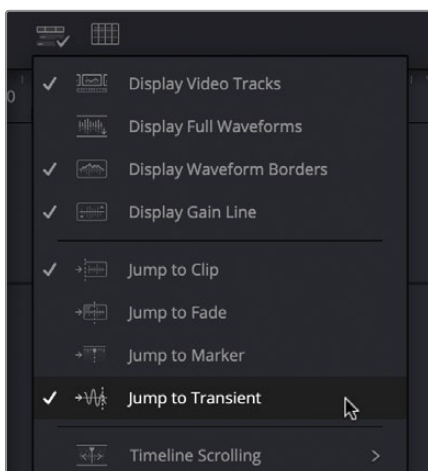
With the Jump to Transient option enabled, you can use the Up and Down Arrow keys to navigate to transients within the clip.

5   In the Timeline toolbar, to the left of the Vertical Zoom controls, click the Transient Detection button to turn it on.

Once Transient Detection is active, a Transient Detection icon will appear on each track header. This icon allows you to choose which tracks will detect and display transients.

6   In the A13 track header, click the Transient Detection button to display the transients within that track.


The thin vertical lines within the clip are the detected transients. Notice that there is a transient before each camera-click sound. You can now use these transients to navigate to and split the clip into individual clicks.

> **TIP** Jump to Clips, Markers, Fades, and Transients looks at all the visible timeline clips and tracks for navigation with the Up Arrow and Down Arrow keys. To focus on a single track or specific tracks, you can simply hide all other tracks in the Tracks index while you work.

7   In the Index, click the Tracks button to switch from the Markers index to the Tracks index.

8 Swipe off visibility (the eye icon) for tracks A1 through A12 so that only the A13 track is visible.
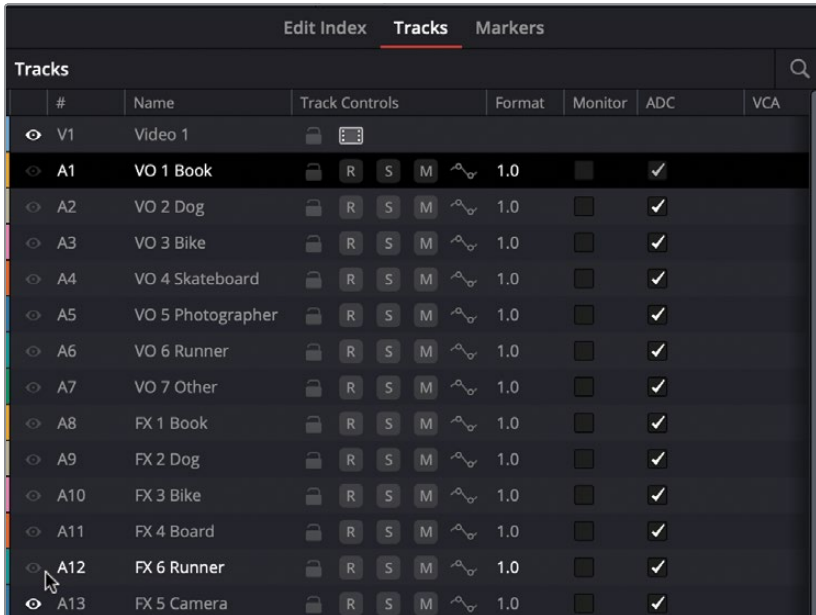
9 Select the A13 track header and move the playhead to the beginning of the track. Press the Down Arrow to jump the playhead to the beginning of the first clip in that track.

10 Press the Down Arrow again to move to the first transient before the first click sound. Press the Down Arrow again to move to the second transient, which is before the second camera sound.
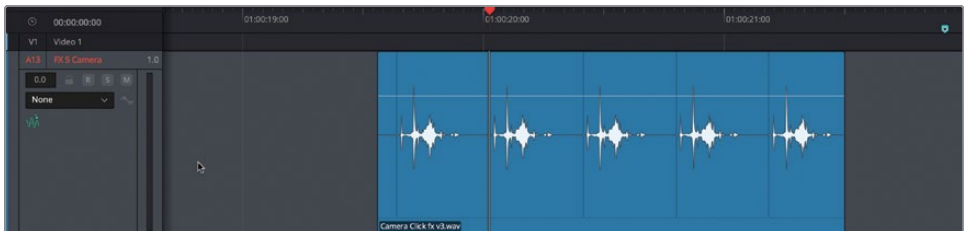
NOTE Another advantage of hiding the other tracks is that the only clips you will split are those showing in the timeline. Normally, if no tracks or clips are selected, all visible clips beneath the playhead will be split when using the Split or Razor shortcuts.

11 Press Command-B (macOS) or Ctrl-B (Windows) to split the clip at the playhead position, which is also the second transient.

12 Press the Down Arrow to move to the next transient and split the clip. Repeat this step until each marked transient in the clip has been split. When you are finished, there should be five clips in the A13 track.

13 Select and delete the first and third clips in the A13 track. Now, there are three independent camera clicks.

Working with transients can be helpful in splitting clips into smaller segments. With the sounds split into smaller clips, you can then arrange them as needed in the track. Transients are also useful for detecting beats in music and words and phrases in dialogue. You are finished using transient detection for now.

14 In the Timeline toolbar, click the Transient Detection button to disable that option in the timeline.

15 Unsolo the A13 track.

16 In the Tracks index, swipe on track visibility for the A1-A12 tracks.

17 In the Timeline View Options menu, disable Jump to Transient. If necessary, enable Jump to Clip.

18 Zoom to see all the clips and tracks in the timeline again.

19 Play the timeline starting at the pink Bike marker to hear the edited camera sound in context.

Great job! Just one more thing. The extended runner clip sounds so good, let's do the same thing at the end of the clip.

20 Extend the end of the Running clip in the A13 track by about 1 second and add a fade-out.

Mission accomplished! The sound effects are working great, and your clients are happy and eager for you to finish the soundtrack. In the next exercise, you'll work with the Fairlight Sound Library, where you can search for and audition sound effects to use in your project.

Working with the Sound Library

Many editors and audio professionals have vast libraries of project-ready sound effects and music, often stored on servers or separate hard drives. You can access your own sound collections in the Fairlight page within the Sound Library panel. The Sound Library hosts a user-defined collection of sounds that reside elsewhere on your system and are indexed to be searched, marked, and edited to the timeline, just like clips in the media pool. Additionally, Sound Library files can be auditioned or marked with a sync point that aligns with the timeline playhead. Sound library files are only added to the project media pool when confirmed in the timeline.

> **NOTE** This exercise assumes that you have followed along with the "Getting Started" section of this book to download and install the Fairlight Sound Library on your system. The Fairlight Sound Library includes over 500 royalty-free Foley sound effects you can use in your projects.

In this exercise, you'll continue adding sound effects to the current timeline. This time, instead of working with clips from the media pool, you'll use clips from the Fairlight Sound Library. For this example, you'll use the sounds installed with the Fairlight Sound library to search for and edit three different sound effects to be added for the camera bag, bike, and skateboard. Let's start with the camera bag.

1   In the interface toolbar, click the Sound Library button to show the Sound Library.

2   Click the Project Library button to the right of the search field to show the Project Library menu. In the Project Library dropdown menu, choose Fairlight Sound Library.
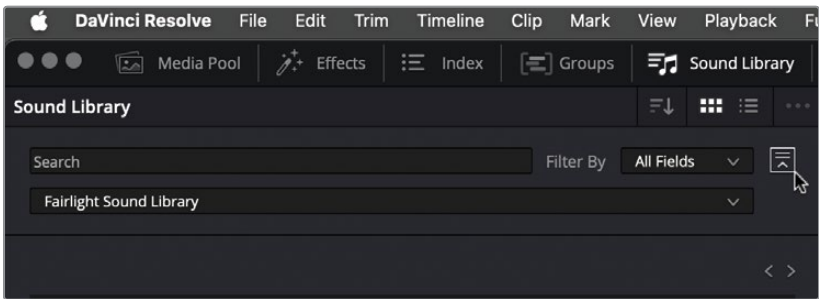
Now, you can find a sound effect to audition in the Sound Library. Let's start with the sound of a backpack representing the camera bag when the photographer says, "I grabbed my camera, and I was taking pictures."

3   In the Sound Library search field, type **backpack**.
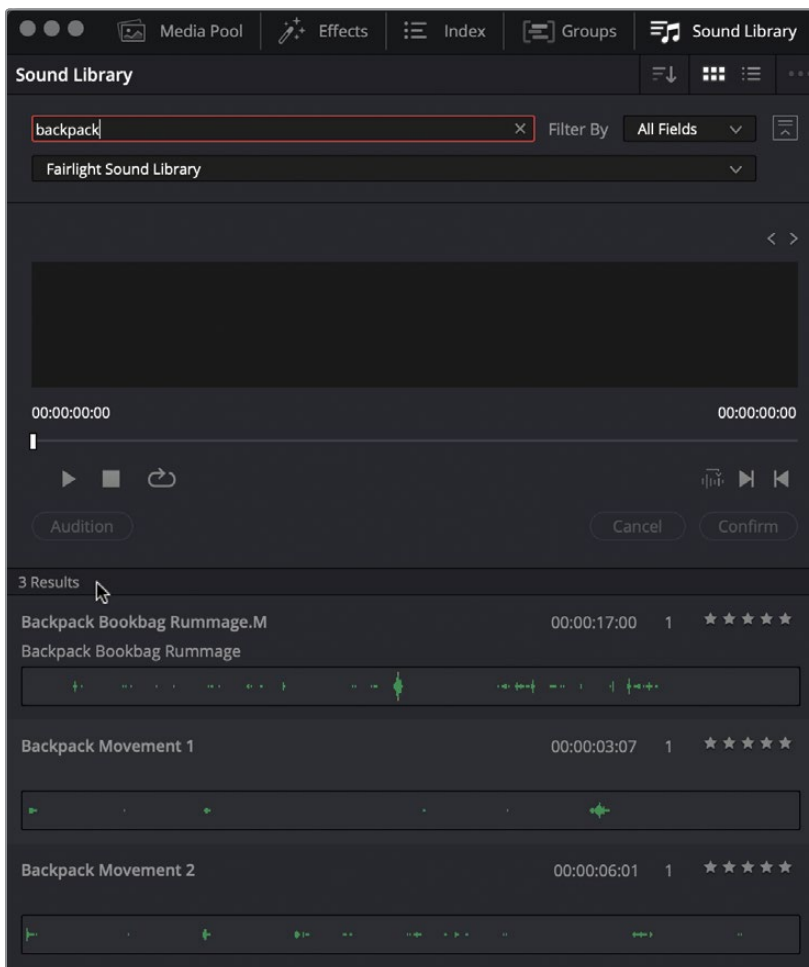
There are three results listed.

4 Select each sound, one at a time, and play it in the Sound Library preview player.

Any of the sounds could work. For this exercise, the Backpack Movement 2 clip should work nicely.

5 Select the **Backpack Movement 2** clip in the list and play it again.
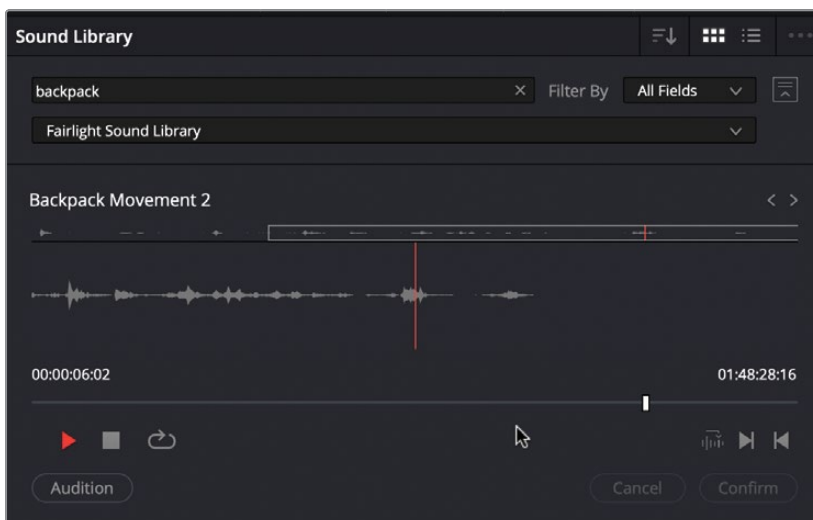
There is a lot of bag movement in this clip, and you're looking for something that could sound like someone quickly grabbing a camera bag. Keep in mind that you only need about 1 second of sound. The end of the clip seems promising. Let's mark the last second and a half of the clip.

6 Using the source timecode in the lower right corner of the preview player as a guide, move the playhead to 01:48:28:06, which is about a second and a half from the end of the clip. Mark an In point. The duration to the end of the clip should be around 01:16.
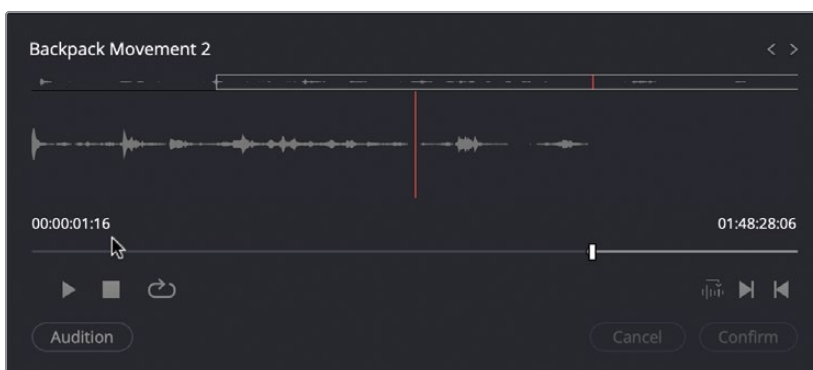
7 Play the marked section of the clip.

It's perfect! You can add a sound to the timeline from the Sound Library just as you do a source clip in the media pool.

8 Zoom the A13 track and clips as needed for a clear view of the track and clips.

> **NOTE** From this point forward, feel free to zoom in as needed while you work. Zoom instructions will only be given when necessary for a specific exercise.

9 Drag the **Backpack Movement 2** clip from the waveform in the preview player to the A13 FX 5 Camera track. Once in the track, move the new clip so it starts before the camera clicks.
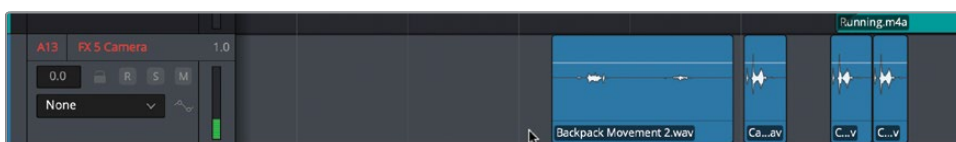
10 Play the timeline from the pink marker again.

The new clip works but has two movement sounds. Let's trim off the second waveform at the end of the clip and move the remaining clip to the right, closer to the camera clicks.

11 Trim the tail of the backpack sound to remove the second waveform. Then select the clip and nudge it toward the right about 10 frames.

12 Play that section of the timeline again.

Auditioning Sound Effects in the Timeline

One of the great things about working with the Sound Library is that you can access thousands of sounds in multiple libraries and audition them directly in the timeline, thereby hearing them in the context of the other tracks without committing to their use until you are sure they work. All you need to do is select a track and move the playhead to the position where you want the sound to start.

In the following exercise, you'll audition bike sounds in the A10 track to choose which you want to commit to using. To keep the process simple, the Fairlight Sound library includes an Audition button to temporarily place a clip into the selected track in the timeline and a set of buttons to cancel or commit, all without the need to drag and drop the clip.

1   In the timeline, select the A10 FX 3 Bike track.

2   Press Shift-Up Arrow or Shift-Down Arrow to move the playhead to the pink
Bike marker.

Before auditioning sound effects, it's a good idea to turn on the Stop and Go to Last
Position option so you can continue to play back each clip you audition without
needing to move the playhead into position each time.

3   Choose Playback > Stop and Go to Last Position.

> **NOTE** You can right-click the Stop button in the transport controls in both the
> Sound Library and timeline to enable or disable the Stop and Go to Last
> Position option.

4   In the Sound Library search field, type **bike**.

The search results include a list of seven clips ranging from **Bike Bells 1** to
Bike Chain 2.

5   Listen to the first three clips in the list; each is a different recording of bike bells.
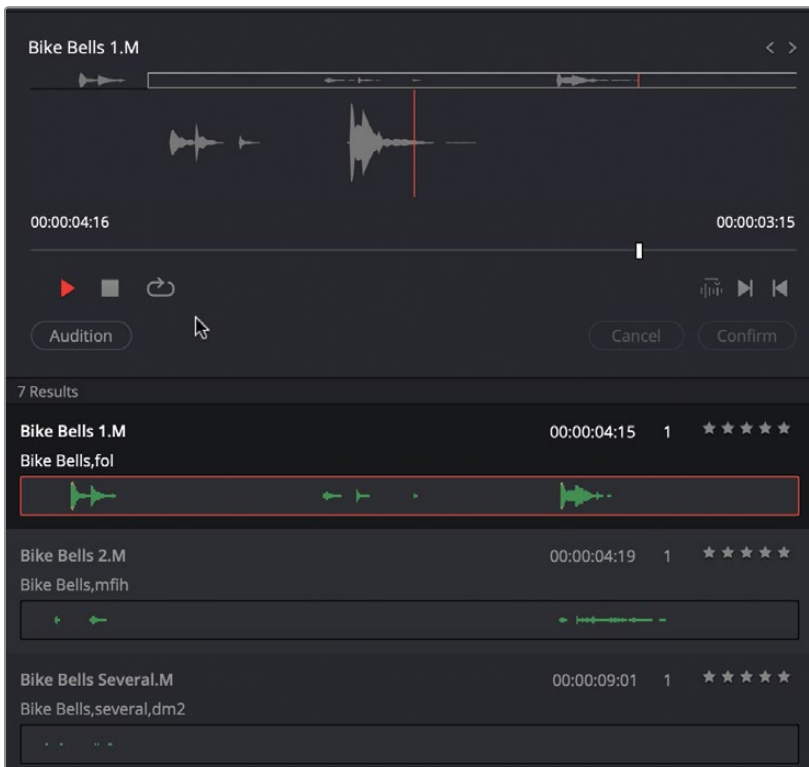
Thoughts? You could try using bells for the scene. However, the character is a college student on her way to class. My guess is that she is running late for class on a fast bike with no bell. Let's keep looking.

Now that you've heard the bike bell sound effects, let's listen to the last four sounds, which focus more on bikes in motion.

6   In the Sound Library, select **Bike By 1** and preview the clip.

Now, this sounds like someone on a bike hurrying to get somewhere. Let's audition the clip in the timeline. To audition a clip, you need to select the track where you want the clip and move the playhead to the point where you want the clip to start.

7   Select the A10 FX 3 Bike track. Then move the playhead to the pink Bike marker.

8   In the Sound Library, click the Audition button.
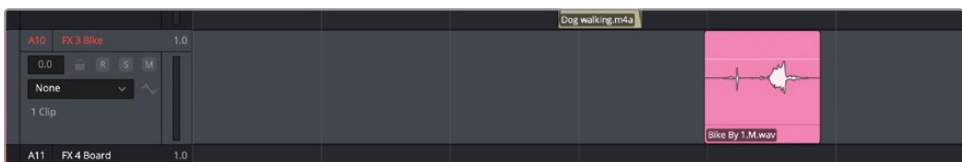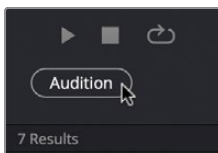
The sound effect appears in the timeline, ready to play.

9   Choose Workspace > Active Panel > Timeline or press Command-4 (macOS) or Ctrl-4 (Windows) to change the focus from the Sound Library to the Timeline.

10 Press the Spacebar to start playback in the timeline from the pink marker.

The sound effect works well and complements the VO 3 Bike voiceover. Let's audition the **Bike By 2** sound effect.

> **NOTE** Clicking the Cancel button removes the previous sound effect and allows you to audition another audio clip in the same place. You can also cancel the audition by selecting a different sound in the Sound Library.

11 In the Sound Library, select **Bike By 2** in the results list.

The previous clip that you auditioned disappears from the timeline.

12 Click the Audition button. Then, select the timeline and play the clip to hear it in context with the voiceover.

The second bike sound is good, but the first is better.

13 Audition the other two bike sounds and choose a favorite for the timeline. If you can't decide, select **Bike By 1**. Click Audition to place one of the bike sounds in the timeline. Then, click Confirm to add the clip to the media pool and timeline as a source clip.
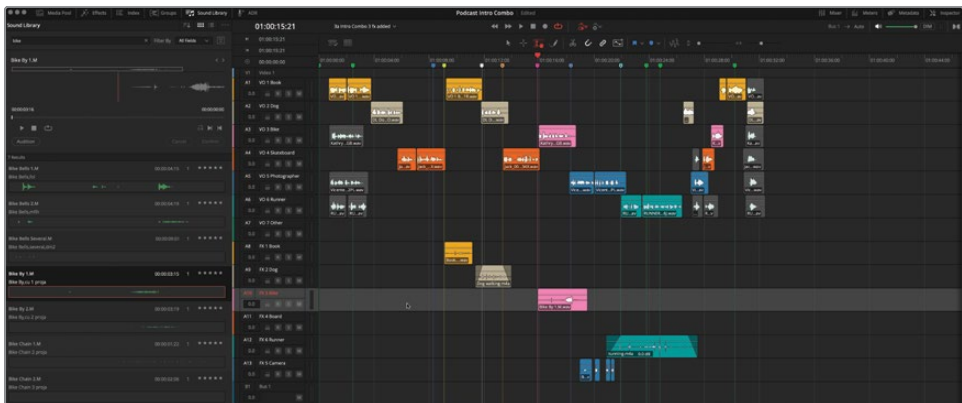
Success! Two sound effects are done, and one to go. At this rate, you'll be done with this assignment before your clients arrive with their next big idea.

Audition and Confirm the Skateboard SFX

Now that you are familiar with the search, audition, and confirm functions in the Sound Library, it's your turn to fill in a skateboard sound on the A11 track at the orange Skateboard marker (01:00:13:08). Your mission, if you choose to accept it, is to search for Skateboard sound effects, audition the available sounds, and choose a favorite to confirm in the timeline. Good luck!

Playing the Podcast Intro with Sound Effects

Before moving on to the next section, where you'll use tools to sync sound effects to pictures, let's take a moment to listen to a version of the PPN Podcast Intro Combo with all the sound effect tracks. You will work with this project again in Lesson 5 to balance and pan the tracks. For now, you'll open a version of the timeline with all the sound effects in place.

1   Show the media pool.

2   Open the timeline **3b Intro Combo FX added**.

   The timeline opens with 21 tracks. The lower tracks are all muted. These tracks have been in the timeline you have been working with all along; they were just muted and hidden in the Tracks index.

   You can use the "Apply to all" modified click to quickly unmute all the tracks. Holding Command-Option (macOS) or Ctrl-Alt (Windows) while clicking the Mute button to unmute a track will unmute all tracks in the timeline. Let's try it.

3   Hold Command-Option (macOS) or Ctrl-Alt (Windows) and click a red Mute button on one of the muted tracks.

   All the tracks should now be unmuted. The "Apply to all" modified click can be used for many purposes while you work, and you'll have the opportunity to use it again in later lessons.

4   Play the timeline from the beginning to hear the full, unmixed podcast combo intro with the sound effects, dragons and all.
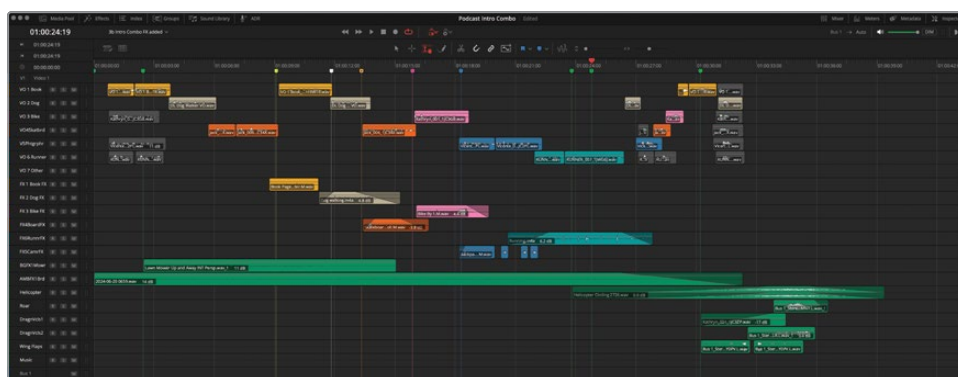
Although unmixed, the intro shows promise for an exciting narrative podcast series. You'll return to this project at the end of the lesson to add music. For now, it's time to move on to the TML Project.

Preparing the TML Project

Time to reopen the *Too Much Life* project you worked on in Lesson 2. Let's take a minute for some minor Fairlight housekeeping to prepare the timeline for the next set of exercises.

1   Choose Playback > Stop and Go to Last Position or right-click the Stop button in the transport controls to turn off that option.

2   Choose File > Open Recent Project and choose your TML Audio Post project from the list. If the project is not in the Recent Projects list, go to the Project Manager to open the project.

3   In the media pool Lesson 3 bin, open the timeline **3 Sync Sound to Picture**.

4   Show the meters. In the viewer, click the Floating Window button or choose Workspace > Fairlight Viewer > Floating.

5   Hide the meters and hide the media pool.

6   Show the Sound Library. Clear the search field.

7   In the Sound Library search field, type **wood door**.

There are two results. You'll work with these in the next exercise.

8   Resize the floating viewer so you can clearly see the picture and place it in the lower right corner of the screen.
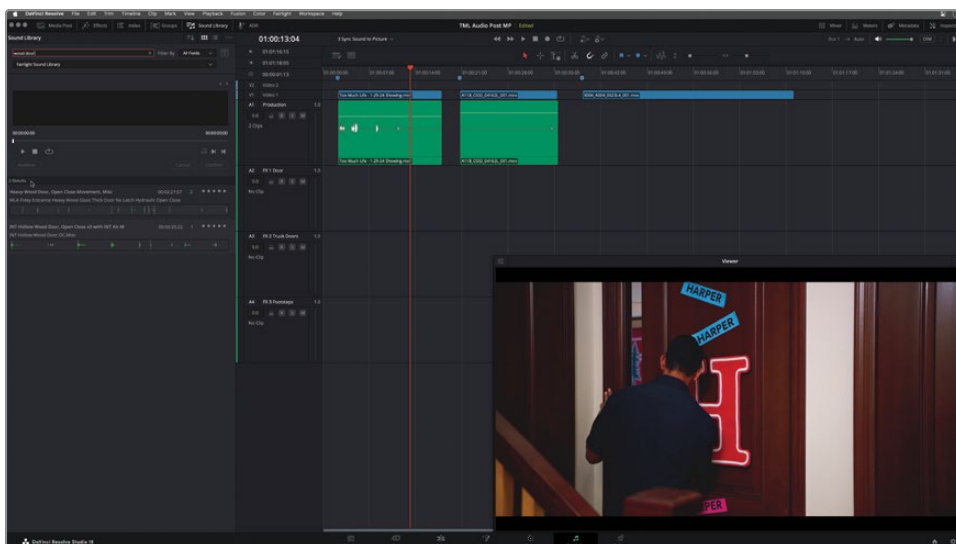
> **NOTE** Feel free to move and resize the floating viewer as needed while you work on the remaining exercises.

Using a Sync Point in the Sound Library

One of the daily challenges for sound designers and the sound effects editors on their team is to sync audio clips to video cues precisely. In this exercise, you'll use the Sound Library to search for and audition sound effects. This time, instead of dropping a clip in the timeline based on the In point, you'll use a sync point. A *sync point* is a specific frame on the sound effect that aligns with the timeline playhead when you click the Audition button.

The 3 Sync Sound to Picture timeline includes three different clips featuring doors. The first two clips are of a wooden bedroom door. The third clip includes a truck with doors that are opened and closed throughout the scene.

1 In the timeline, play the first clip.
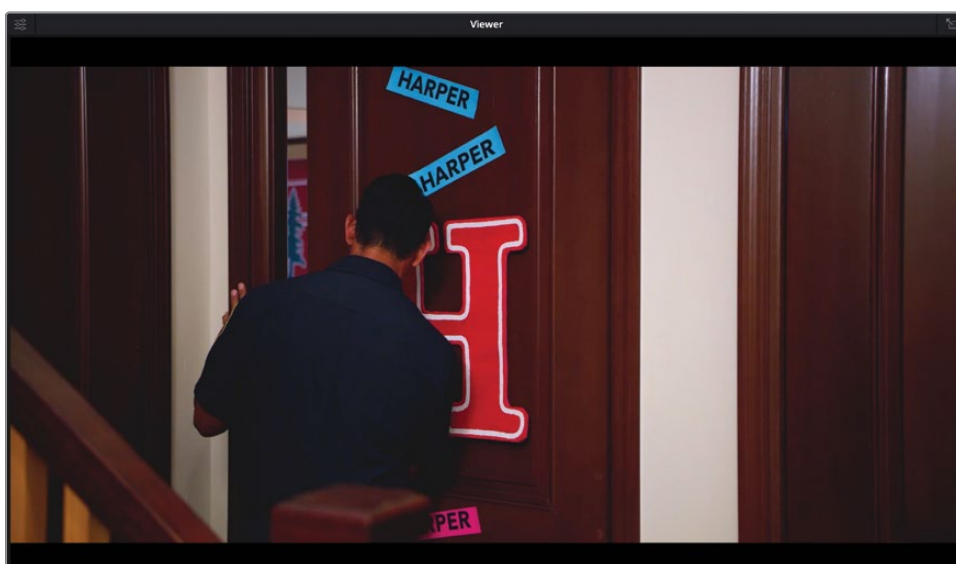
As you can see, Harper's dad knocks on the door and then opens the door from the hallway. The scene cuts to a matched action angle from inside the room to complete the action of the door opening into the room.

Your goal is to set the playhead on the frame where the door starts to open, and then set a sync point on a door-opening sound effect at the peak of the door opening waveform.

2 In the Sound Library, preview each wood door sound in the list.

In both clips, you can hear multiple versions of wooden doors opening and closing. For this example, the **INT Hollow Wood Door** sound effect should work well with the door onscreen.

Let's set the sync point on the first instance of the door opening. The sync point will be the loudest peak in the door-opening waveform at the beginning of the clip. First, you'll mark In and Out points at the beginning and end of the effect. Then, set a sync point on the frame you want to align to the playhead in the timeline. To set a sync point at the playhead position, click the Sync Point button to the left of the Mark In and Mark Out buttons in the Sound Library preview player.

> **NOTE** It is not necessary to mark an In and Out point on a sound to set a sync point. The advantage of marking an In and Out point is to limit the duration of the clip that is added to the timeline. You can always trim a clip after it has been added to the timeline.

3 Select the **INT Hollow Wood Door** sound in the list.

4 In the Sound Library preview player, move the playhead to the beginning of the clip and mark an In point. Move the playhead to the end of the first instance of the door opening and squeaky hinge and mark an Out point (00:00:04:12).
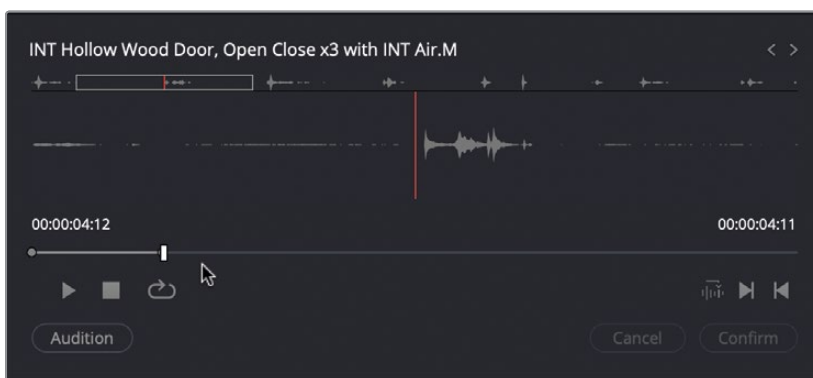
To view a different area of the waveform in the preview player, you can click the horizontal waveform mini map above the preview player. Let's try it.

5 Locate the rectangle in the waveform mini map above the preview player. Click the beginning of the waveform in the map to jump the rectangle and waveform view in the preview player to the beginning of the audio file's waveform.
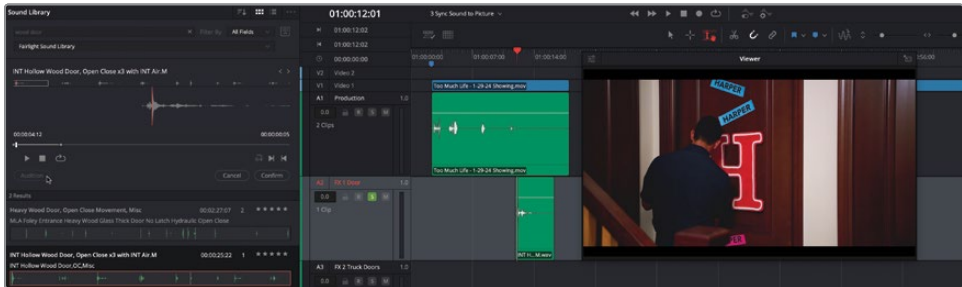

6 Move the playhead to the loudest peak in the first instance of the door opening sound (00:00:00:05). Click the Sync Point button.
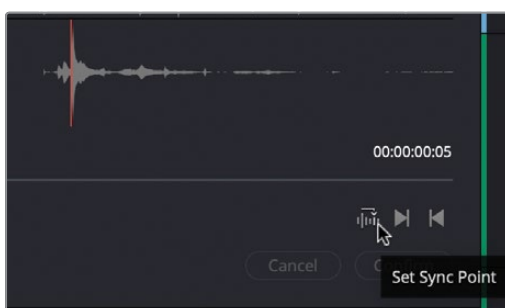
The audio sync point is the loudest peak of the door opening. In other words, it's in the process of opening, not before it opens. So you'll use the same logic in finding a sync frame in the viewer. You will look for the slightest crack of the door opening and sync to that. Remember that you can always nudge the sound effect later if needed.

7 In the timeline, move the playhead to the first frame where you see a crack of light in the door where it starts to open, then back up by one frame (01:00:12:01).

8 Select the A2 FX 1 Door track.

9 In the Sound Library, click Audition.

The clip appears in the A2 track with the playhead aligned to the highest peak in the waveform. Let's solo the A2 track and play back the video at full screen to check the sync.

10 Solo the A2 track. Then, move the playhead to the blue marker at the beginning of the video clip.

11 Choose Workspace > Viewer Mode > Cinema Viewer or press Command-F (macOS) or Ctrl-F (Windows). Play the timeline from the beginning of the video clip.

The sound effect should be in sync with the door opening. After you confirm the clip, feel free to nudge the sound effect a frame or two in either direction to fix the sync if necessary.

12 In the Sound Library, click Confirm.

One door down, one to go. The best way to hone your new skills is to use them, so let's do it again! This time, with less direction.

13 In the timeline, move the playhead to the second blue marker. Play the second video clip to see the door opening.

This time, the door is farther away, so the sound may not be as pronounced. Choose whichever door sound effect you like.

14 In the Sound Library, mark In and Out points around one of the door opening sound instances and set a sync point.

15 Move the playhead to the first frame where you see a crack of light in the door's opening, then back up a frame until the light crack is gone.

16 Audition the sound effect. Play the clip in the timeline and check the sync. Lower the clip gain level on the door sound. Confirm the clip. Nudge if needed.
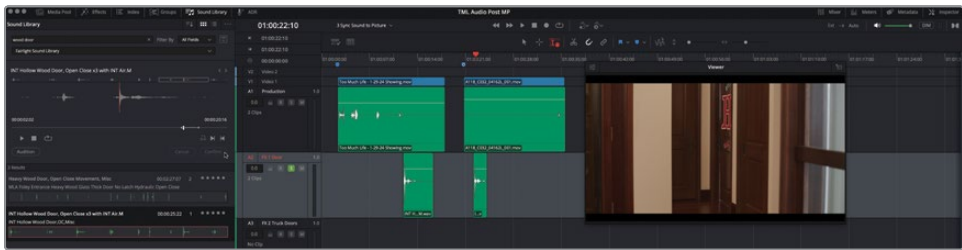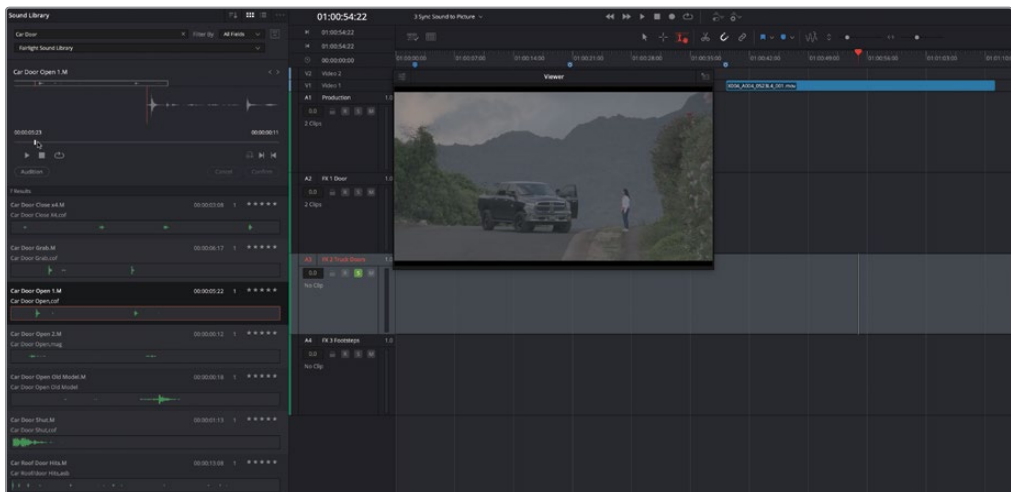

> **TIP** A great way to check the sync on a clip is to scrub the clip in slow motion in reverse using the JKL keys or a jog wheel on a hardware controller.

Well done! You've used the Sound Library to sync sound effects to picture using a sync point.

Sync the Truck Doors

If you are enjoying these exercises and would like to try something more challenging, the third shot includes a truck with doors that open and close during the scene. For this self-guided exercise, you'll solo the A3 FX 2 Truck Doors track and sync car door sound effects to the clip. The Sound Library includes a variety of car door sounds to choose from. If the car door sounds aren't a perfect match, don't worry; you'll learn how to lower pitch and stretch waveforms to modify sound effects in Lesson 7, "Using Fairlight FX and Processing for Creative Sound Design."

Using Video and Audio Scrollers for Precise Synchronization

The Fairlight audio timeline includes a set of scrollers that let you compare a frame-accurate filmstrip of the video track with any track's audio waveform. You'll find the controls to show and hide these scrollers in the Timeline View Options menu. In this exercise, you'll work with a scene from the film *Hyperlight*, where you will combine the scrollers with some skills you already have to sync a sound effect to a picture.

1   Open the timeline **3 HL Pod Sync with scrollers**.

2   Hide all panels except the timeline and floating viewer. Resize the viewer and move it to the upper right of the screen.

3   Play the timeline once from the beginning.

4 Go to the blue marker, just after Emiliana's line "Positive, do it."

Your goal in this exercise is to sync the sound of the pod engines to the visual of the pod engines. Unlike the doors opening and closing, which have an easy-to-identify sync point, the pod engines take four frames to ignite from off to full engine fire.

Whether you are working with single frame sync or a sequence of frames, the video and audio scrollers available only on the Fairlight page are a powerful visual tool for syncing sound effects to picture.

5 Click the timeline options menu to show all the timeline options. Select the Display Video Scroller option.
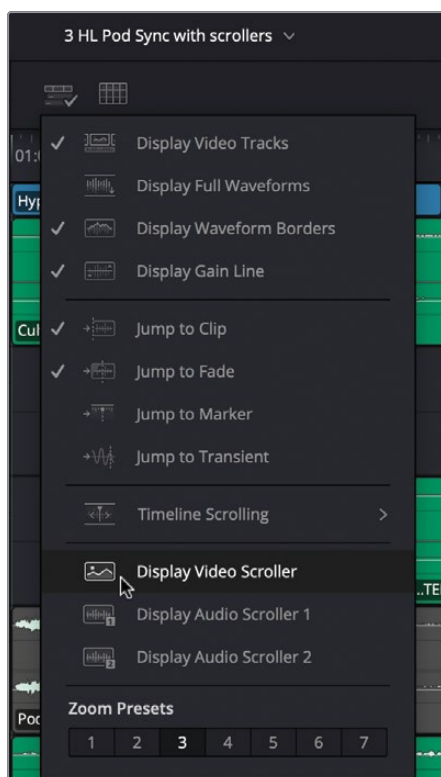
At the bottom of the timeline, you'll see the video scroller. Each filmstrip frame in the video scroller corresponds to a single video frame.

> **NOTE** If you don't see every frame, right-click and change the filmstrip Zoom Level to Low.

The red vertical line on the video scroller represents the timeline playhead.

6   Play the timeline until the space pod engines are fully ignited with blue flames. Stop playback and look at the video scroller.
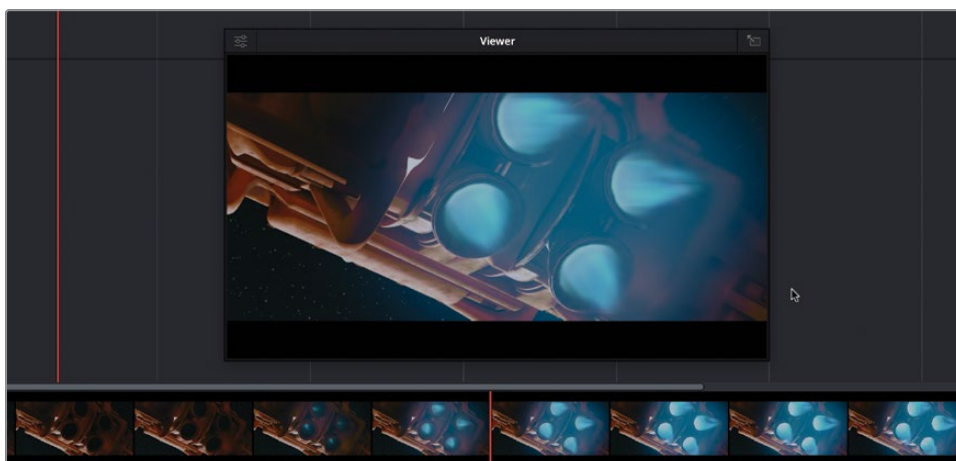
As you can see by looking at the video scroller, this is not actually the first frame of the engine ignition. In fact, depending on your reaction time when you stopped playback, the first frame of ignition may not even be visible in the video scroller filmstrip.

7   If necessary, use the JKL keys to reverse the playback until you can see both the pod engines off and ignited in the filmstrip.

The video scroller can be dragged left or right to move the playhead to the desired position.

8   Drag the video scroller to the right or left until the playhead is on the frame before the engine ignites. Watch the viewer as you drag the scroller to confirm when you are on the correct frame.

You can also click any frame on the filmstrip to jump the playhead to that frame.

9 In the video scroller filmstrip, click a frame where the engine is fully ignited with four blue flames.

Now, you'll return the playhead to the first frame before ignition with a single click.

10 In the video scroller filmstrip, click the last frame before ignition, just before the first sign of blue flame.
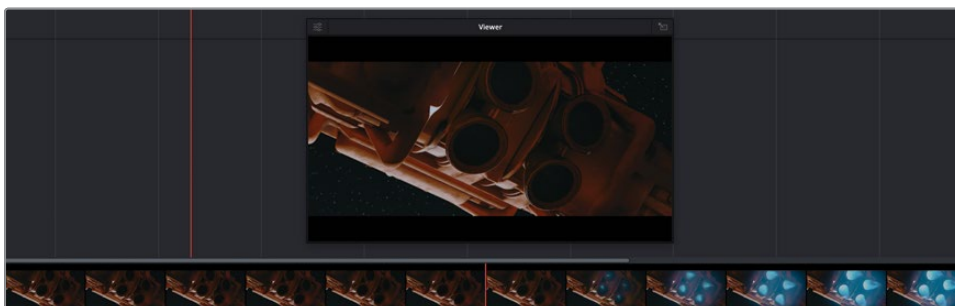
Next, you'll enable the audio scroller so you can see the waveform of the pod jets sound effect in the A4 FX 1 track.

11 In the A4 FX 1 track, select the Pod Jets 2 clip and press D to enable the clip.

This is the sound effect that you will sync to the pod engine ignition.

12 In the Timeline View Options menu, enable the Display Audio Scroller 1 option.

At the bottom of the timeline, you'll see the video scroller and audio scroller 1, which shows the selected track A4 – FX 1.
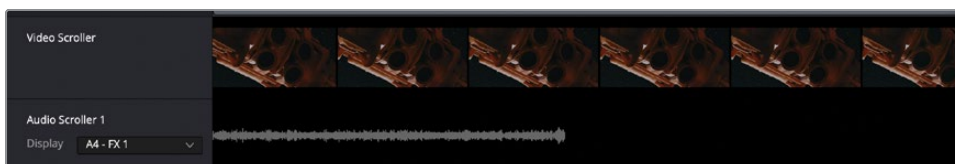
13 If another audio track is showing, click the Audio Scroller 1 Display dropdown menu and choose A4 – FX 1.

14 Solo the A4 track and play the clip from the beginning to hear the sound effect.

Now that you've heard the sound effect, it's time to sync it to the picture. You could nudge or drag the clip into position, but instead, let's use cut and paste to pick up the clip and place it exactly where you want it. This is also a good time to increase the size of the A4 track for a better view of the clip's waveform.

15 Increase the height of the A4 track.

16 Move the playhead to the beginning of the timeline and select the A4 track. If necessary, set the edit selection point at the beginning of the clip in the A4 track.

17 Choose Edit > Cut or press Command-X (macOS) or Ctrl-X (Windows) to cut the clip in the A4 track.

A semitransparent version of the clip remains synced to the playhead until you paste it.
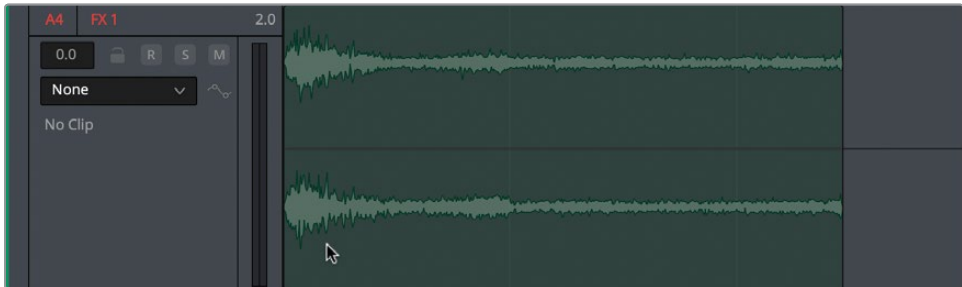
18 Press Shift-Down Arrow to move the playhead and clipboard version of the clip to the blue marker.

19 Start playback and stop as soon as you see blue flames in the filmstrip. Then, click the filmstrip frame before the blue flame first ignites.

20 Choose Edit > Paste or press Command-V (macOS) or Ctrl-V (Windows) to paste the sound effect.
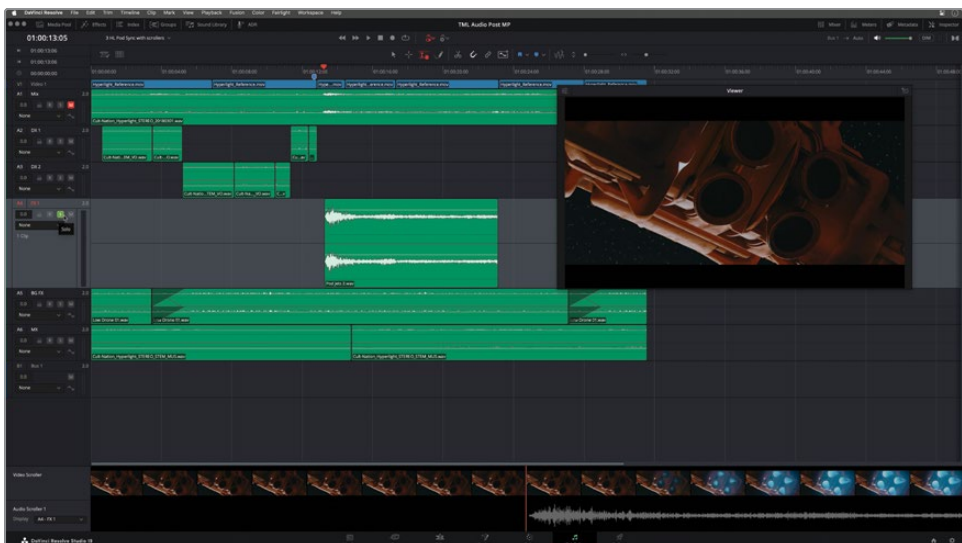
Once the clip is pasted, you can see its waveform in the audio scroller.

21 Click the A4 FX 1 track header to deselect the track.

22 Play the timeline from the blue marker to see and hear the pod engine sound along with the video. Play that section of the timeline forward and backward to check the sync. It should sync perfectly with the video. If not, you can nudge the sound effect as needed until you are satisfied with the result.

23 Unsolo the A4 track and play the entire timeline to see and hear the results.

As you just discovered, the video and audio scrollers are a great way to locate, navigate, and sync audio to video in the Fairlight timeline. In the next section, you'll use the video scroller as a guide for setting markers for a visual effects clip.

Preparing the VFX Project

You are about to embark on a whole new project composed of a VFX clip created in the Fusion page, aptly named Fusion VFX v1. The clip in this project is silent, and you'll add music shortly. Meanwhile, let's take a minute to restore the project archive and save a version with your initials.

1 In the Project Manager, right-click the empty space and choose Restore Project Archive from the shortcut menu. In the Finder, navigate to R19 Fairlight book media > R19 Fairlight Part 2 > Fusion VFX v1.dra.

2 Click Open.
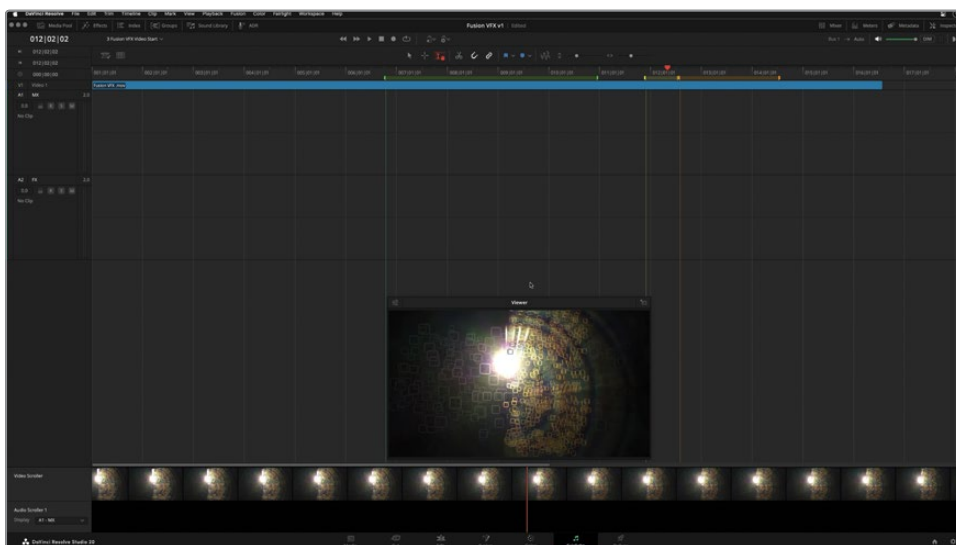
The Fusion VFX v1 project opens with the 3 Fusion VFX Video Start timeline open and the video and audio scrollers still showing. The viewer will be in the same position and size as you had it in the previous exercise.

3   In the Timeline View Options menu, uncheck the Display Audio Scroller 1 option to hide the audio scroller.

4   Choose File > Save Project As and add your initials to the end of the project name.

5   Click Save.

6   Show the media pool and select the Lesson 3 bin to see the timelines for this series of exercises.
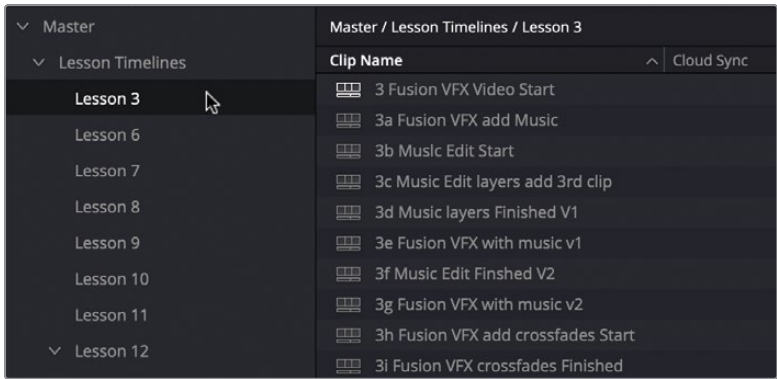
Here you'll see three sets of Start and Finished timelines as well as backup timelines if needed along the way.

7   Hide the media pool.

8   Play the 3 Fusion VFX Video Start timeline once from start to finish to see the full VFX clip.

Now that you've seen the clip, let's get busy setting a few markers and adding music to accompany the visuals.

Marking Sound Cues with the Video Scroller

This Fusion VFX video includes a wide range of moving elements in 3D space, offering exciting possibilities for the sound. Currently, the clients are "sure" that they want a music-only soundtrack. So in this lesson, you'll focus on editing the music the clients selected for this video. However, as a sound editor in training, it's a good idea to also mark some prime areas of the video that are perfect for interesting sound design effects. Since you already have the video scroller showing, let's take a minute and add a few markers based on the action on screen.

For this exercise, you'll continue working with the Focus mode multi-tool, which is the only tool that provides live updates in the viewer as you drag an edit selection or range. First, you'll take a look at the current markers in the index, and then set two new duration markers using the Focus mode multi-tool.

1   Show the Markers index.
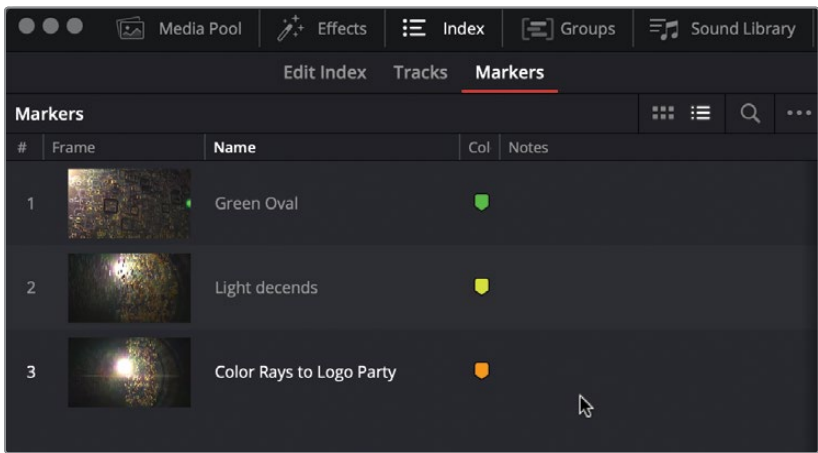
Currently, three markers in the index correspond with the three markers in the timeline.

2   In the index, select the thumbnail frame for the green marker to move the playhead to that position in the timeline.

3   Play the section of the timeline with the green duration marker. Watch the green oval draw in and eventually disappear in the distance onscreen in the viewer and video scroller filmstrip.

Next, you'll use the scroller and multi-tool to locate when the logo flies into frame.

4   Start playback from the beginning and stop when the multi-color DaVinci Resolve logo is visible in the middle of the viewer.
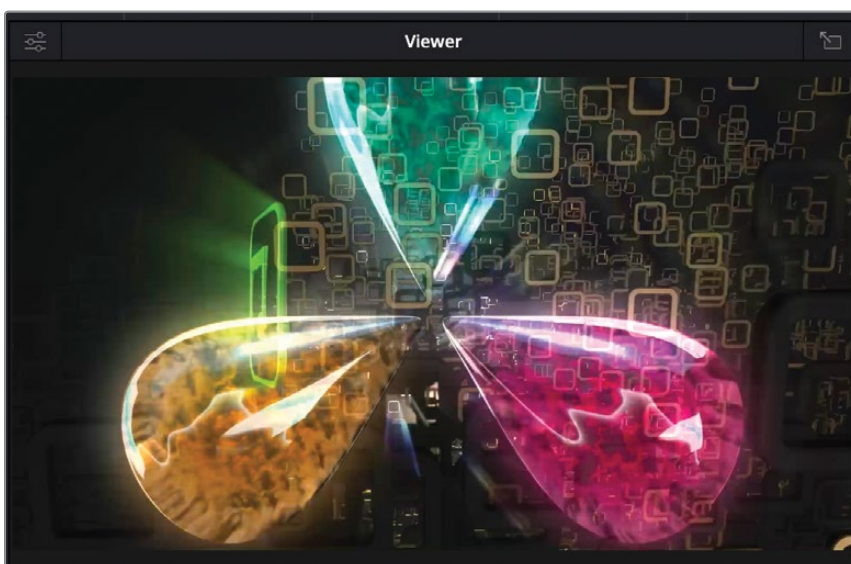
5   Use the JKL keys or Left-Arrow and Right-Arrow to navigate one frame at a time while watching the viewer and video scroller to locate where the logo starts to fly into the picture (approximately 01:00:08:22).

As you draw an edit selection range with the multi-tool, the viewer updates live.

6   In the A1 MX track, drag an edit selection range from left to right, starting just as the logo begins to fly onscreen and ending when the logo fades out (approximately 01:00:08:22 – 01:00:13:18).

> **NOTE** You can hold Shift and drag the edges if needed to resize the selection range.

7 Choose Mark > Convert In and Out to Duration Marker.
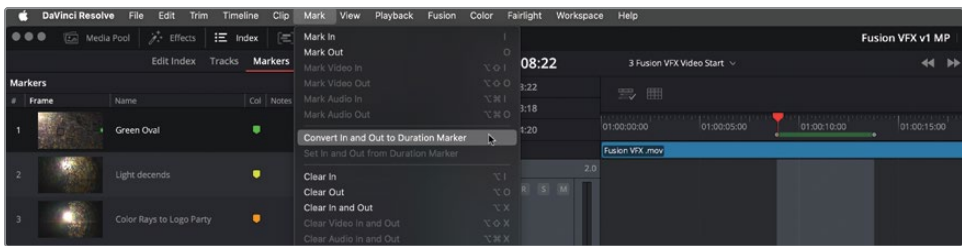
A blue marker appears in the timeline.

8 Double-click the new duration marker to open the Markers dialog and edit the marker as follows:

— Name: Logo Fly In and Glow Out

— Notes: Foreground to Background

— Color: Orange

9 Click Done.
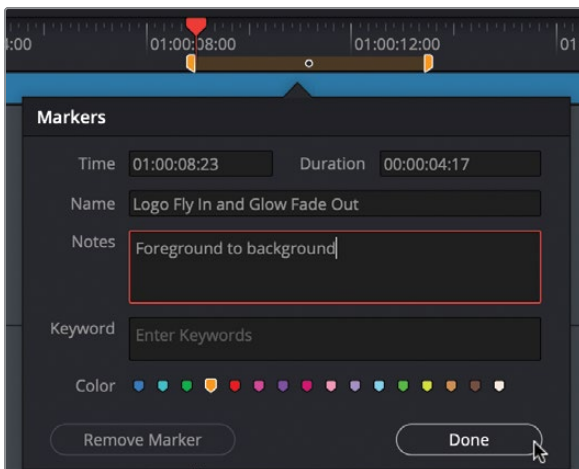
One more marker. This time, you'll drag the selection range from right to left because the end of the marker is also the end of the clip.

10 Move the playhead to the end of the timeline

11 While using the viewer and video scroller as a guide, drag an edit selection from the end of the video clip where the logo disappears offscreen to the point just before the logo starts to move. While watching the viewer, you can drag the beginning of the range back and forth without releasing it until you've found the best starting frame (01:00:53:00–01:00:55:00).

12 Choose Mark > Convert In and Out to Duration Marker. Change the new marker's color to orange.

13 In the Markers index, name the new marker **Logo Fly Out** and type **Center to Foreground** in the Notes field.
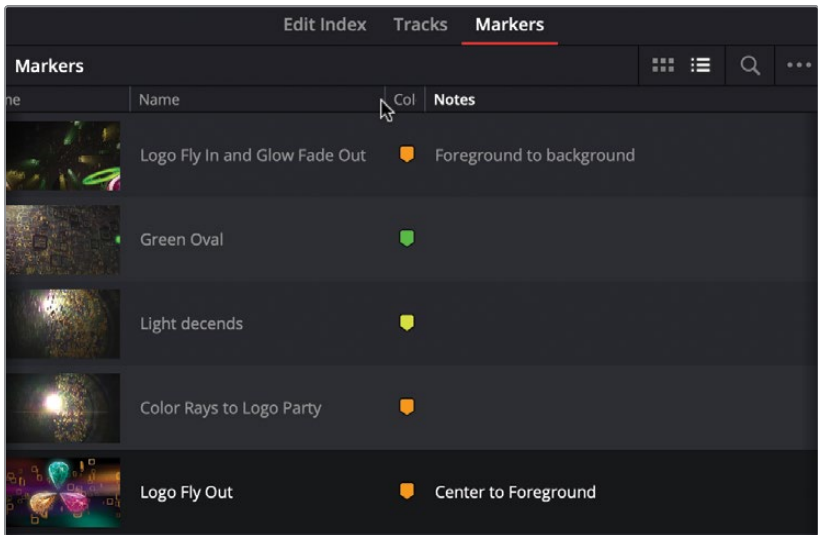
You'll work with these markers later in Lesson 7. For now, you are finished with the video scroller and Markers index.

14 Hide the viewer and video scroller.

That concludes your work with sound effects in this lesson. Time to move on to music editing.

Editing Music to the Beat

Editing music is like editing dialogue and sound effects, and you can use any of the Fairlight tools you've learned so far to edit and trim music in your projects. One challenge when editing music is maintaining musical time to hide the edits, which means editing to the beat rather than the frame. The Fairlight page in DaVinci Resolve offers features for editing music, including a user-defined tempo grid and floating Timecode window that can display musical time. In the next series of exercises, you'll utilize these features to set the timeline tempo to match a song. Then, you'll intercut an instrumental version of the song to finish the track. You'll also use audio track layers and fades to simplify the editing and draw custom crossfades from one musical phrase to another. Once the music is edited, you'll add that timeline to the Fusion VFX v1 timeline as a nest and play the soundtrack with the picture.

Showing and Setting the Tempo Grid

In previous exercises, you relied on the timecode display, timeline ruler, and grid as a guide for everything from setting markers to editing clips and keeping track of duration and program running time. In this exercise, you'll change the timeline's time scale from timecode to tempo in the Grid View Options menu. Then, you'll set the grid to the tempo of the song.

Let's start by opening the timeline containing the song you'll work with for the Fusion VFX soundtrack. The song for this project is "Circles," written and performed by singer-songwriter Esbie Fonte.

1 In the media pool, open the timeline **3b Music Edit Start**. Hide the media pool.

The timeline shows one track, A1 Song Edit, and a clip with the first part of the song "Circles." There are also some timeline markers that you'll use as a guide while editing the song.

2   Choose Workspace > Timecode Window to show the floating timecode window.
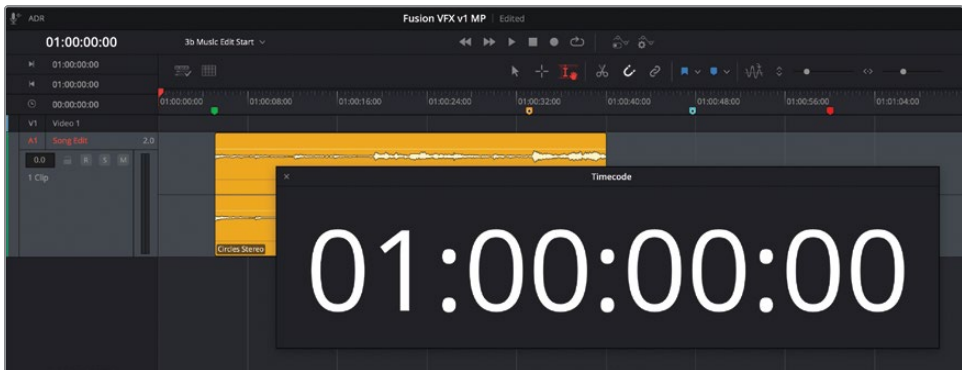
As you can see, the timecode window shows a larger version of the current playhead position, which is also visible in the timecode display. You can resize and move this window anywhere on the screen. Let's resize the window and move it to the center of the screen.

3   Drag any corner of the timecode window to resize it for a clear view of the timecode. Drag the timecode window header to move the window to the center of the screen, where you can see it while you work.

4   Play the clip to hear the beginning of the song that will be used for the Fusion VFX soundtrack.

5   Use the Focus mode multi-tool to click the lower half of the clip to select the entire clip and its duration (35:01).

Next, you'll show the tempo grid and customize the settings. Grid settings are located in the Grid View Options menu, which is located to the right of the Timeline View Options menu.
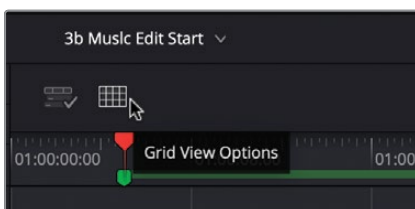
6 Click the Grid View Options menu to show the different Grid options.
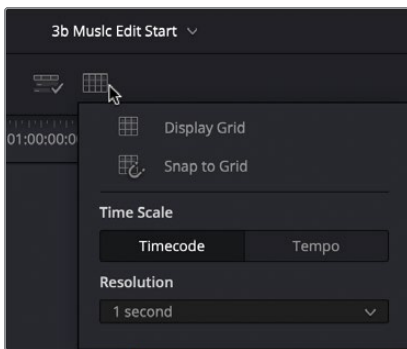
You can use this menu to customize the grid line visibility, snapping, time scale of either timecode or tempo, and the resolution.

> **NOTE** *Tempo* is the heartbeat of a song and determines how quickly the beats within a measure are played. The Fairlight page tempo grid doesn't change the speed of your music—rather, you change the grid as needed to match the song's tempo. Changing the grid time scale from timecode to tempo changes the ruler and timecode displays to musical time: Bar|Beat|Note.

7 In the Grid View Options menu, set the options as follows:

— Time Scale: Tempo

— Resolution: Bar (measure)

— Time Signature: 4/4 (four beats per measure)

— Tempo: 120 BPM (beats per minute - default)

— Song Start: 01:00:00:00 (start of timeline default)
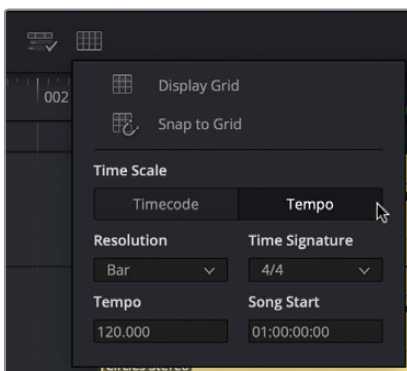
Let's zoom in on the clip for a better view of the waveform.

8   Zoom horizontally and vertically as needed for a clear view of the clip's waveform.

9   Move the playhead to the beginning of the clip. Notice that the musical time in the timecode window shows 003|03|01.

Let's change the grid starting time to align with the beginning of the clip and the green "Start" marker.

10 Right-click the timeline ruler above the clip and choose "Set Tempo Grid start" from the shortcut menu.
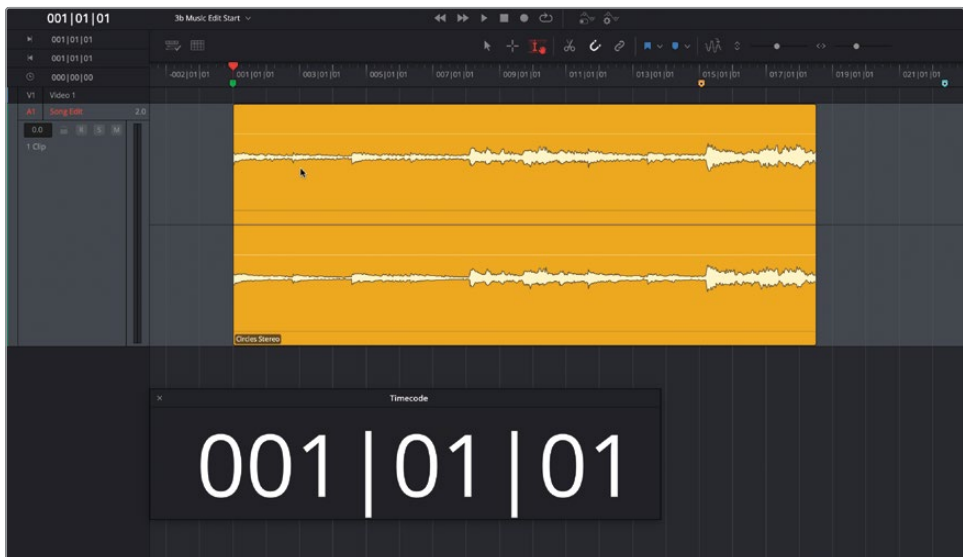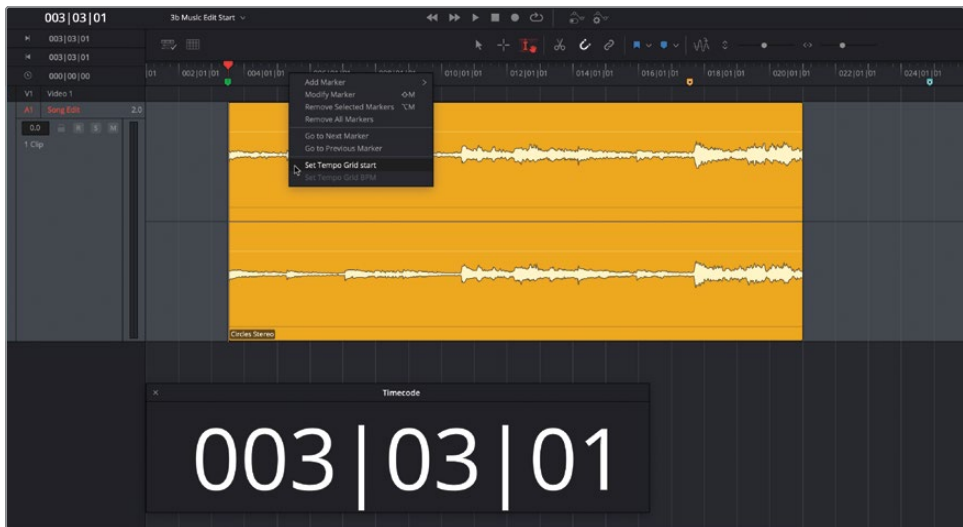
The ruler and timecode window now show 001|01|01 starting at the beginning of the clip.

Great. The grid aligns with the beginning of the clip, but how do you know if the grid tempo matches the music? One method to check the tempo against the music is to listen to the music while watching the timecode window. If the tempo of the music aligns with the bars, beats, and notes as they change in the display, then the tempo is correct. If the numbers in the timecode window don't follow the beat of the music, it's time to set the grid to match the song. (Hint: the tempo of this song is not 120 BPM.)

11 Play the clip from the beginning and watch the timecode window while listening to the music.

Nope. Not even close. Now you know. If you are a musician, you are probably guessing that the tempo is about twice the speed it should be for this song. The good news is that you can easily change the tempo to match the song. All you'll need to do is count to 4 four times, or 4 consecutive bars with 4 beats each. Even better, this song offers a very easy-to-recognize bass beat at the beginning of each bar.

Your goal is to mark a range starting at the first beat of the first bar and ending after the fourth beat of the fourth bar, which is actually the first beat of the fifth bar. If this sounds confusing, don't worry; it won't be when you try it.

12 Play the beginning of the clip and listen to the bass guitar note that starts the instrumental intro. Listen for the second bass guitar note and stop playback.

Don't worry if you think yourself rhythmically challenged; you should be able to count the beats in this song. Each bar starts with a bass note that you can hear and see in the waveform as the highest peak at the beginning of each bar. All you'll need to do is count to four, starting with the bass note as "one." When you get to four, it's time for the next bar and bass note, which will be "one" for the next bar. As you count, you'll replace "one" at the beginning of the bar with the incoming bar number. Using numbers, your count will be 1, 2, 3, 4 | 2, 2, 3, 4 | 3, 2, 3, 4 | 4, 2, 3, 4.

One last thing: you'll need to mark an In point at the beginning of the clip before the first beat and an Out point right after you count the fourth beat in the fourth bar. Press O to set an Out point where the next "one" count would have been if you had kept counting. For this song, the vocal starts at the beginning of the fifth bar, so you'll set the Out just before the vocal starts. Let's try it.

13 Set an In point at the beginning of the clip since the first note is the first beat of the first bar. Play the clip and count 1, 2, 3, 4 | 2, 2, 3, 4 | 3, 2, 3, 4 | 4, 2, 3, 4 | Out. Mark an Out point after the fourth beat of the fourth bar. Ignore the timecode window while you count because it will be incorrect until you set the tempo.

Once you have set a range containing a specific number of bars and beats, you can change the grid accordingly.

14 Right-click the timeline ruler above the In and Out points and choose Set Tempo Grid BPM (beats per minute).
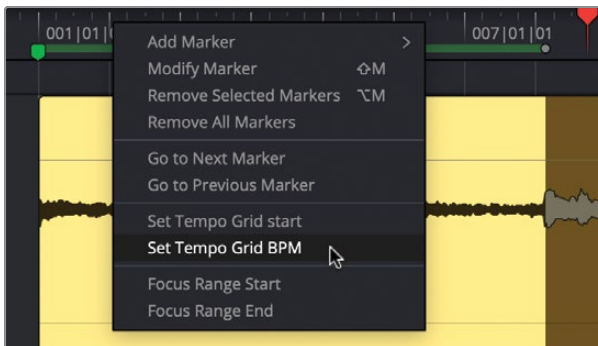
15 In the Tempo Grid Setup dialog, set the Number of Bars to 4 if necessary. Then click Set Tempo From Range.

> **NOTE** You can set the tempo grid with fewer than four bars; however, to be as accurate as possible with your beat count, it's a good idea to use at least two or three bars to set the grid BPM.

16 Clear the range and move the playhead to the beginning of the clip.
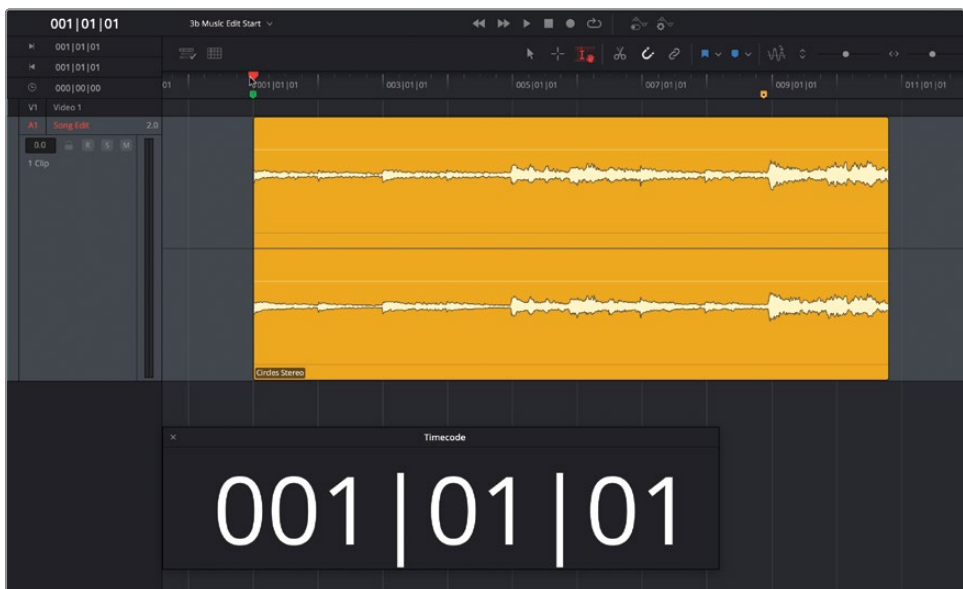
The grid lines mark each bar of music to match the timecode window's musical time display. Before editing the music, let's play the beginning of the song again and check the music against the revised musical time.

17 Play the entire clip and watch the timecode window.

The bars and beats should align with the music, with a bass guitar note on the first beat of each of the first four bars.

18 Close the timecode window.

Congratulations! You've successfully set up the tempo grid to match a song, and you're ready to move on to editing the music.

Editing Music in Track Layers

You can edit music clips on separate tracks or in track layers within the same track. In this exercise, you'll work in track layers since they offer several advantages for editing music. One advantage is that in layers, you can easily compare waveforms to align musical parts based on timing in the waveform. Audio track layers are also great for drawing custom fades between layers. Let's try it.

1 In the Tracks index, enable visibility on the A2 Inst track.
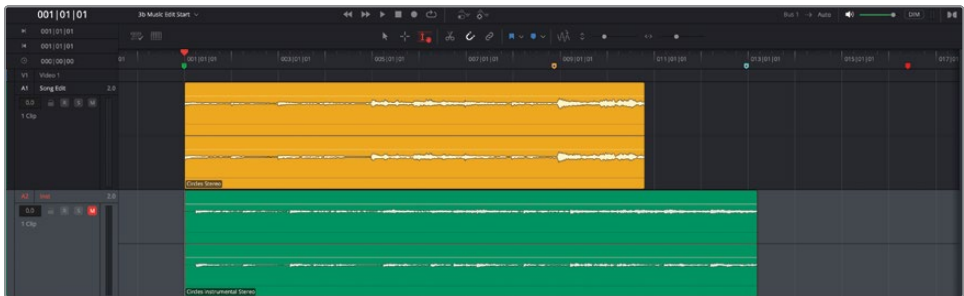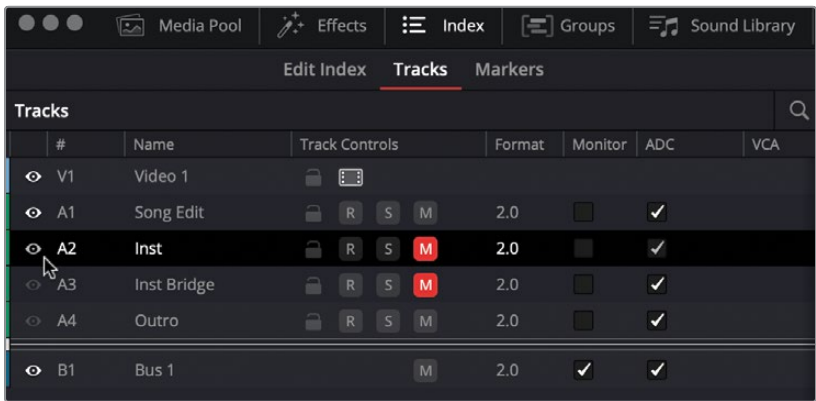
The A2 Inst track appears below the A1 Song Edit track in the timeline. The A2 track contains an instrumental version of the song.

2 Show the Markers Index.

3 In the timeline, unmute the A2 track and play the beginning to hear both tracks together.

Clearly, the instrumental clip is not aligned with the song clip in the A1 track; they are out of sync. No problem. You can quickly align them in track layers. First, you'll need to enable Layered Audio Editing so you can move clips into the same track in layers rather than overwriting the existing clip with the incoming clip.

4 Choose Timeline > Layered Audio Editing to enable that option if necessary.

5 In the timeline, increase the vertical height of the A1 Song Edit track.

6 In the Timeline toolbar, turn off Snapping (magnet) if necessary.

7 Drag the green clip in the A2 track up to the A1 track and use the transparent waveforms to align the clips.

8 Choose View > Show Audio Track Layers to see both clips in the track.

These music clips are two-channel stereo clips, so you will see both channels in the track layers.

Trimming and Fading Music in Track Layers

Now that the clips are aligned, you can trim any unnecessary clip handles and transition from the vocal song to the instrumental version with custom fade. Since you have the tempo grid showing, let's turn on the Snap to Grid option so the edits will align with the grid.

1 Show the Grid View Options menu. Enable the Snap to Grid option.
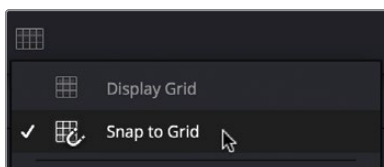
Snap to Grid works even if timeline snapping is turned off.

2 In the timeline, drag the beginning of the green clip toward the right to trim the head of the clip to the nearest grid line.

The edge you are trimming snaps to the nearest grid line and aligns with the beginning of the yellow clip. Next, you'll trim the end of the yellow clip to the grid line nearest to the orange marker.

3 Drag the end of the yellow clip toward the left until it snaps to the grid line near the orange marker.
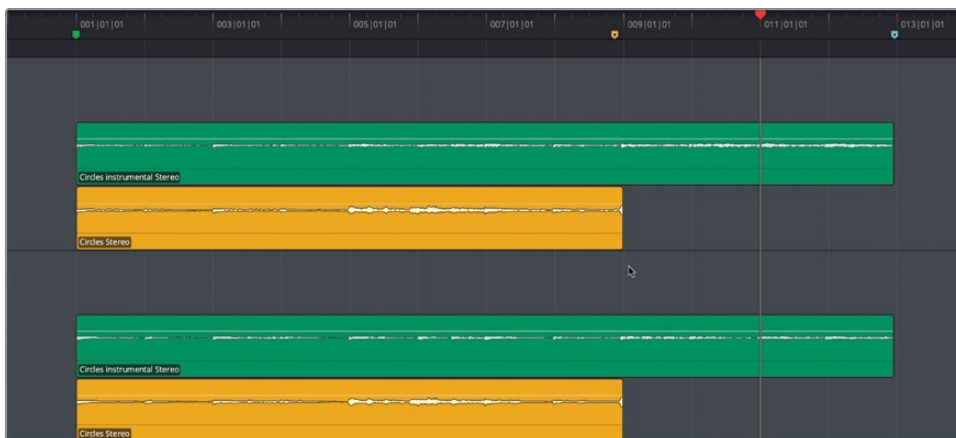
Next, you'll move the yellow clip above the green clip. If the yellow clip is already above the green clip, you can skip to step 5.

4 Drag the yellow clip up above the green clip in the A1 track. Deselect the clip.

5 Play the last two bars of the yellow clip and listen to how it cuts to the instrumental clip.

Thoughts? The edit sounds abrupt and definitely needs a fade.

6   Using the grid as a guide, drag a two-bar fade out at the end of the yellow clip.
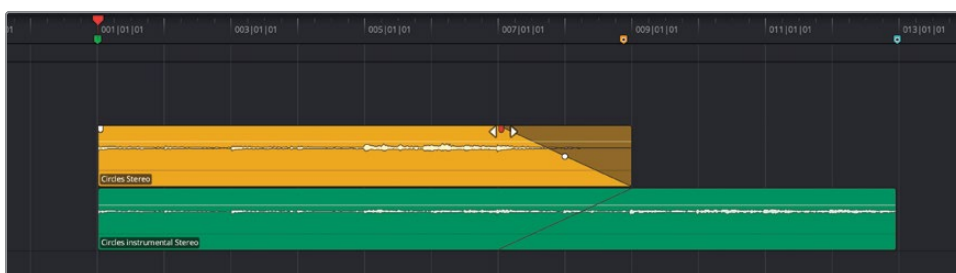
7   Play the music from the beginning to hear the smooth transition from the vocal version of the song to the instrumental version.

Bravo! The transition is flawless and will go completely unnoticed by the audience. You know a music edit works when you don't hear it, and the music continues without skipping a beat, literally. Next, you'll add a different section of the instrumental music to finish off the Fusion VFX soundtrack.

> **NOTE** If you didn't complete the previous music exercises, you can open the **3c Music Edit Layers add 3rd** clip to catch up.

Finishing the Song Edit

Based on your performance in the previous exercise, you should have no trouble adding the last clip to finish the music edit. This exercise will serve as an opportunity to practice some of the new skills that you've learned so far. To finish off the soundtrack, you'll add a section of the song's bridge (a change in music to add interest).

1   In the Tracks Inspector, show the A3 track.

2   In the timeline, unmute the A3 Inst Bridge track.

3   Play the timeline from the orange marker and listen to the edit from the green instrumental clip in A1 to the teal instrumental bridge clip in A3.

Not bad. In fact, you could possibly leave it as is. However, as a music editor in training, "not bad" isn't "awesome" or "inspiring," which should be your new standard. How do you elevate the music edit to the next level? Let's extend the beginning of the clip to fade in some of that percussive beat into the bridge. This is also a good time to change the grid from bars to quarter notes and show the grid for more visibility as you finish the edit. First, let's use keyboard shortcuts to move the clip from the A3 track to the A1 track without changing its horizontal position.

4 Select the clip in the A3 track. Press Option/Alt-Up Arrow twice to move the selected clip from the A3 track to the A1 track.
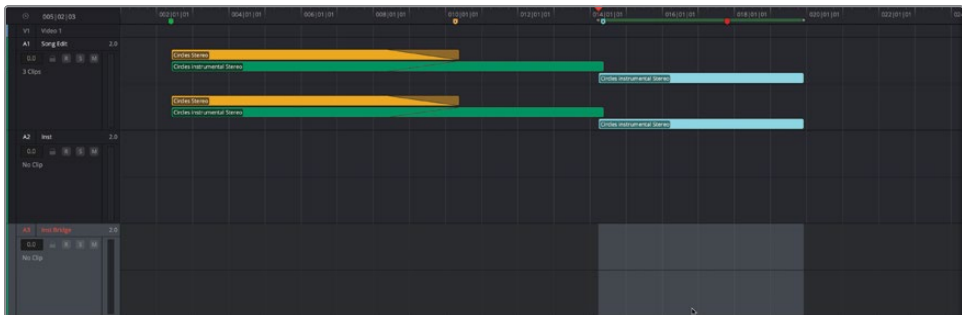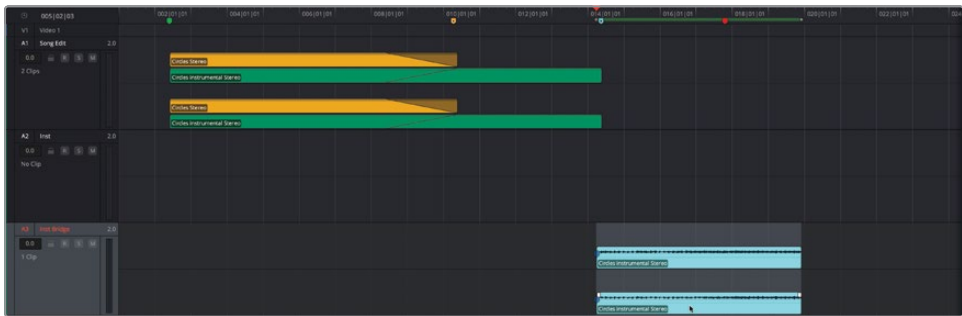
The teal clip appears in the lowest layer of the A1 track. Before proceeding, let's tidy up the timeline.

5 In the Tracks index, hide the empty A2 and A3 tracks. Increase the vertical height of the A1 track so you can easily see the grid, clips, and waveforms.

6 In the Grid View Options menu, change the Resolution to 1/4 note. Then select the Display Grid option at the top of the menu.
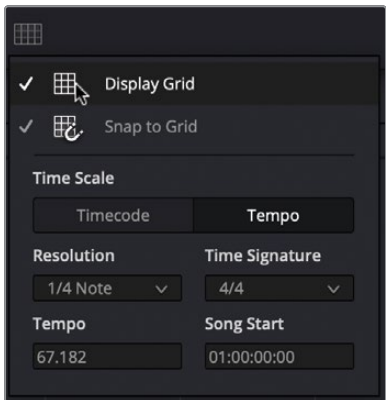
The tempo grid now shows four quarter-note sections between each set of brighter bar lines.

7   Move the playhead to the beginning of the teal clip and zoom horizontally for a clear view that includes the overlapping green and teal clips (bar 013 – bar 016) in the ruler.
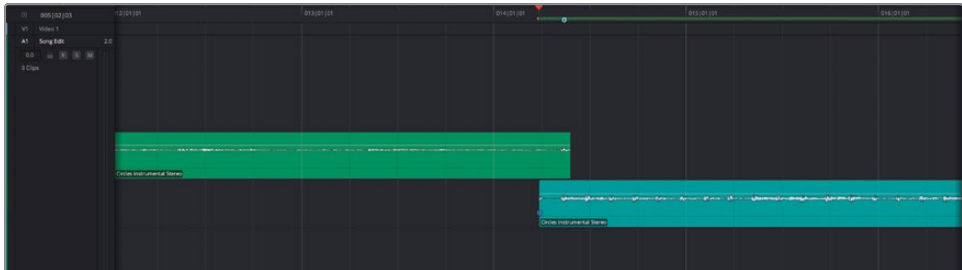
Your goal is to fade from the upper clip to the lower clip to hear four bass drumbeats before the instrumental bridge kicks in at the teal marker. Luckily, the tempo grid offers exactly what is needed to simplify this musical edit.

8   Drag the head of the teal clip to the middle of bar 013 (013|03|01). Then, on the green clip, drag a fade from the tail to the middle of bar 013 (013|03|01).
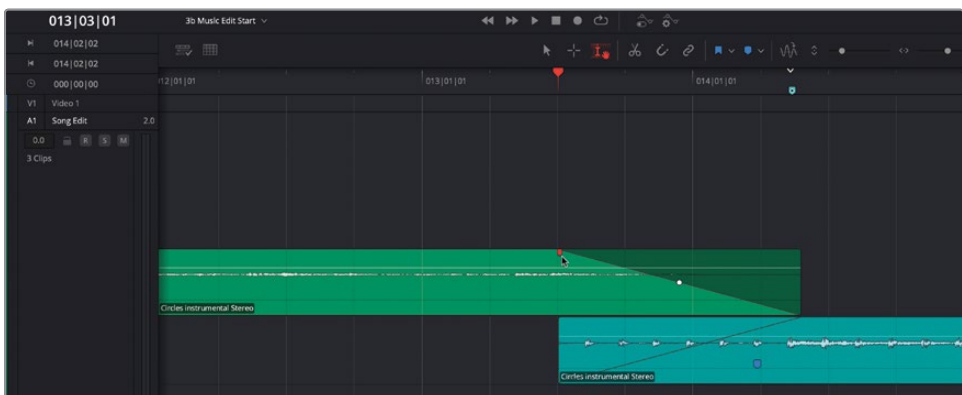
9   Play the timeline from the beginning of bar 13 to the end of bar 14.

Nice work. The two musical sections blend nicely with the basic linear fade. The client loves the music; however, they had a comment about the transition: "Great, but... can you be more subtle fading into the beats with a slow bleed before you drop into the bridge?" Your response, as always, is "Sure!"

Customizing a Fade in the Timeline

Once you've created a fade transition, you can adjust the curve of the fade by dragging the handle that appears on the fade curve. Dragging the handle up and down affects the angle of the fade curve, and dragging the handle left and right affects the shape of the curve. Using the handle, you can create a variety of custom fades. As you change the shape of the fade, bright and shaded areas on the clip indicate the power levels of the fade over time. Now, let's shape the fade for a more interesting transition from the green clip to the teal clip. In this exercise, you'll change the curve of the fade to maintain the level of the green clip longer with a more subtle transition to the incoming bass drumbeats in the teal clip.

1   Hover over the fade-out on the green clip to see the handle in the middle of the fade curve.
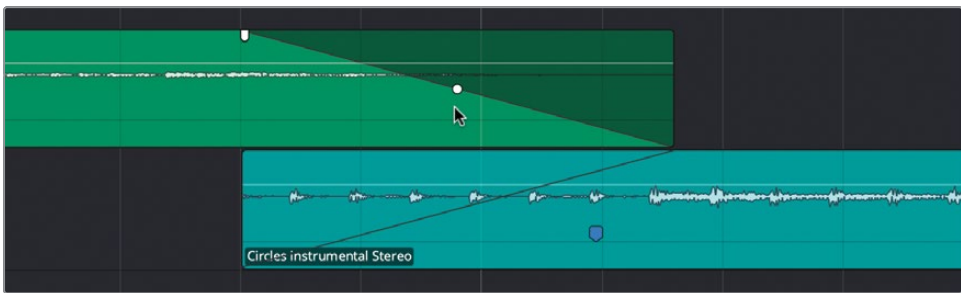
2   Drag the fade handle down as far as possible to change the curve. Then, drag the handle toward the left to create a steep and quick fade.
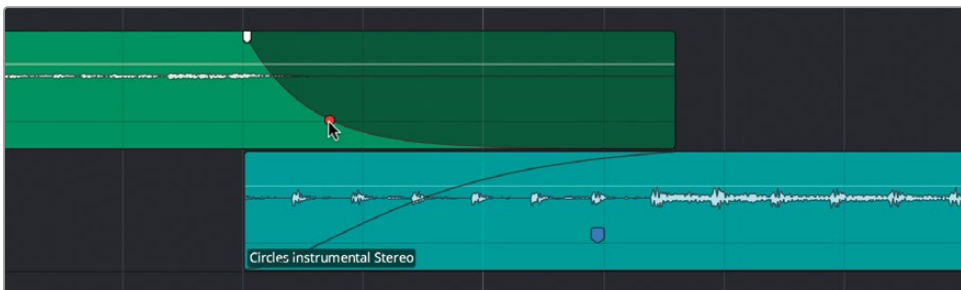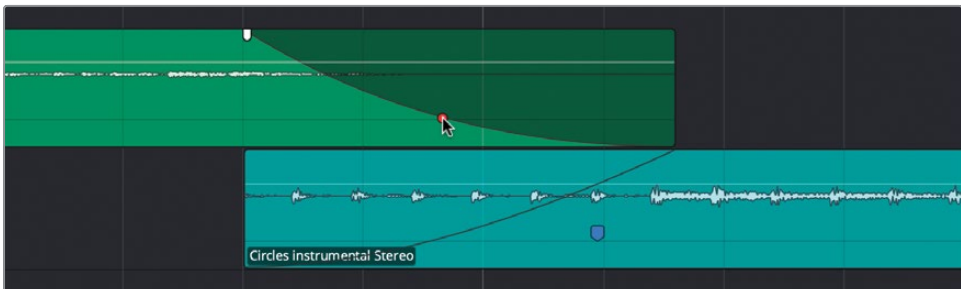
The bright and shaded area on the clip indicates the level changes during the fade. In this case, the sound of the green instrumental clip drops away quickly with an equally quick entrance of the drumbeat in the teal clip.

3 Play the transition to hear how it sounds.

Ouch. That didn't work for this musical edit and is the opposite of what the client requested. Then again, what a great way to test-drive custom fade curves. Now, let's try that again, this time changing the curve so the green clip remains dominant with a subtle bleed-through of the drumbeats until a fast drop to the teal clip at the end of the transition.

4 Drag the fade curve handle toward the right to the last grid line before the end of the clip, then up or down to about the middle of the clip.
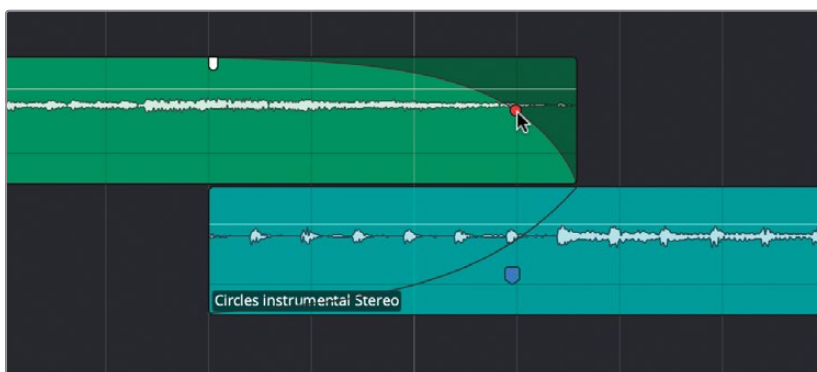
5 Play the transition.

Awesome! Notice how the drumbeats subtly bleed in seamlessly to blend two music sections together, even though the first section has no bass drum and the second section is driven by the bass drum. Sweet!

Time for a little housekeeping before you move this timeline into the Fusion VFX timeline to play the music with the video.

6 Press Shift-Z to fit the clips to the visible timeline.

7 Decrease the height of the A1 track.

8 Hide the index.

9 In the Grid View Options menu, set the Time Scale to Timecode and deselect the Display Grid option.

10 Choose View > Show Audio Track Layers to hide the layers.

11 Drag a fade-out from the end of the teal clip to the red marker.
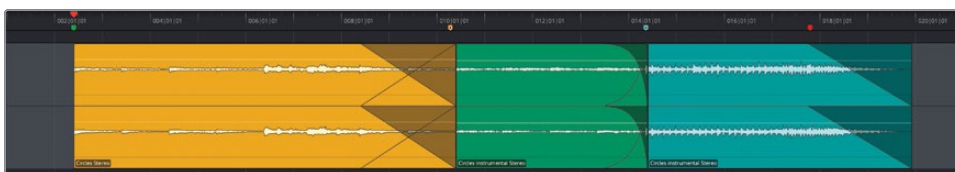
> **NOTE** You can modify fades and fade curves on layered audio clips even when the audio track layers are not showing.

12 Play the timeline once from start to finish to hear the first version of your music edit.

Applause. Now let's see how it works with the video! To move these clips to the Fusion VFX timeline, you could either copy and paste the clips or drag one timeline into the other as a nested timeline. For this exercise, let's try the second option.

Working with a Nested Timeline

DaVinci Resolve includes powerful workflow options for nesting and decomposing timelines within timelines in the Fairlight page.

Nested audio timelines look and play back just like a clip. The difference is that nested timelines can be opened and edited, and the results update in the nested version. Additionally, you can decompose the nested timeline to add tracks and clips as well as preserve all the bussing, processing effects, and mixing from the nested timeline. You'll work more with nested timelines during the mixing lessons later in this book.

In this exercise, you will add the timeline with the finished music edit to an empty track in the Fusion VFX timeline, play the nested timeline, open the nested timeline, add a clip, and then decompose the nested timeline in place to instantly add all the clips and layers to the primary video timeline. You'll start by setting In and Out points around the edited music. Then, you'll drag the music timeline into an empty MX (music) track in the Fusion VFX timeline.

> **NOTE** If you didn't complete the previous music editing exercises, you can use the 3d Music Layers Finished V1 timeline instead of the 3b Music Edit Start timeline.

1 In the Timeline View Options menu, deselect Display Video Tracks if necessary.

2 In the 3b Music Edit Start timeline, mark an In point at the green marker. Mark an Out point at the end of the teal clip.

Setting In and Out points on the timeline before you add it to another timeline will define the duration of the nested timeline.

3 In the media pool, open the timeline **3a Fusion VFX add Music**.
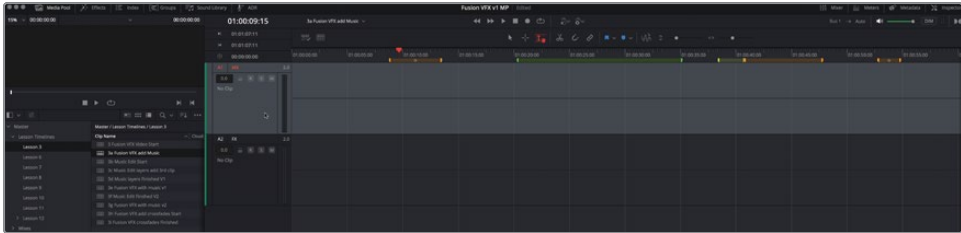
As you can see, this timeline includes two empty tracks, A1 MX for music and A2 FX for sound effects. Next, you'll add the 3b Music Edit Start timeline to the A1 MX track.

4 Drag the 3b Music Edit Start timeline from the media pool to the beginning of the A1 MX track.
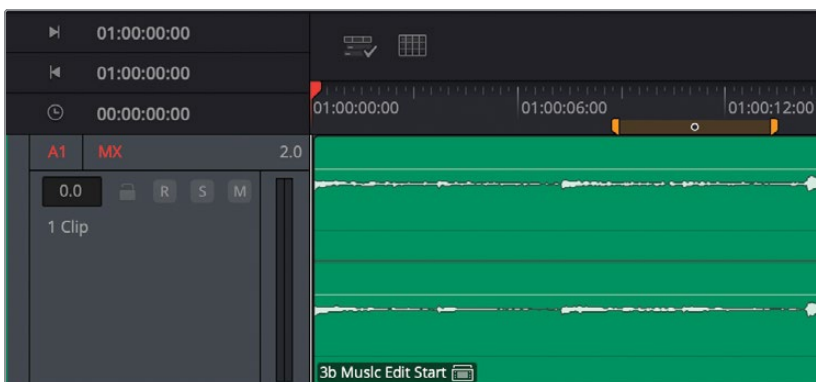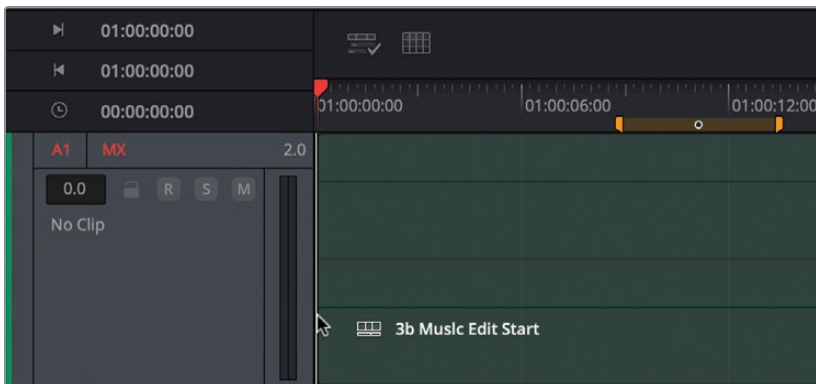
Notice that the nested timeline looks like a clip except for the badge in the lower left corner that indicates it is a nested timeline. The clients are eager to see the Fusion VFX video with the music edit.

> **NOTE** The nested timeline should show a waveform representing the current audio output. This waveform is a cache file and may take a minute to appear. If you don't see the waveform, try opening a different timeline and then returning to the timeline containing the nested timeline clip.

5 Show the floating viewer. Resize the viewer as needed and move it to the lower center of the screen.

6 Play the timeline and listen to the music while watching the video.

Pretty cool, right? The song really works with the visuals, and the clients are excited. They have two minor notes for you to fix while they step out of the room to take a call.

Client notes:

— *Check the levels on the middle instrumental section; it seems too low.*

— *The music needs a definitive ending.*

Looking at the waveform in the nested timeline, you can see that the waveform in the middle section seems lower in level. That's easy to fix. As for adding a definitive ending, that will be easy to fix as well in the music timeline.

Editing a Nested Timeline

Nested timelines work great for collaborative projects because the editor, VFX artist, or colorist could be working on the timeline with your nested music while you make changes or finish mixing in the master music timeline. Now is your chance to edit a timeline nested within another timeline. Any changes you make to the music timeline will update in the Fusion VFX timeline. For this exercise, you'll open the **3b Music Edit Start** timeline and make the requested changes for the clients.

1 In the **3a Fusion VFX add Music** timeline, right-click the nested clip and choose Find in Media Pool from the shortcut menu.

The timeline that is nested is selected in the media pool.

2 In the media pool, open the selected timeline.

3 Hide the viewer.

4 Show audio track layers.

5   Increase the height of the A1 Song Edit track.
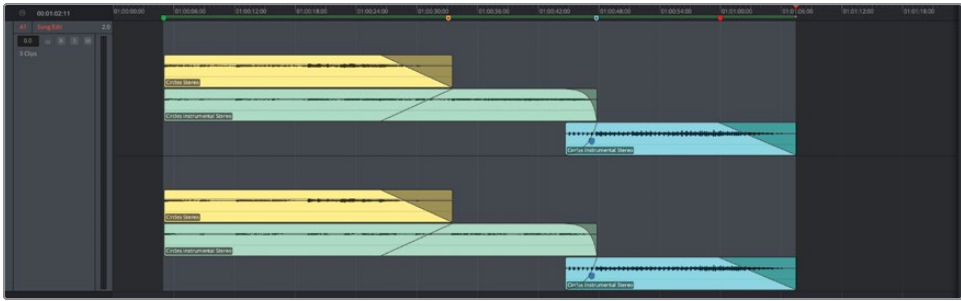
Déjà vu. Welcome back to the timeline you were just working on. Time to make a few quick improvements.

6   Clear the In and Out points.

7   Drag the clip gain line on the green clip upward to increase the clip level by around 3 or 4 dB.
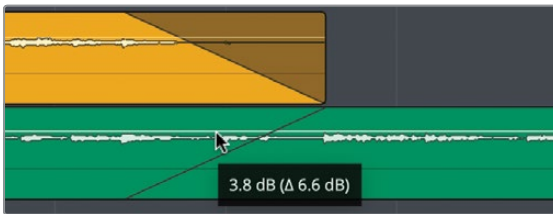
8   In the Tracks index, show the A4 Outro track. Enable the clip in the A4 track.

9   Solo the A4 Outro track and play the clip to hear it. When finished, unsolo the track.

Now that is a definitive ending. All you need to do is add it to the end of the song so that it sounds good.

Fix the Song Outro

It's time to put your new music editing skills to the test. Give yourself a 5-minute time limit to get the job done. With practice, you could do it in about a minute. Feel free to dive in and follow your musical instincts to fix it without guidance. If you would like a few breadcrumbs to follow, here is a basic to-do list. There are many ways to achieve a great result. Here is one possibility:

— Drag the navy clip up to the A1 track and place it below the teal clip.

— In the Grid Option View menu, turn off Snap to Grid so you can freely align the Outro clip.

— Remove the long fade at the end of the teal clip.

— Trim the teal clip so that it ends at 01:00:58:09.

— Add a short 2-frame fade-out to the teal clip to smooth the edit.

— Reduce the clip gain level of the navy outro clip by about 2–3 dB.

— Listen to the edit. When satisfied, hide the audio track layers.
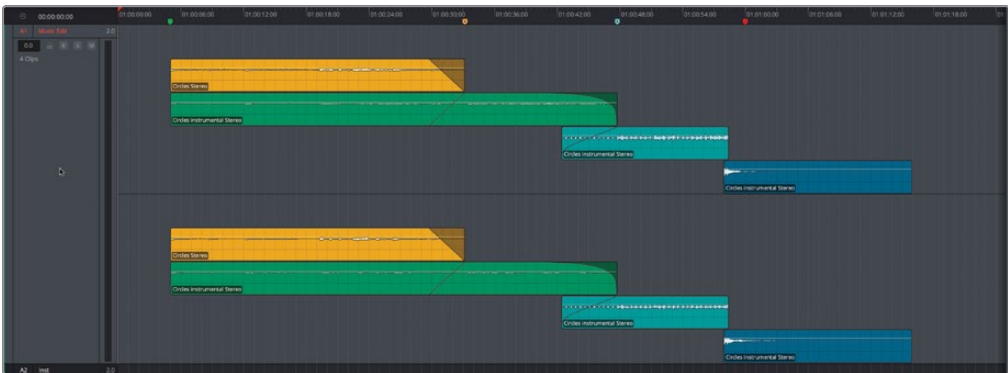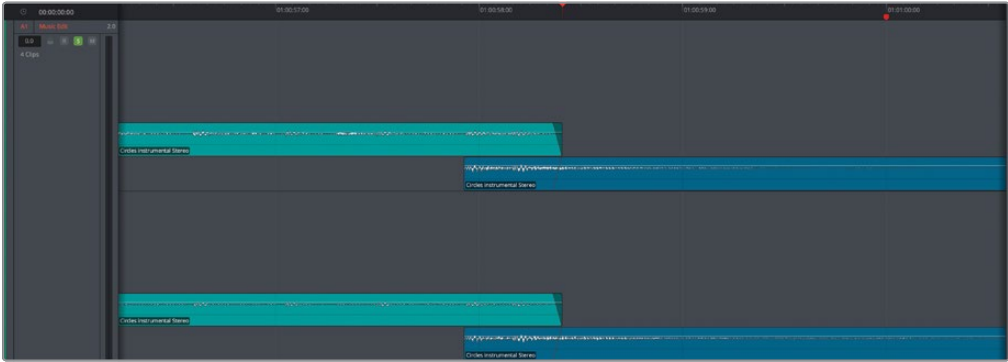
NOTE If you didn't finish the music edit and want to see and hear the new ending, open and play back the timeline 3f Music Edit Finished V2.

Playing the Updated Nested Timeline

All the improvements you made to the 3b Music Edit Start timeline updated automatically in the nested version of the timeline in the 3a Fusion VFX add Music timeline. As long as a timeline remains nested, any changes to the original timeline update as you progress in the nested timeline. Hearing is believing, so let's verify that the changes have been updated.

1   In the 3b Music Edit Start timeline, set an In point at the green marker.
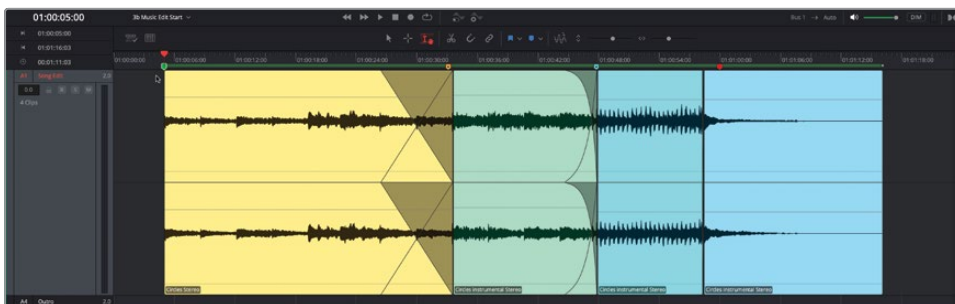
2   Open the **3a Fusion VFX add Music** timeline.

3   Show the viewer and play the clip in the A1 MX track to hear if it has been updated with the recent changes to the nested timeline.
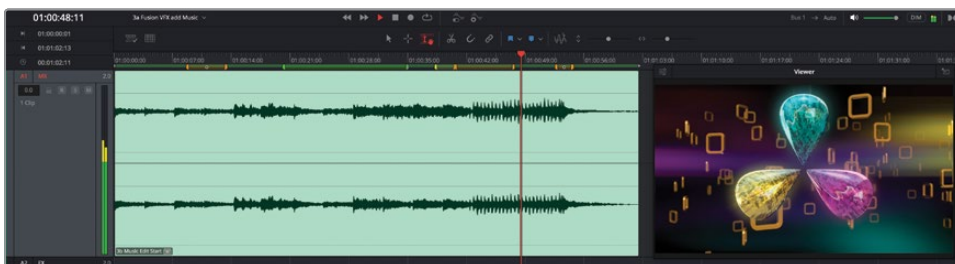
The changes are all there, and the clients are thrilled! At this point, you could leave the nested timeline in case the clients change their minds or have a new idea they want you to try. Keeping the timeline nested gives you the freedom to modify its contents without having to bother the clients with new versions, timelines, or mixes.

Decomposing a Nested Timeline

You can decompose a nested timeline via the right-click contextual menu in the timeline. Remember, once you decompose a timeline, there will no longer be a live connection between the clips and the formerly nested timeline in the media pool. In this case, decomposing the timeline will complete the music edit now that the clients have signed off on it.

1   In the 3a Fusion VFX add Music timeline, right-click the 3b Music Edit Start clip and choose Decompose in Place > Preserving Audio Data.
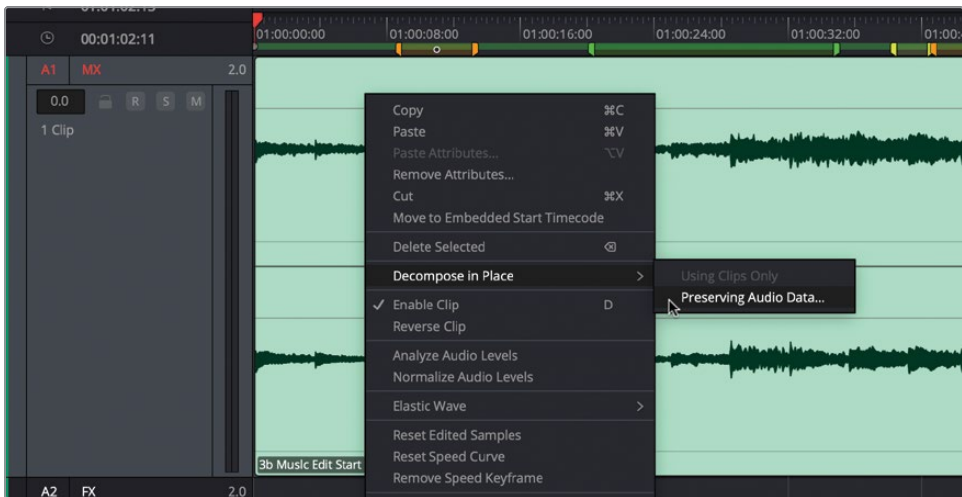
The Decompose Preserving Audio Data dialog offers three routing options: New Matching Busses, "Preserve existing paths," and "Leave unassigned." These choices affect how the tracks and busses in the nested timeline are routed to busses in the master timeline. The New Matching Busses option creates new busses for each bus that was in the nested timeline. "Preserve existing paths" will route tracks to existing busses in the master timeline with the same name and channel format and will only make new busses if they don't match busses in the master timeline. The last option, "Leave unassigned," does exactly what it says and doesn't route any of the incoming tracks or busses. Don't worry if this seems confusing. You'll work more extensively with busses in a later lesson.

For this exercise, both timelines contain only one output bus (Bus 1), so you'll use the second option to "Preserve existing paths" and seamlessly route the tracks from the nested Bus 1 to the Bus 1 in the master timeline.

2 In the Decompose Preserving Audio Data dialog, choose "Preserve existing paths" from the dropdown menu.
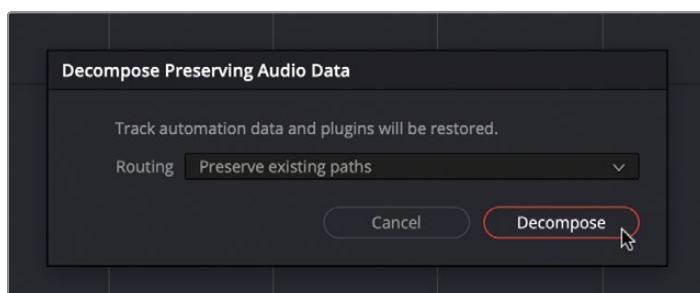
3 Click Decompose.
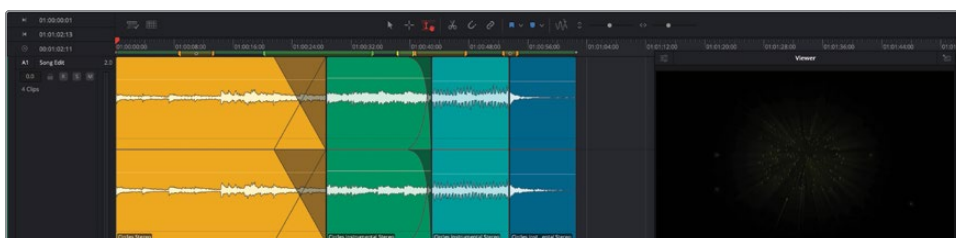
Voilà! Just like that, all the clips and tracks from the music edit timeline are now in the Fusion VFX timeline as if they have been there all along. If the clients want any last-minute changes before delivery, you can make them right in this timeline. You'll come back to this project again in later lessons.

> **NOTE** DaVinci Resolve 20 Studio includes new AI-based music tools in the cut and edit pages including Show Music Beats in the right-click shortcut menu and the AI Music Editor in the Inspector. You can learn more about these features in the *DaVinci Resolve Reference Manual*.

Adding Custom Crossfades in the Timeline

In the previous lesson, you edited music in audio track layers and created custom fades using the fade handles. You can also use the right-click shortcut menu to add crossfades between clips or draw them with a range. In this set of exercises, you'll try both methods. Crossfades do not require layered audio editing and work well as long as the clips have enough handles to accommodate the transition.

1 Open the timeline **3h Fusion VFX add crossfades Start**. Then hide the media pool.
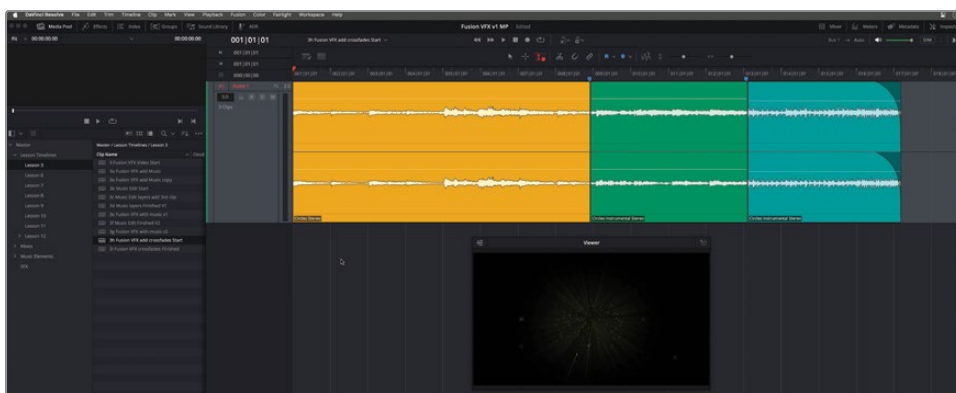
This is a version of the Fusion VFX timeline where the music clips were edited with cuts only within the same track.

2 Play the timeline once to hear the cuts-only music edit.

It sounds pretty good with cuts only. Some music editors prefer to edit music with cuts only to ensure every edit works and then add crossfades where needed.

For the first crossfade, you'll use the right-click method between the yellow and green clips in the A1 track. To do this, you'll also use the Pointer mode arrow tool. Although you can add crossfades via the right-click shortcut with the Range tool or multi-tool, it's easiest to work with the good ol' arrow tool.

3 Press A to switch to the Pointer mode arrow tool.

4 Move the playhead to the first blue marker.

5 Zoom horizontally until you see only the yellow and green clips and one musical gridline in the ruler.

6 Right-click the edit point where the last frame of the yellow clip meets the first frame of the green clip. Choose "Add 12 frame Crossfade 0 dB" from the shortcut menu. Click any empty timeline space to deselect all clips.
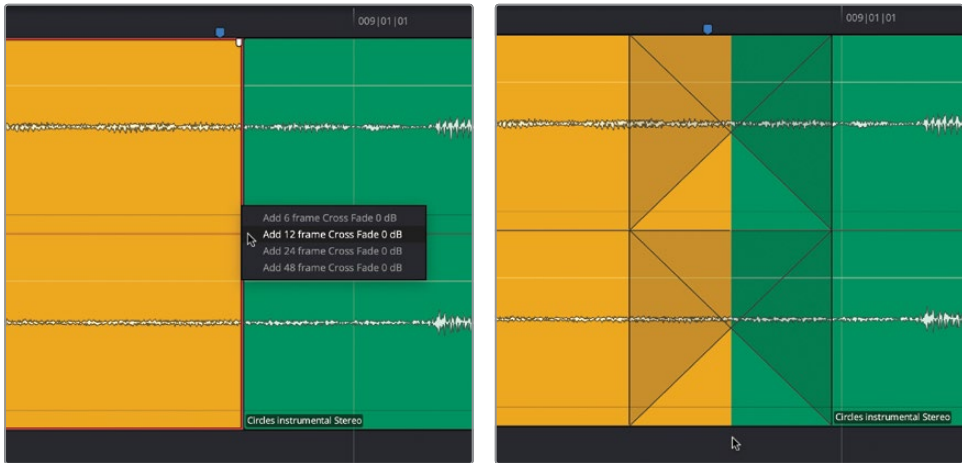
The crossfade appears between the two clips. Let's set a playback range for looped playback so you can hear the transition changes as you make them.

7 Press R to switch to the Range tool.

8 At the current zoom level, using only the visible portions of the yellow and green clips, drag a range that includes the last half of the yellow clip and the first half of the green clip. Press A to return to the arrow tool to maintain the playback range while you work.
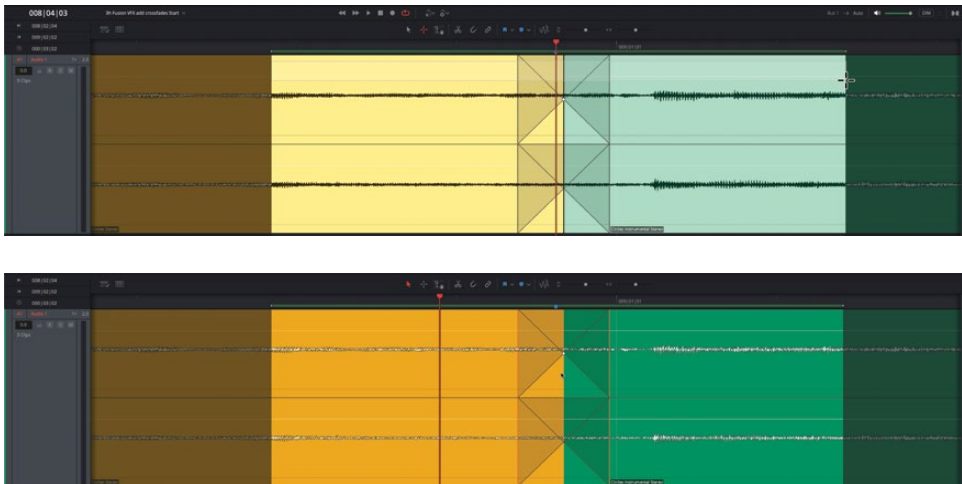
9 In the transport controls, click to turn on the Loop button if necessary.

10 Play the marked range to hear the transition.

It sounds great. However, while you are here, you might as well see and hear what happens if you modify the crossfade.

Once a crossfade is in the timeline, you can select, move, resize, change the curve, and even delete it. Let's start by selecting and moving the transition so the edit point aligns with the blue marker. This is like a Roll edit on the edit page.

11 With the arrow tool, click any empty space in the crossfade to select it. Move the pointer over the lower half of the clip for the Grabber tool. Drag the crossfade toward the left until the edit point between the yellow and green clips is directly beneath the blue marker.
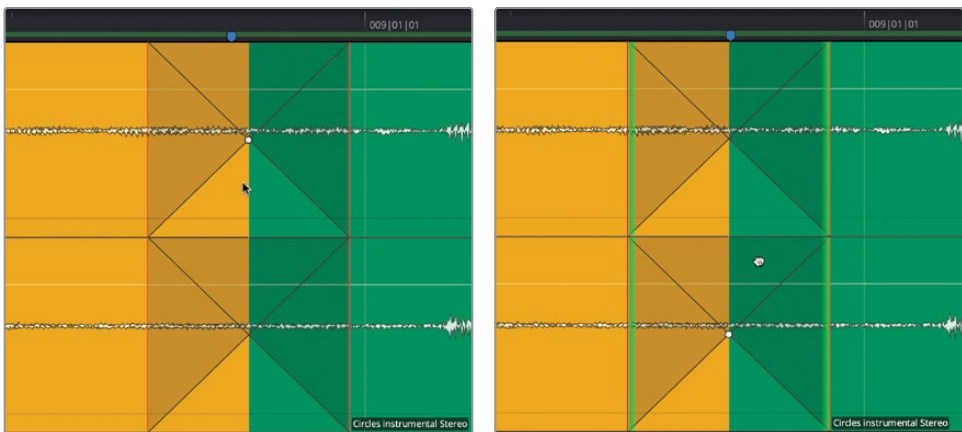
12 Start looped playback.

13 Experiment with the crossfade by dragging the edges to extend or reduce the length.

14 Drag the handle in the center of the crossfade vertically and horizontally to change the fade curve.
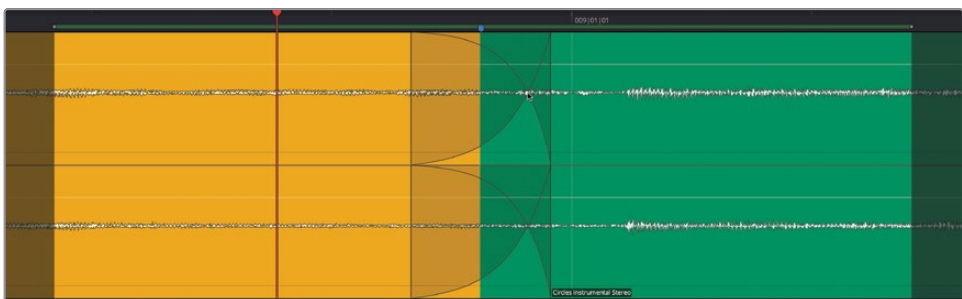
15 When you have explored the different variations of the crossfade and are satisfied with the results, stop playback.

Congratulations! You can now quickly add a crossfade between clips and manipulate it as needed. In the next section, you'll add a crossfade to the second blue marker.

Converting a Range Selection into a Crossfade

Another method for adding a custom crossfade is to simply draw a range with either the Range tool or multi-tool. For this exercise, you'll use the Focus mode multi-tool to draw a range, convert the range to a crossfade, and modify the crossfade to taste.

1   Move the playhead to the second blue marker.

2   In the timeline toolbar, click the Focus mode button to switch to the multi-tool.

3   If necessary, zoom in horizontally for a clear view of the edit point between the green and teal clips.

4   Drag an edit selection range across the edit point. Choose Trim > Crossfade Selection or right-click the timeline and choose Edit Selection Editing > Crossfade Selection from the shortcut menu.
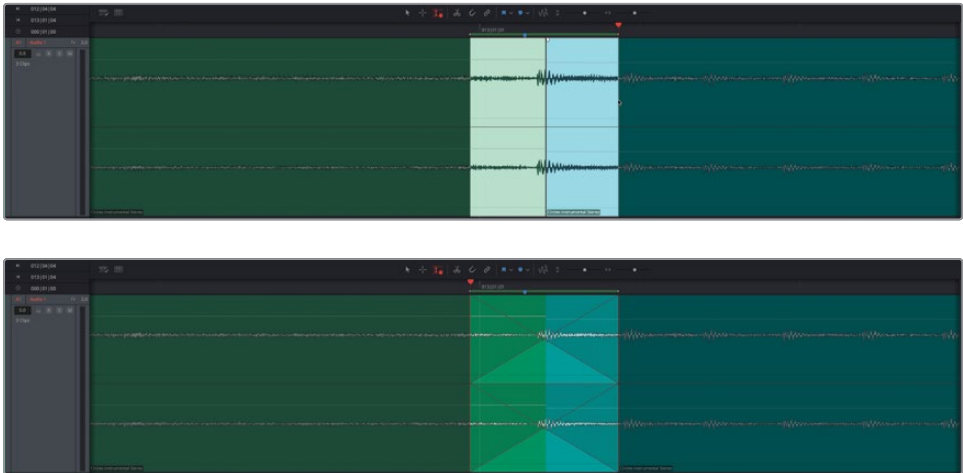
This time, you can either keep working with the multi-tool, which automatically sets a playback range over the selected crossfade so you can hear it loop while you work, or drag a playback range longer than the transition and switch to the Arrow tool to adjust the crossfade without clearing the playback range.

5   Set a playback range if you plan to use the Arrow tool or continue working with the multi-tool and only loop the crossfade.

6   Move the crossfade toward the left so the edit point aligns with the blue marker. Customize the crossfade however you'd like until you are satisfied with the results.
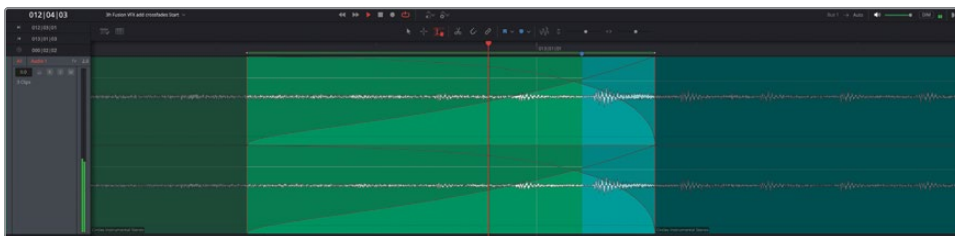
7   When you are finished, press Shift-Z to fit the clips horizontally to the timeline. Play the finished timeline to hear it all in context.

Fantastic! The clients are so happy that they are humming the song on their way to lunch. When it comes to sound editing, the clients don't care about the details of how you do it; they just want it to be great. Congratulations.

> **NOTE** Converting a selected range to a crossfade also works across gaps between the clips as long as there are enough clip handles to accommodate the transition.

Adding Podcast Music

Your last music editing assignment is to add a bit of the "Dangerous" music piece to the end of the Podcast intro.

1   Open your Podcast Intro Combo project.

2   Hide the viewer if needed.

3   Open the timeline **3d Intro Combo FX and Music v1**, if necessary.

4   Play the timeline once to hear all the dialogue, sound effects, and music clip together.

This timeline version includes some track panning automation but still needs balancing between the clip and track levels. You'll work with balancing and panning clips in Lesson 5. For now, your goal is to open an earlier music-free version of the timeline and edit the music clip yourself.

5   Open the timeline **3c Intro Combo FX and Pan**.

6   Resize the Music track as needed.

7   Locate the **Dangerous Music M19.wav** clip in the Music bin.
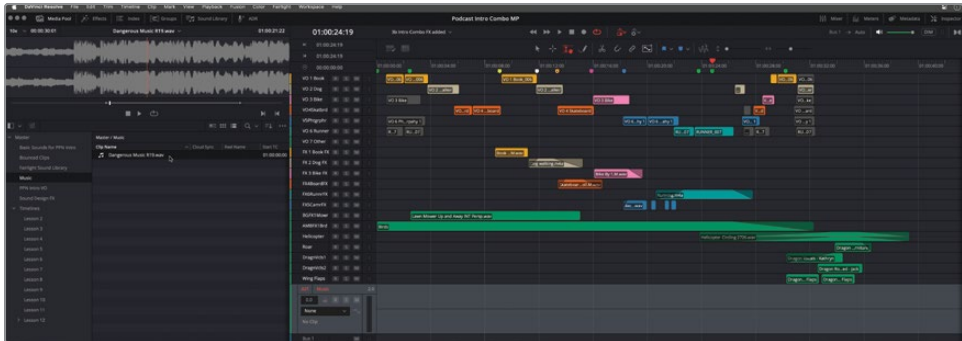
8   Use your Fairlight editing skills to edit, nudge, trim, and fade in and out the music in this timeline.

This is your self-guided assignment, so it's up to you to determine which part of the music you want to use. The timeline has a green Music marker if you want to use it as a guide. However, it's entirely up to you to decide where you want the music to start and end, the clip gain level, and finally, the duration and type of fades you want to use to bring the music in and out of the soundtrack. Good luck and have fun.

Working with the Music Remixer (Studio Only)

The Fairlight page in DaVinci Resolve Studio includes an AI-based Track FX that can change a vocal song into an instrumental piece with a single click. The Music Remixer is an AI plug-in that lets you remix music tracks to fit your show. The controls split music into individual basic stems, including Vocals, Drums, Bass, Guitar, and "Other," which means everything else from keyboard to strings and other instruments. You can apply the Music Remixer to any track or clip containing music. In this exercise, you'll apply the Music Remixer to the music track of the *Too Much Life* trailer to remove vocals from the soundtrack song. Once again, you'll work with an original song by singer-songwriter Esbie Fonte. Then, you'll apply the Music Remixer to a finished scene and apply the music mixer to automate the music mix.

1   Open your TML Audio Post project.

2   In the media pool, open the timeline **3 TML Trailer Music Start**. Then hide the media pool.

3 Show the floating Fairlight viewer. Resize and move the viewer to a location where it is easy to see while you play the timeline.

For this exercise, you won't be editing clips or adjusting levels, so there is no need for oversized clips or tracks. Your goal is to reduce or remove the vocals in the soundtrack music using a track FX plug-in.

4 Play the timeline from the beginning and stop when you get to around 20 seconds (01:00:20:00).
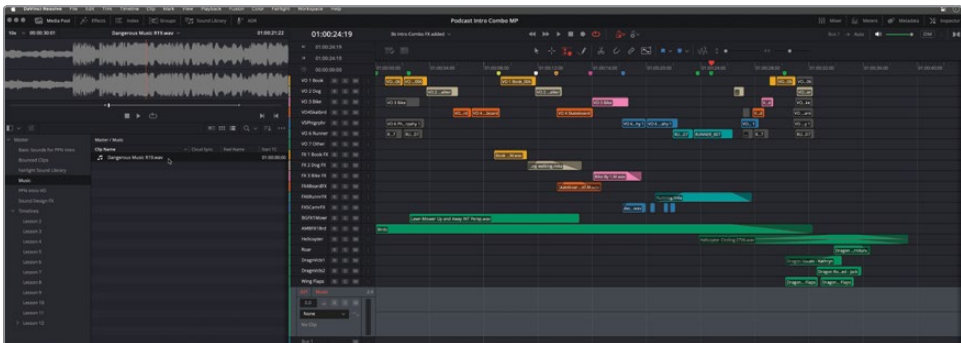
Chances are, you recognized the issue with the music as soon as the voiceover started. The music vocals are stepping all over the trailer voiceover, so the listener can't really focus on either one. How did this happen? Anything can happen in the wonderful world of post-production. As a sound editor, your job is to know which tool to reach for when the unexpected happens. Perhaps there was a short-notice opportunity to show the movie trailer before the actual music was secured and cleared, and the production team really wanted to use this song. Perhaps they just wanted it for the screening audience. The only issue with the song is the vocals. This would be great in any other circumstance, but it doesn't work with the voiceover. No problem. This is a perfect opportunity to use the Music Remixer Track FX.

5 Select the A5 MX track and show the Inspector.
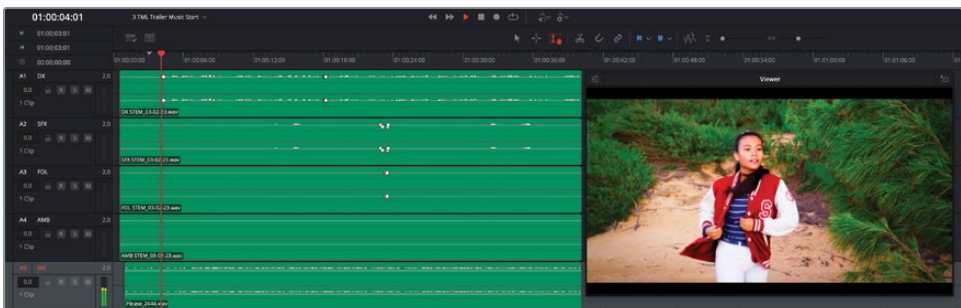
The track name, MX, at the top of the Inspector indicates which track is selected. DaVinci Resolve Studio 19 includes five Track FX that are available in the Inspector and mixer. You can also apply some Track FX to individual clips in the timeline. For this lesson, you'll apply the Music Remixer to a track and use the controls available in the Inspector. You'll work more with plug-ins and Track FX in later lessons.

> **NOTE** If the Inspector header is the clip name, Please_2444.wav, then your Inspector is showing the clip rather than the MX track. To switch the Inspector controls from a selected clip to a selected track, click the Track button to the immediate left of the Inspector header. There are two buttons at the top left of the Inspector to switch between the selected clip and selected track as needed.

6   In the Inspector, click the switch to the left of the Music Remixer to enable it and show the controls.

The Music Remixer controls include volume sliders for different music elements, including Voice, Drums, Bass, Other instruments, and Guitar. There are also Mute options to quickly mute any of those music elements from the selected track. Let's try it.

7 In the Inspector Music Remixer controls, click the Mute checkboxes for all the options except Drums.
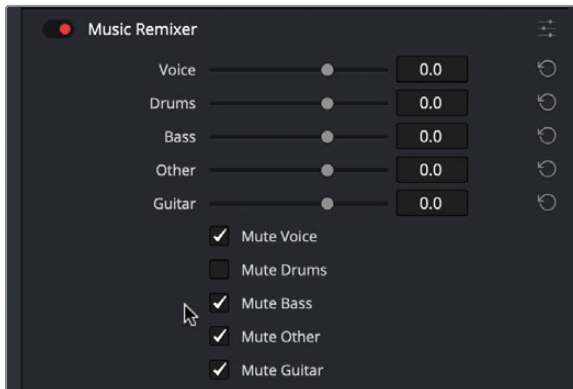
8 Play the first half of the timeline from the beginning to hear the remixed drum-only music in the soundtrack.

Amazing, right? The music is instantly percussion only. The downside is that it gets a little boring and redundant quickly. No problem. Let's bring back the other instruments except the vocals.

9 In the Music Remixer controls, unmute all the instrument parts except the vocals.

10 Play the trailer from the beginning.

Done!

> **NOTE** If you are working with a song with heavy vocal effects and background vocals, the Music Remixer may not remove the entire voice with a single click. You may need to adjust the levels on the vocals and other categories rather than simply muting them.

Automating the Music Remixer During Playback

All effects plug-ins, including the Music Remixer, include a handy floating window with easy-to-use controls that you can adjust during playback. In this exercise, you'll apply the Music Remixer to the stereo mix of a scene and use the floating controls window to adjust the percussion and bass levels over time. You'll also enable the plug-in automation controls to record the changes over time. When finished, you'll look at the automation curves in the timeline.

1   Open the timeline **3 TML Music Remix Scene**.
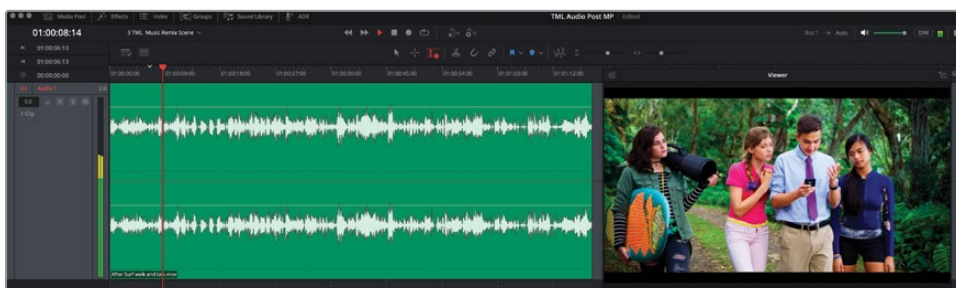
As you can see, the timeline consists of a single clip in the A1 track.

2   Play the timeline once.

As you may have guessed, this scene follows the surf scene you worked with in the dialogue editing exercise. Although this is only the first half of the scene, it makes for a great example of using the Music Remixer on a finished mix.

3   Select the A1 track header and show the Inspector for the track.

4   In the Inspector, turn on the Music Remixer. Then, click the Controls button to open the floating Music Remixer window.
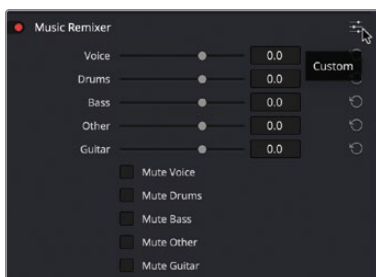
The Music Remixer window offers easy dial controls and Mute buttons. Let's test the controls during playback.

5 Play the scene from the beginning. During playback, adjust the Drum level to decrease the percussion, and then bring it back up. Feel free to experiment with muting and adjusting the different levels to hear the outcome.

Now that you've had time to experiment, let's try to reset the controls and record some changes over time with the automation controls.

6 In the top right of the Music Remixer window, click the Reset All button to reset all controls.

> **NOTE** You can reset individual control dials by double-clicking the dial or the control name within the window.

To record changes to the plug-in during playback, you'll first need to turn on the automation controls at the top of the screen and enable plug-in automation. You'll find the buttons to toggle automation and show automation controls to the right of the transport controls above the timeline. Fairlight's automation toolset includes independent controls to enable automation and expose global automation controls. You can show or hide the automation control toolbar as needed, without affecting whether automation is on or off.

You'll find the Toggle Automation and Automation Controls buttons at the top of the Fairlight page, next to the transport controls.

7 Click the Toggle Automation button to turn on automation. Click the Automation Controls button to open the automation toolbar.
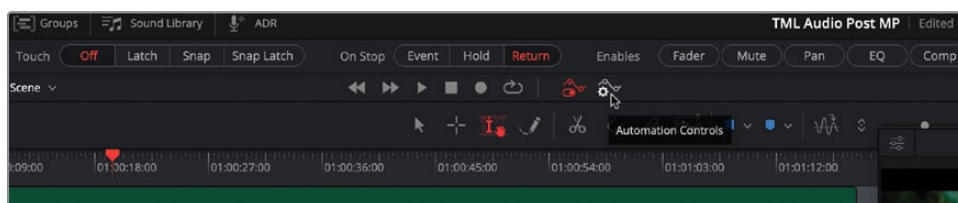
The automation toolbar includes buttons that control every available option for setting up and recording automation for your mix. The buttons are organized in groups from left to right. You'll work with automation more in later lessons. For now, you'll focus on recording the plug-in automation for this exercise. You can identify which automation controls are turned on because they will appear red.

8 In the automation toolbar, click the following buttons from left to right to enable them: Write, Latch, Hold, Plugins.
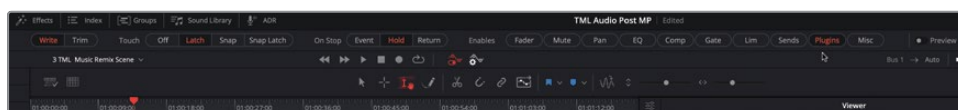
What do those settings mean? In a nutshell, during playback, you will record (write) any changes you make to the plug-in controls until playback stops and then hold (maintain) the most recently recorded automation value, overwriting previous levels for that parameter for the rest of the track. Any control you click or change will turn red to show it is recording that data, and green once you stop playback to indicate the control is automated. Let's try it.

9 Start playback and adjust any of the controls in the Music Remixer including the dials and mute buttons. When finished stop playback.
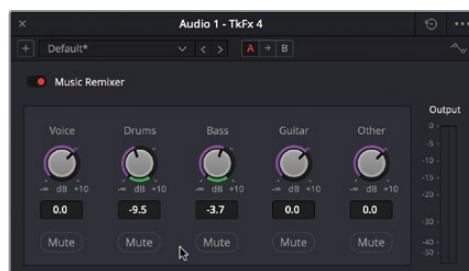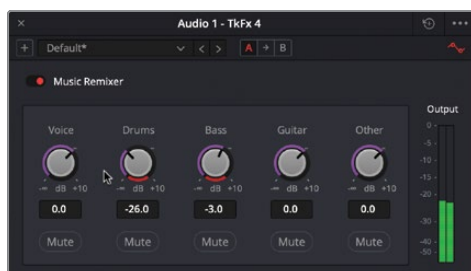
10 Play the track from the beginning to see and hear the changes and see the controls move automatically according to your recorded automation. Feel free to grab a control and modify the settings during playback. As long as the automation is in Latch mode, you will write new data during playback.

11 Once you are finished experimenting with the automation, change the Touch mode to Off.

Once in off mode, no new automation will be recorded unless you change the Touch mode or manually edit the automation curve.

Each track includes automation curves to show a graphical view of the changes for each parameter. To quickly see the curve in the track, just right-click the automated parameter.

12 Right-click the Drums knob to see the automated Drums level curve. Right-click the Bass knob to see that curve.
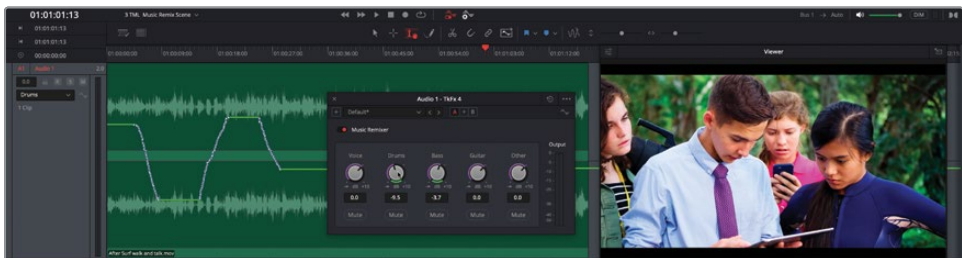
Automation curves can be trimmed, edited, moved, cut, copied, pasted, deleted, and drawn. You'll spend more time with them in another lesson. For now, you'll delete all automation and turn off automation recording until you are ready to try it again. If you enjoyed automating parameters, you are in luck because in the Fairlight page, you can automate nearly everything. Just take a closer look at the list of automation Enables buttons in the automation controls.

To clear track automation, you simply right-click the track header and choose Clear Track Automation.

13 Right-click the A1 track header and choose Clear Track Automation. In the dialog, click Reset.
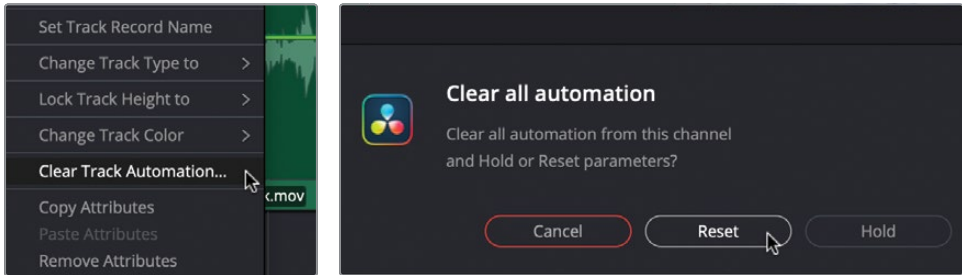
14 Turn off the Automation Toggle and Automation Controls buttons.

Wow! Who knew automating a powerful AI-based plug-in, could be this much fun? This type of musical surgery on a clip containing dialogue and sound effects would have been impossible not long ago.

This concludes the lesson on editing sound effects and music. You've covered many different techniques and tools that you can apply to your own projects. In the next lesson, you'll learn about recording in the Fairlight page.

Lesson Review

1 Where can you find and edit the Markers list in the Fairlight page? (Choose all that apply.)

   a) Mark menu

   b) Media pool

   c) Markers index

   d) Inspector

2 Which modifier functions are unique to the Focus mode multi-tool? (Choose all that apply.)

   a) You can solo-scrub clips in the timeline.

   b) You can snap the head or tail of a clip to the edit point.

   c) Dragging a selection range updates live in the viewer.

   d) Right-clicking the lower half of the clip duplicates the clip.

3 True or False? When using the Focus mode multi-tool, clicking the upper half of a clip activates an I-beam cursor, while clicking the lower half of a clip selects the entire clip.

4 Where in the Fairlight interface can you choose the Jump To options that use the Up-Arrow and Down-Arrow keys for navigation?

   a) Timeline View Options menu

   b) Timeline toolbar

   c) Timeline menu

   d) Timeline right-click contextual menu

5 When using a sync point in the Sound Library, what happens to the selected clip in the Sound Library when you click Audition?

   a) The beginning of the clip syncs to the nearest clip in the selected timeline track.

   b) The sync point on the sound library clip aligns to the playhead in the selected timeline track.

   c) The beginning of the clip aligns with the playhead in the selected timeline track.

   d) Sync point is a media pool function and is not available in the Sound Library.

6 Where do you change the timeline grid from timecode to musical time?

   a) In the Timeline View Options menu

   b) In the Sound Library preferences

   c) In the Inspector

   d) In the Grid View Options menu

Answers

1 a

2 a, b, c

3 True

4 a

5 b

6 d

Recording Voiceover, ADR, and the Foley Sampler

Audio post-production often requires recording new audio files to fill out the soundtrack. These tracks can range from scratch voiceover (VO) and automatic dialogue replacement (ADR) to Foley sound effects or multitrack music recordings. The number and type of tracks you record depend entirely on your audio interface and the type of project.

You can easily record your own tracks in the Fairlight page timeline. All you need to do is set up a microphone, patch the input to a track, arm the track, and start recording.

Time

This lesson takes approximately 75 minutes to complete.

Goals

In this lesson, you'll set up and perform four types of audio recordings. First, you'll manually record a simple voiceover track for the Post Park Normal podcast. Then, you'll use the ADR tools to set up and record automatic dialogue replacement for a scene from the film *Too Much Life*. Next, you'll patch and record noise and tones from Resolve's built-in tone generator for sound effects. Finally, you'll set up and record footsteps to picture using the Foley Sampler plug-in.

> **NOTE** The exercises in this lesson build from the tools and skills you learned in the previous lesson. If you skipped ahead to this lesson, you might need to look back at the previous lesson as a guide for skills already covered.

Setting Up Your Microphone

Before you can start recording, you must set up your microphone. If you don't have a separate microphone, you can use a built-in microphone in your computer. When setting up new audio hardware with your system, it's a good idea to first close DaVinci Resolve; otherwise, the newly attached hardware might not be recognized. Once your audio interface and microphone have been connected and recognized by your computer, they should also be available when you open Resolve.

> **MORE INFO** For more specific information on compatible audio interfaces, including Fairlight, MIDI, and MADI interfaces, a Fairlight Accelerator card, and additional monitors, please refer to the *DaVinci Resolve Reference Manual*.

1 Close DaVinci Resolve.

2 Attach a microphone to your computer or audio interface.

3 In your computer's sound settings, configure your microphone (or the built-in mic) as the audio input device.

For this example, a Rode NT1-A microphone is connected to the computer via a Scarlett Solo USB audio interface.
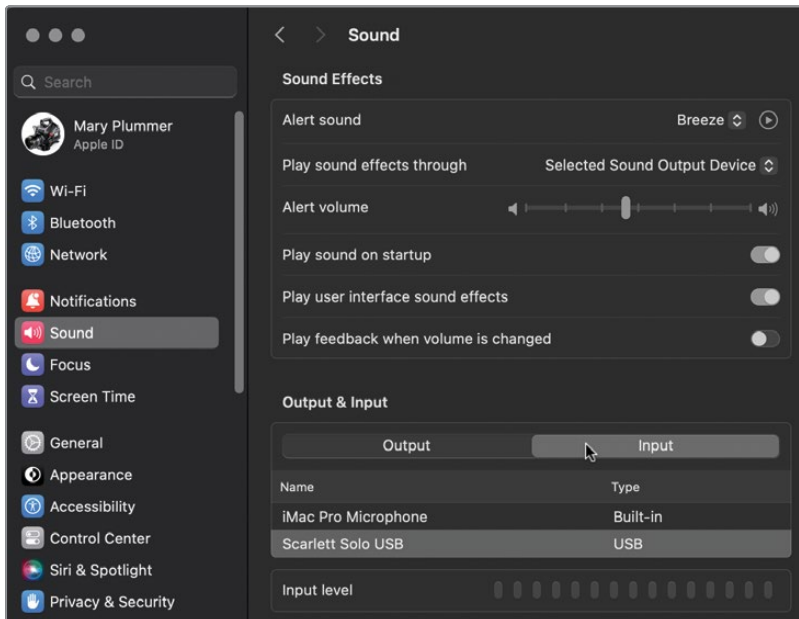
Once the microphone is set up, you can use it in Resolve. Next, you'll open the project that you will use for the recording exercises.

> **NOTE** DaVinci Resolve 20 includes all new voiceover recording tools in the cut and edit pages. This is the first version of DaVinci Resolve to offer audio recording options outside of the Fairlight page. You can learn more about these features in the *DaVinci Resolve Reference Manual*. In this lesson, you'll focus on the recording options in the Fairlight page.

Preparing the Project

Remember the Runner voiceover that you edited in Lesson 2? Let's go back in time and look at the original timeline for that recording session, including the script. This will give you a glimpse of what you will create for a new character shortly. What new character? Apparently, while the clients celebrated how much they loved the podcast intro combo you've been working on, one of them had an epiphany. The sound effects and voiceover are great, but who is driving the mower? And just like that, the role of the groundskeeper

was born. That's right! In a few minutes, you will have the opportunity to record the part of the park groundskeeper. For now, let's open the project and take a quick look at the timeline with the Runner voiceover.

1   Open DaVinci Resolve.

2   In the Project Manager, open your Podcast Intro Combo project.

    This is a good time to reset the UI layout.

3   Choose Workspace > Reset UI Layout.

4   In the Media Pool > Timelines bin, open the timeline **4 Runner Voiceover**.

    The timeline opens in the Fairlight page with one track of recorded voiceover and the voiceover script showing in the viewer. Although this timeline is audio only, it may be useful to show the video tracks so you can see the text clip containing the script in a timeline track.

5   In the Timeline View Options menu, select Display Video Track, if necessary, to show the video tracks in the timeline.

6   In the Playback menu, choose Stop and Go To Last Position to turn on that playback mode.

7   Play the beginning of the timeline to hear some of the recording and see the script in the viewer.

    Sound familiar? It should. You edited this voiceover recording in Lesson 2. Now that you've seen an example of a voiceover recording timeline, it's time to set up a new recording and timeline on your own system.

    Next, you will create a new timeline for the Groundskeeper recording. There are many options for creating a new timeline, including using the File menu, right-click contextual menu, and keyboard shortcut. In this exercise, you'll use the right-click option to create the timeline. First, let's go to the media pool to locate the text clip that will serve as the voiceover script and then create a new timeline for recording.

8 In the media pool, locate the PPN Intro Scripts bin. Select the bin.
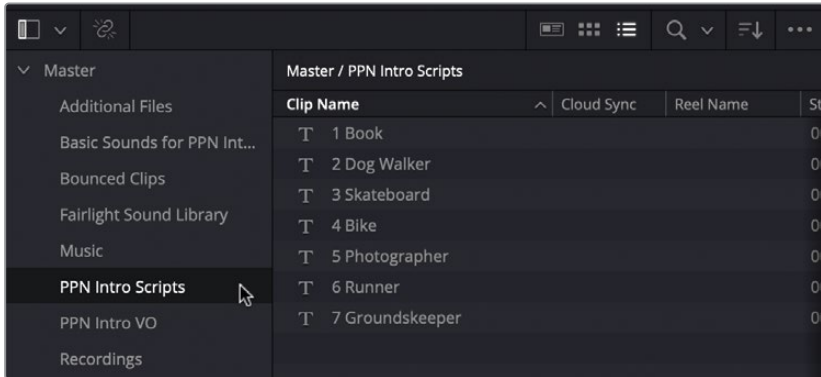
The bin includes a text file script for each character, including the Groundskeeper.

> **NOTE** If you do not see the text files in this bin, click the media pool Options menu (…) in the upper right corner of the media pool and enable the Show All Clips option.

9 Right-click the **7 Groundskeeper** text file and choose Create New Timeline Using Selected Clips. In the Create New Timeline dialog, type **4 Groundskeeper VO** in the Timeline Name field and click Create.
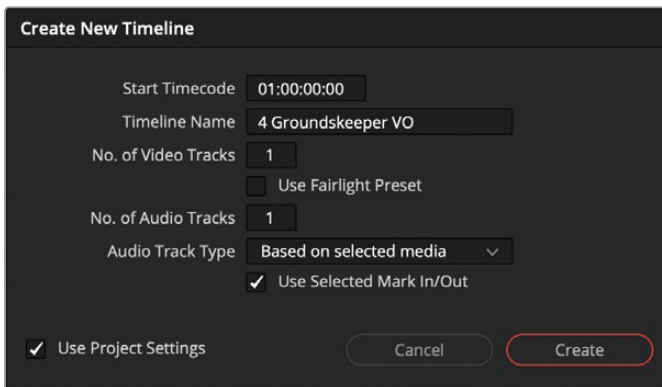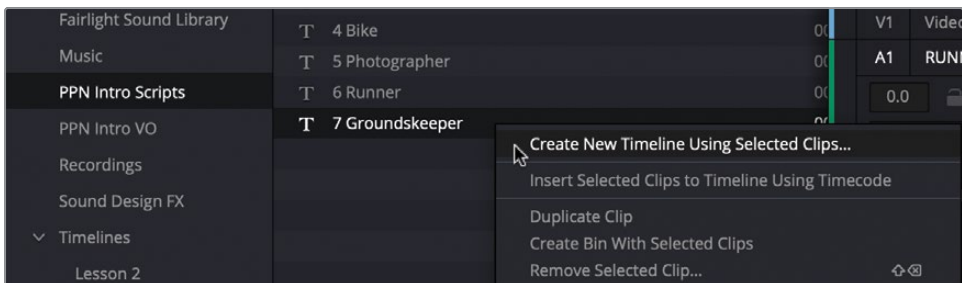
The new 4 Groundskeeper VO timeline opens with three tracks, including the Text clip in the V1 track, an empty A1 stereo track, and a B1 stereo bus track.

> **TIP** You can edit the script text right in the Fairlight page Inspector. Just select the text clip in the timeline and use the Title controls in the Video panel.

If you look at the media pool, you'll see the new 4 Groundskeeper VO timeline among the text files in the PPN Intro Scripts bin. Let's move it to the Lesson 4 bin.

10 In the media pool, drag the 4 Groundskeeper VO timeline to the Lesson 4 bin.
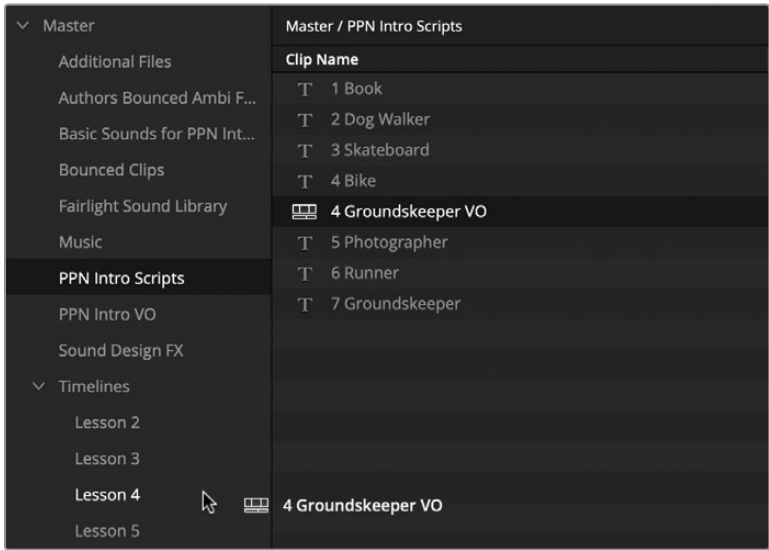
One more thing: There is no reason at this time to show the Bus 1 track or have automation turned on, so to simplify the timeline, let's also turn off automation.

11 Click the Toggle Automation button to the right of the transport controls to turn off automation and hide bus tracks in the timeline.
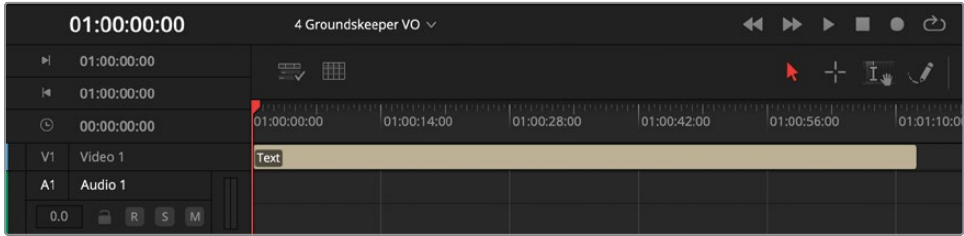
A1 is now the only audio track showing in the timeline. The new timeline is set up and ready for the next exercise.

Choosing a Location for New Audio Recordings

When you record audio files in the Fairlight page, you create new clips in the timeline and media pool and store new media on your hard disk. Files are stored in the Capture location on your system, while the corresponding clips will appear in the selected bin in the media pool. In DaVinci Resolve 20, you can easily set the media location for each new project right in the New Project dialog. You can also change the location for project media in the Project Settings window.

In this exercise, you'll create a new bin for the recorded clips and locate where the new files will be stored on your storage disk.

1   If necessary, show the media pool.

2   In the Master bin list, right-click the Master bin and choose New Bin.

The new bin appears in the bin list with the name field selected, ready for you to type in a new name.

3   In the new bin's Name field, type **Recordings** and press Return/Enter.
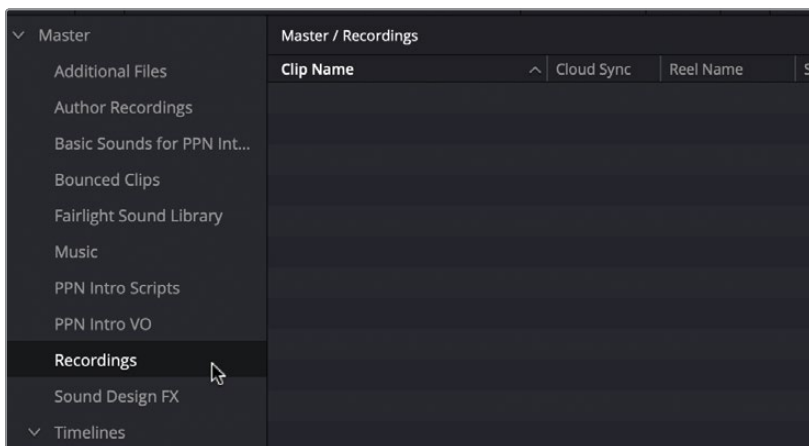
You've created a bin for the recorded clips in your project, and now you'll choose a location to store the new files. For this project, you can use the default Project media location; however, it's a good idea to know where the default project media location is and how to change it. You can specify the location of your project media capture files, which include recorded audio files, in the Master Settings panel of the Project Settings.

4   Choose File > Project Settings or press Shift-9 to open the Project Settings window.

5   In the Project Settings sidebar, click Master Settings to show the Working Folders panel.
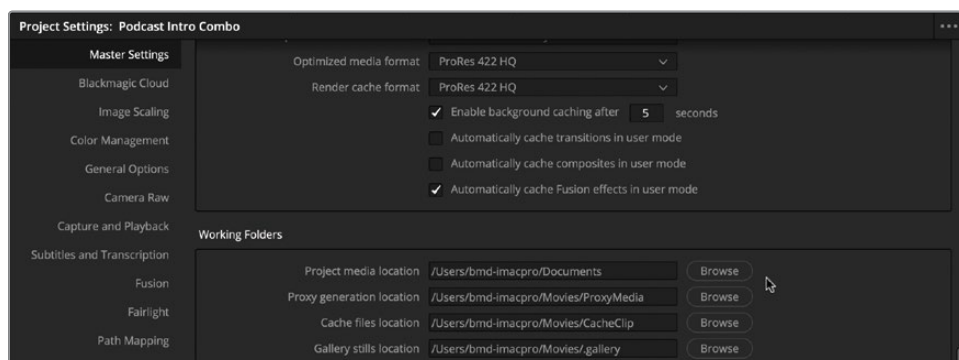
At the top of the Working Folders, you'll see that the current Project media location is set to the default location in the Documents folder or another user-defined location. This location is where newly recorded files will be stored. For this project, you can keep the current settings.

If you want to save the recording to a different location, click Browse and choose that new location now. The new location will apply to all newly captured video and audio media. Here, in Working Folders, you can also see the locations for proxy generation, cache files, and gallery stills.

6   In the Project Settings sidebar, click Capture and Playback and ensure that the Project media location dropdown menu is set for "Video and audio." If necessary, change the Capture dropdown menu from "Video only" to "Video and audio."

TIP It's always a good idea to check the project media location before recording audio or capturing video files. Also, if you share a workstation and change the media location, be sure to either change it back or coordinate with the other users so that you can all keep track of your media as you go.

Setting the Audio Metering for Recording

Before closing the Project Settings window, let's look at the Fairlight settings, where you can set the Audio Metering to "Pre fader metering on tracks" for recording.

1   In the Project Settings sidebar, click Fairlight to see the Fairlight settings.

2   In the Audio Metering settings, click the "Pre fader metering on tracks" option to select it, if necessary.

The "Pre fader metering on tracks" option controls whether the position of the faders affects the meters in the mixer. By default, the "Pre fader metering on tracks" option is unchecked, so the meters display each clip's signal level after whatever fader adjustments have taken place. This is often referred to as *post-fader metering* because the meters in the mixer show the post-fader results of all signal processing and level changes applied to the clips and track. In this mode, whatever change you apply to a fader is reflected in the meters. Selecting the "Pre fader metering on tracks" option, on the other hand, shows the actual levels of each clip in the track, regardless of the fader position. This includes the track source signal if you're recording or routing signal from another track or bus. This is an important distinction because when you are recording, you usually want to see the levels coming in from your source. Otherwise, a signal could be too hot (loud), and you might not realize it because the faders have been lowered.

3   Click Save to save and close the Project Settings window.

Before recording to a track, you must first set the input. This is referred to as *patching a track*. Next, you'll patch the track to your microphone source for recording.

Patching a Track for Recording

To patch a track's input, you can choose Fairlight > Patch Input/Output or click the Input settings in the mixer. Let's use the latter method for this recording. First, it's a good idea to consider whether you want to record in stereo or mono. Stereo files consist of two audio channels, left and right, while mono tracks have only one audio channel. In most cases, the preferred track format for dialogue recordings is mono, especially when working with voiceover or narration.

For this exercise, you'll change the A1 track format from Stereo to Mono. Then, you'll use the Input settings in the mixer to patch the microphone to the mono track. To see the current number of channels in a track, you might need to increase the track height.

1   Drag the bottom of the A1 track header downward to increase the height of the track until you see the text "No Clip" in the lower left and the 2.0 channel indicator in the upper right.
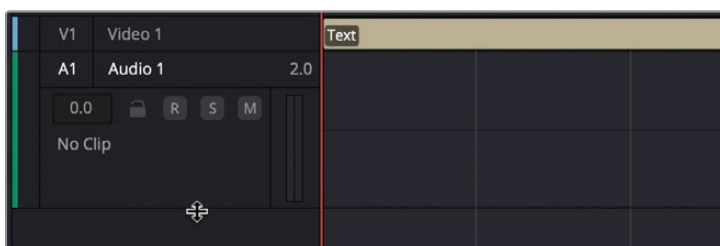
The 2.0 channel indicator on the A1 track header shows that the empty track is stereo with two channels, left and right. You can change a track's channel format anytime via the right-click contextual menu.

2   Right-click the A1 track header area and choose Change Track Type To > Mono.

Now, the A1 track header's channel indicator shows 1.0, which means it is a single-channel mono track.

> **TIP** You can change the track type for new timelines in the Editing panel of the User Preferences. The default track type for new timelines is stereo.

3 Name the A1 track **Groundskeeper**.
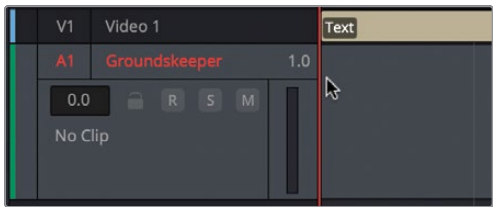
4 If necessary, show the mixer.

Input settings are displayed at the top of each channel strip just below the track number assignment. Tracks without an assigned input will display No Input.

5 At the top of the A1 channel strip, in the Input pop-up menu, choose Input.
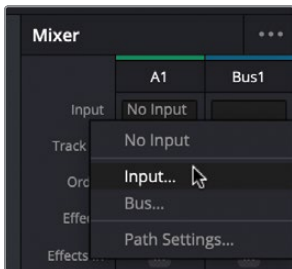
The Patch Input/Output window opens. This window displays the source inputs to the left and the destination tracks to the right.

6 Select the first channel for your microphone as the source and select the Groundskeeper track as the destination.
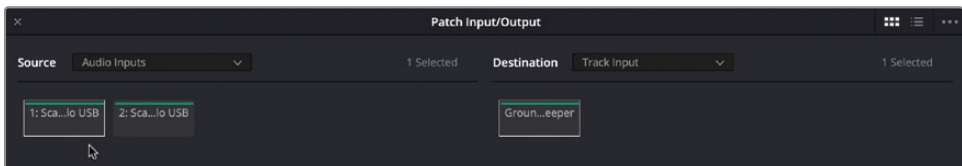
> **NOTE** If you were recording with a stereo microphone or recording multiple microphone sources to multiple tracks, you would patch each track's audio input channels accordingly.

7 Click Patch to set your input patch.
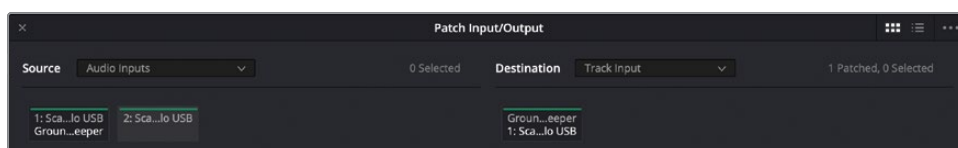
The Patch Input/Output window and the A1 channel strip in the mixer update to show that the microphone channel you selected is patched to the A1 track.

8 Close the Patch Input/Output window.

Your track is created and patched, so now you can arm it for recording. The Arm button, labeled "R" for "Arm for Record," is available in the track header, tracks index, and the track's channel strip in the mixer.

9 In the A1 track header, click the Arm button (R).
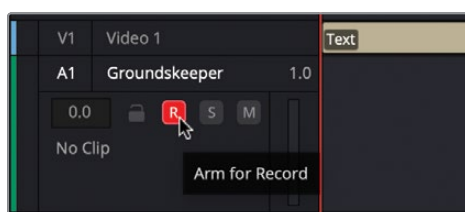
The Arm buttons in the track header and channel strip turn red to indicate that the track is armed for recording.

> **NOTE** If your hardware supports multitrack recording, you can patch and arm multiple tracks accordingly.

Now that the track is patched and armed, it's a good idea to take a moment to check your monitoring style.

Monitoring the Track Input

DaVinci Resolve 20 offers a variety of user-defined input monitoring styles with which you can hear the microphone signal before, during, and after you record. The Fairlight menu includes five Input Monitor Style options, including Input, Auto, Record, Mute, and Repro.
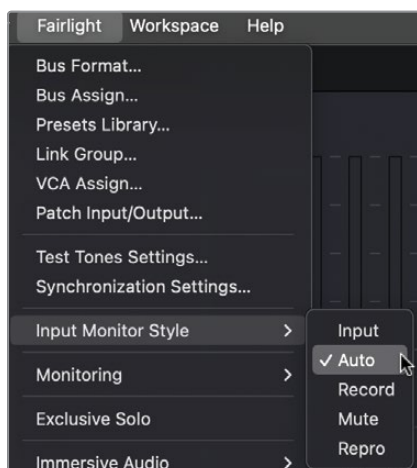
The Input style lets you hear only the live signal on input, whereas the Record style limits you to monitoring the input signal to active recording when the Record button is on. The Repro style monitors only the audio already recorded to the track; instead of hearing the live input, you can review what was just recorded during recording.

As you might have guessed, when you choose the Mute style, you'll hear nothing. If you think you'd never need to use the Mute style, imagine trying to record a scratch voiceover in the same room as the speakers/monitors without using headphones.

Fortunately, the default input monitoring style, Auto, is perfect for this recording exercise because it lets you hear the live input signal from armed tracks during recording and the contents of each track during playback.

1   In the Fairlight menu, choose Input Monitor Style > Auto.

2   Speak into the microphone. You should be able to hear the input signal through your headphones and/or speakers.

> **TIP** If the microphone and monitoring speakers are in the same room, you'll need to use headphones to monitor your input during recording. If you don't have headphones, you can mute playback during recording or use the Mute input monitoring style.

Finally, if you're using an external microphone and audio input/output interface, you might need to increase the microphone input level. You can do so in the Path Settings window in the Input pop-up menu.

3 In the mixer, in the A1 channel strip's Input pop-up menu, choose Path Settings.

The Path Settings window opens with standard controls for adjusting the input level of audio signals for each track. Here, you can use the Mic/Instr control to adjust the microphone/instrument level for the source patched to the A1 track.

> **NOTE** If you're using an audio interface to connect your microphone, you might not see the Mic/Inst controls in the Path Settings window. In that case, use the controls on your audio interface to adjust input levels and phantom power.

4 If your microphone input level is low and you're using an external microphone and audio interface, you can increase the Record Level.

5 When you're finished, press Esc (Escape) to close the Path Settings window.

6 Hide the mixer.

> **MORE INFO** You can find detailed information about all the Input Monitoring styles and Path Settings controls in the *DaVinci Resolve Reference Manual*, available in the Help menu.

7 Move the playhead over the beginning of the text clip in the V1 Video 1 track so you can read the text in the viewer.

You are ready to record.

Recording Consecutive Takes in the Timeline

You have completed all the necessary steps to prepare your project for recording. Before you start recording, it's a good idea to practice your lines and double-check that the Recordings bin is still selected. Remember, you're creating a voiceover track for a new character in a fictional podcast intro. However, the podcast intro was created entirely for this training guide to help you explore the Fairlight page, so there is no pressure on your part for expensive recording equipment or delivering award-winning performances.

1   If necessary, in the media pool, select the Recordings bin to designate it as the storage location for your new recordings.

2   Make the viewer a floating window. Hide the meters.

3   Resize the viewer as needed for a clear view of the script.

    For the purposes of this voiceover recording session, you'll need to read through the lines sequentially, one after another, and then read the entire voiceover script again.
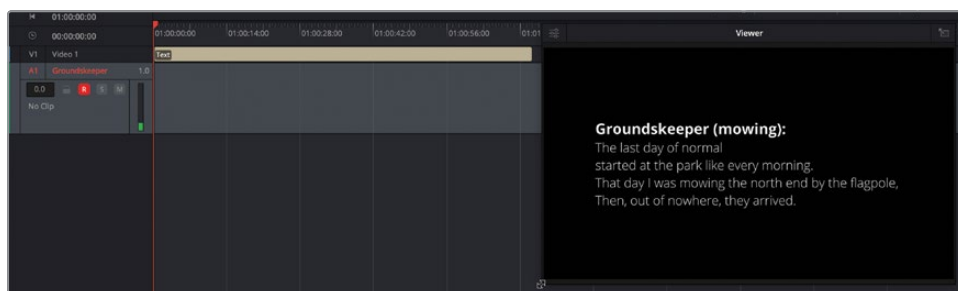
If you'd like a little motivation for your script reading, you'll find the director's notes for the voiceover talent in the project notes. What are project notes? Every DaVinci Resolve project includes a handy text notepad where you can store notes for anyone working on the project.

4 Choose File > Project Notes to see the text window containing the director's project notes. If you'd like, read the notes before proceeding to recording. When finished, close the project notes.
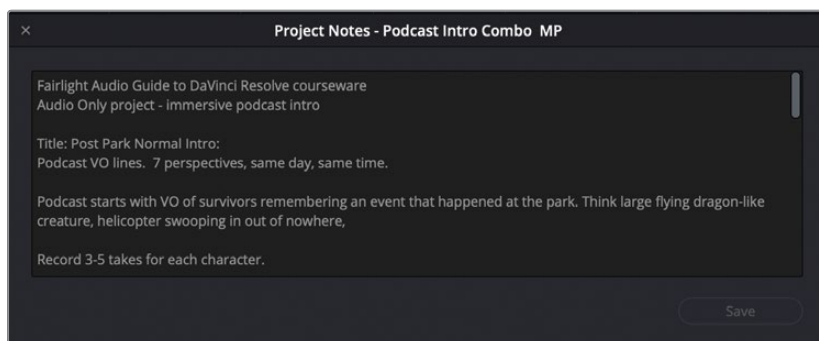
> **NOTE** Each DaVinci Resolve project provides access to project notes, a simple "scratch pad" for keeping track of text notes associated with each project. There's also a Project Notes command in the contextual menu for project icons in the Project Manager, which makes these notes accessible to everyone who's connected to that project library.

5 Practice reading your voiceover lines once.

6 Make sure that the A1 track's Arm button is on (red).

Recording starts at the playhead position on the armed track.

7 Move the playhead to the beginning of the timeline.

The Record button is in the transport controls at the top of the screen. When the playhead starts moving and drawing a red region within the armed track, you are recording.
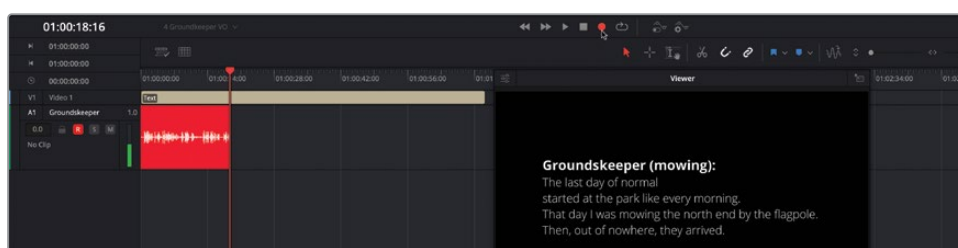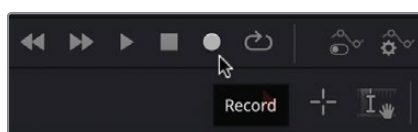
8 In the transport controls, click the Record button. Read the script into the microphone all the way through two or three times. When you're finished, press the Spacebar to stop recording.
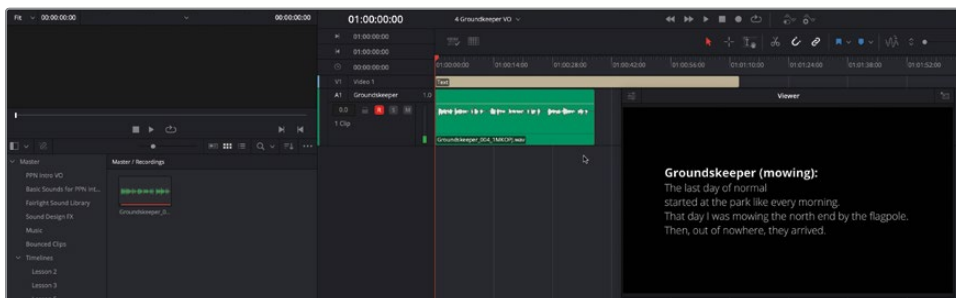
The new audio clip appears in the A1 Groundskeeper track and in the Recordings bin as a .wav file. Notice that the clip name starts with the track name Groundskeeper, followed by the take number 001. Also, the playhead automatically returns to the starting position because you have the Stop and Go To Last Position option selected in the transport controls.

> **TIP** In the Keyboard Customization window, you can assign a keyboard shortcut such as Option-R or Alt-R for Playback > Record. Keep in mind that interface buttons are also available via the menu, and you can create customized keyboard shortcuts for menu options.

9 Disarm the A1 track. Play some of the clip to hear the results of your recording.

Don't worry if your recording was rough. This lesson aims to give you the skills to record audio in the Fairlight page, not perfect your talent as a voiceover artist. Once recorded, you have many options for editing the voiceover, which you've already explored in Lesson 2. Next, you'll repeat this recording, only this time as multiple takes in track layers.

Recording Takes in Track Layers

Let's record a few more takes, this time as track layers. The only difference between recording consecutive takes and multiple takes in layers is that you will stop between takes when recording in layers. There is no special setup required because in the Fairlight page, new recordings do not overwrite existing material in the same track.

Instead of creating a new track and patching it to the microphone for the layered recordings, let's simply duplicate the A1 track. Duplicating the track retains the track name, contents, and input patching. Let's also set a custom record name for the new recordings instead of the track name.

1 Right-click the A1 track header and choose Duplicate Track.
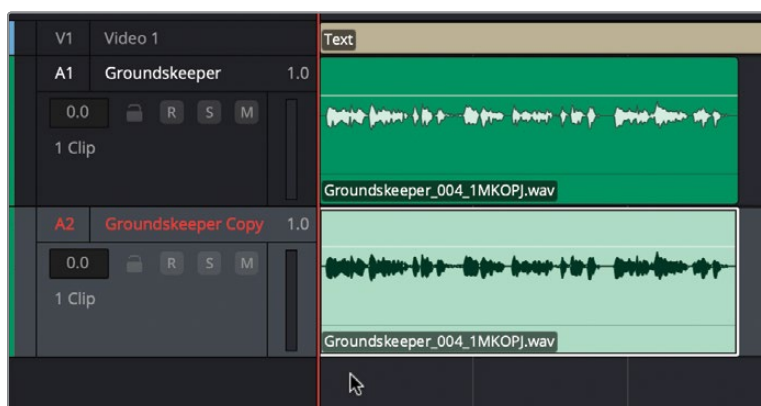
A new A2 Groundskeeper Copy track appears below the A1 Groundskeeper track.

2 Delete the clip in the A2 track. Change the name of the track to **Groundskeeper 2**.

3 Right-click the A2 track header and choose Set Track Record Name.

4 In the Record Seed Name dialog, type **VO 7 Groundskeeper**.
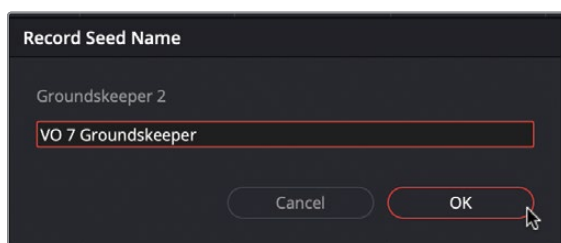
5 Click OK.

6 Mute the A1 track.

7 In the A2 track header, click the Arm button (R).

8 Move the playhead to the beginning of the timeline if necessary.

9 In the transport controls, click the Record button. Read the script into the microphone all the way through once. When you're finished, press the Spacebar to stop recording.

The first take in the A2 track is named VO 7 Groundskeeper. Let's record a second take. Doing so will not overwrite the first recording; instead, the new take will be saved as a separate layer in the same track. To keep track of your takes, color code them as you go.

10 Right-click the clip in the A2 track and choose Clip Color > Yellow.
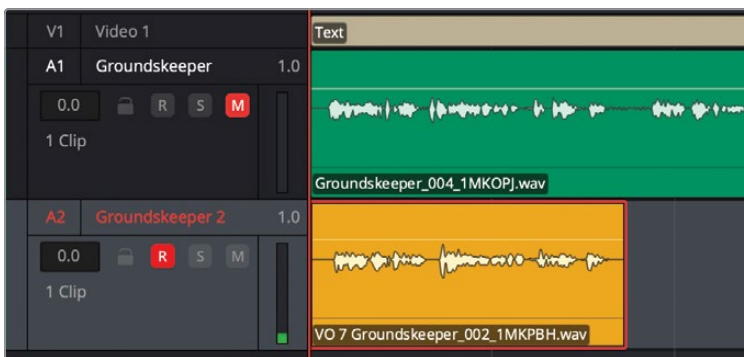
11 Record another take. When you're finished, stop playback and change the color of the second take to orange. Listen to the second recorded take.

> **NOTE** If your second take is shorter than the first, you'll see where the second recording overlaps the first take in the track.

Now that you've recorded several full takes, you can try recording a partial take of just the last section, "Then, out of nowhere, they arrived."

12 In the Playback menu, choose Stop and Go To Last Position to turn off the playback mode.

13 Press the JKL keys, using the waveform as a guide, to move the playhead to the last section of the second take, just before "Then, out of nowhere...."
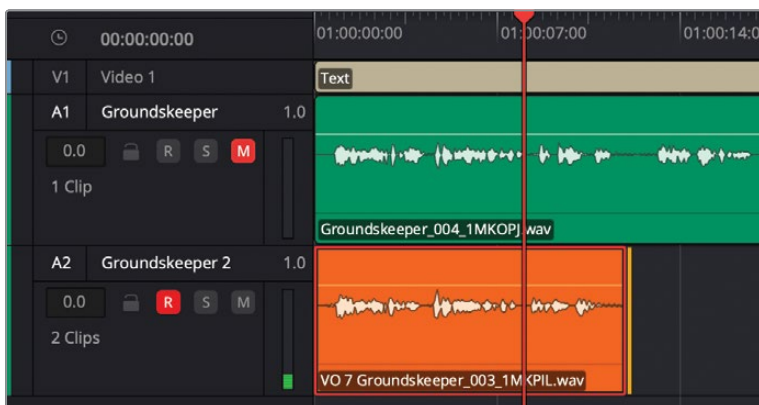
This time, when you record the third take, vary the performance of the last section.

14 Click the Record button and record the entire section "Then, out of nowhere, they arrived." Click the Stop button or press the Spacebar to stop recording.
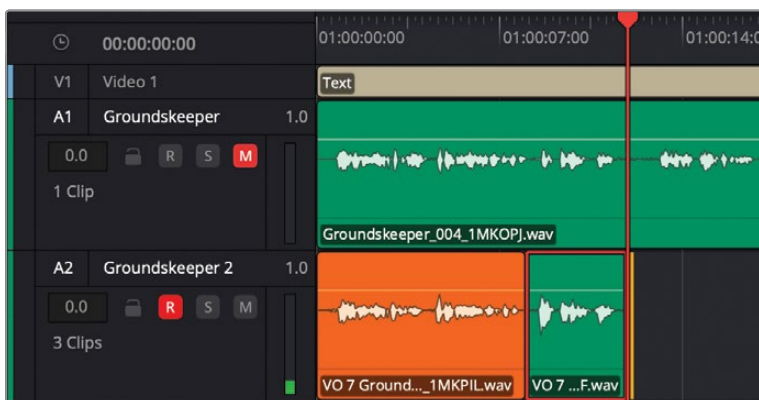
15 Change the partial take color to apricot.

16 Disarm the A2 track. Notice that the A2 track header shows that it contains three clips.
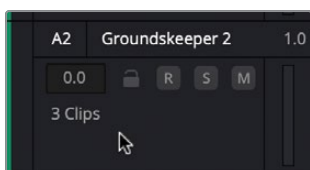
17 Save your project.

Now that you've recorded several takes in the same track, let's show the audio track layers so you can see all your takes at once.

18 Choose View > Show Audio Track Layers. Increase the track height and zoom as needed to see the layered clips in the A2 track.
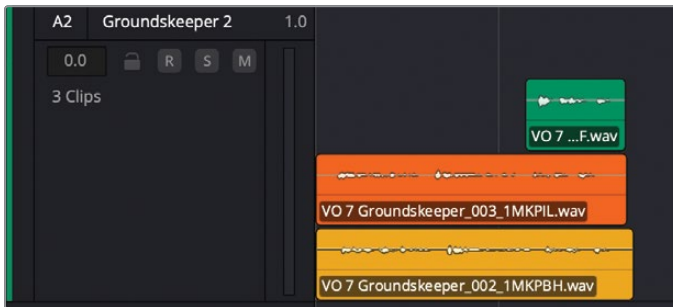
Each clip has its own layer, and an empty, clip-sized space appears in the track above the clips. Once again, you already have experience editing clips in track layers, and now you know how to record them!

19 Choose View > Show Audio Track Layers to deselect that option.

You have successfully set up, patched, armed, and recorded a scratch voiceover track in the Fairlight timeline. In the next lesson, you'll explore the Fairlight ADR toolset.

> **NOTE** If you're using a Fairlight Desktop Console, Fairlight Desktop Audio Editor, or Fairlight Audio Editor panel in a Fairlight console, you'll have additional options for manually recording in the timeline. These options include Record Here, Record Range, Record Clip, Record Again, Punch In Again, and Record Head.

What Is ADR?

If a dialogue recording can't be used because it is damaged, noisy, or unclear, it must be replaced with audio from other takes or be re-recorded. The process of re-recording production dialogue is called automated dialogue replacement (ADR), or *looping*. ADR sessions usually require the original actor to re-record the dialogue to improve the sound quality or reflect script changes. ADR sessions are also commonly used for dubbing films in other languages, recording dialogue for animated films, and performing Foley sound effects. The term *looping* refers to the mechanics of recording dialogue replacement that involves playing, rehearsing, and recording the same dialogue cue over and over again.

Setting Up an ADR Session

DaVinci Resolve includes a full ADR toolset in the Fairlight page. In this exercise, you'll open a new timeline for ADR recording and use the ADR Setup panel to customize your session.

1   Open your TML Audio Post project. In the media pool Lesson 4 bin, open the **4b ADR Session Start** timeline.
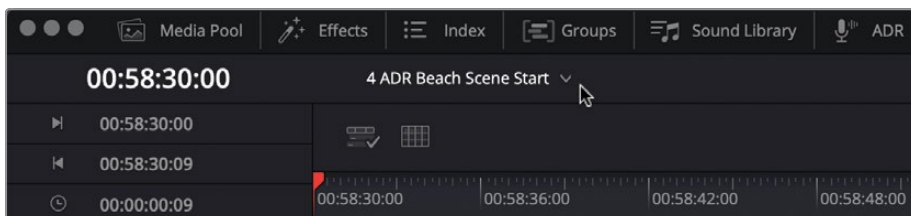
This is a scene with Harper and her dad filmed on the beach. Like the previous surf scene you worked with, this original production dialogue needs replacing. As you can see, each character's dialogue clips have been separated into different tracks. This is part of the dialogue editing process, even if the dialogue will be replaced. Also, the A13 ADR track was created for your replacement dialogue recordings.

All the visible tracks should be muted except the reference sound on A1 and A2, as well as A13.

2   Play the scene while listening to tracks A1 and A2 to hear the stereo reference track from the scene. When you're finished, stop playback and move the playhead to the beginning of the timeline.

Now that you've listened to the finished scene, let's mute the reference tracks and listen to the original production sound in A3.

> **NOTE** Tracks A1 and A2 are mono tracks linked as a stereo group, so they play back as stereo left and right. This also means there is a single stereo fader for both tracks in the mixer, and any changes you make to the track header in one track will apply to both. You'll learn more about linked track groups in a later lesson.

3 Mute the A1 ref L track to mute both A1 and A2 linked tracks.

4 Unmute the A3 Production track.

5 Play the timeline from the first clip in the A3 track to hear the production sound as it was recorded on location.
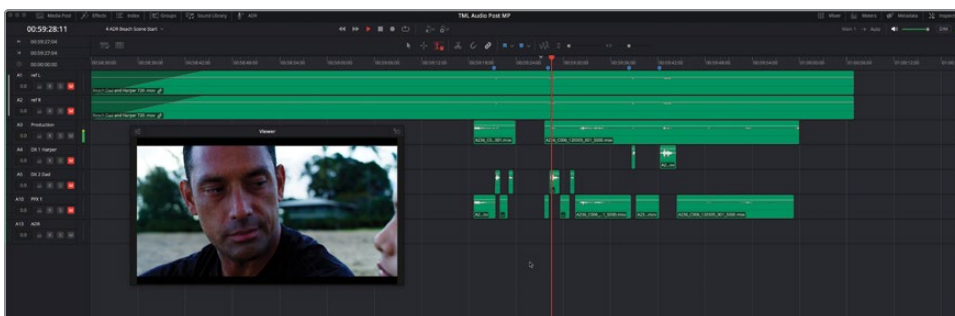
Let's listen to the checkerboard edit. The difference with the checkerboard edit is that some of the clip gain levels were increased to make it easier to hear the spoken words.

6 Mute the A3 track and unmute the A4, A5, and A10 tracks. Listen to the checkerboard edit.

The acting is good, but the dialogue recordings could definitely use a do-over. Blue markers in the timeline show where the spoken words are located. Let's use the markers for navigation and locate the first line that needs to be replaced.

> **NOTE** In the previous lesson, you used the Focus mode multi-tool for the entire lesson. From this point forward, you can use whichever mode and tool you prefer. Feel free to switch between the Arrow tool, Range tool, or multi-tool at any time. If a specific tool is needed for an exercise, it will be called out in the steps.

7 Press Shift-Down Arrow to move the playhead to the first marker. Then, zoom in horizontally so the timeline markers are near the center of the ruler and the clips in that section are easy to see.

You will soon record replacement dialogue for either Dad or Harper. Let's go to the ADR tools to set up your recording session.

8 In the interface toolbar, click the ADR button to display the ADR tools. Then, click the Setup tab at the top of the ADR tools to display the ADR Setup panel.
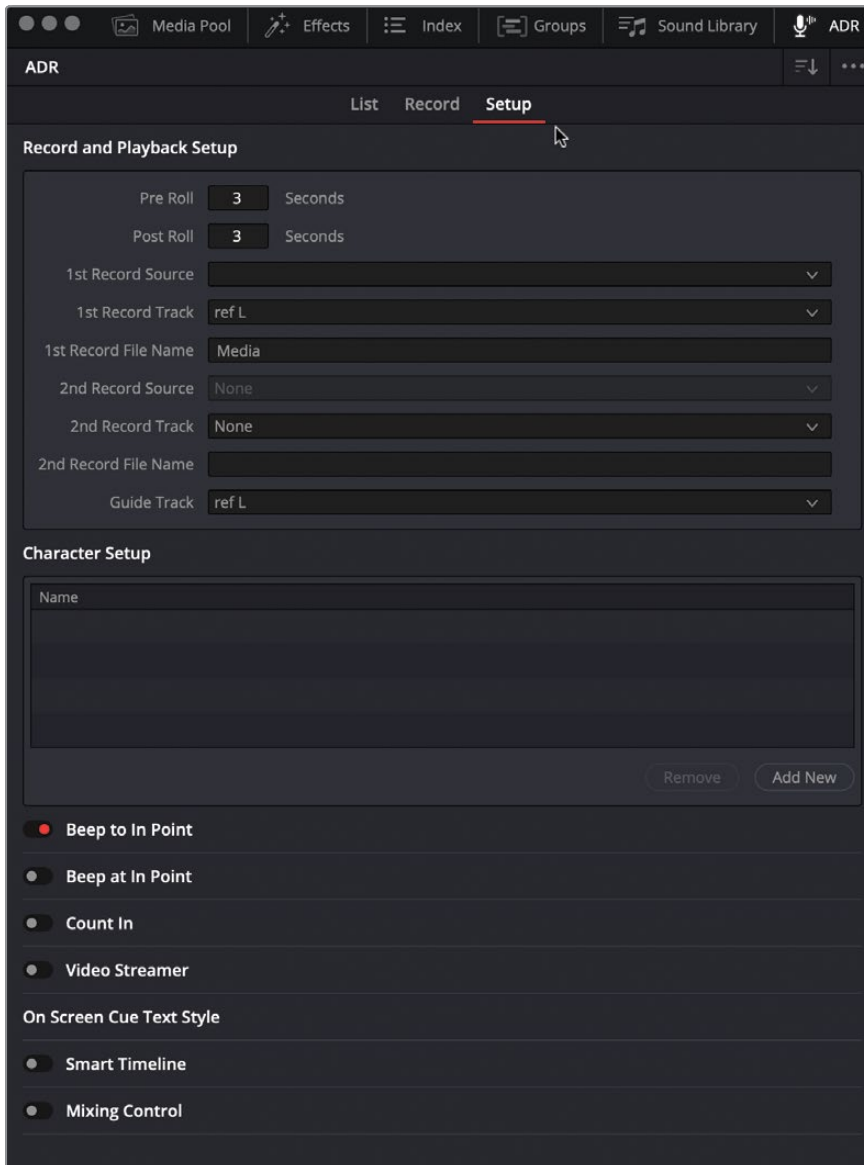
The ADR Setup panel is self-explanatory, so let's just walk through the setup for this session, starting at the top with the Record and Playback Setup controls.

The Pre Roll and Post Roll controls let you determine how much time you have before and after a cue is recorded. Think of pre-roll as allowing time for a count-in before recording begins.

9 Set the Pre Roll to 6 Seconds and the Post Roll to 2 Seconds.

Notice that the Record Source menu is empty. To choose a source, you must first choose the Record Track. DaVinci Resolve now includes two record tracks and two sources so that you can have two people recording simultaneously if needed. You'll only use the first record track and source for this exercise.

10 Choose 1st Record Track > ADR. Then, from the 1st Record Source dropdown menu, choose your microphone.

> **NOTE** The ADR track can now be armed for recording. This will happen automatically when you rehearse or record a cue.

You will focus on the Guide Track as you record the replacement dialogue. While recording, you can listen to the reference sound in A1, the production sound in A3, or the character's dialogue track. You can change this in settings anytime as needed. To keep things simple for this example, let's use the A3 production sound as the guide.

11 Choose Guide Track > Production.

The 1st Record File Name field lets you set a seed name for the ADR recordings. For this exercise, you'll leave this field blank so the naming is automatic based on the character name and cue.

12 If necessary, delete any text in the 1st Record File Name field.
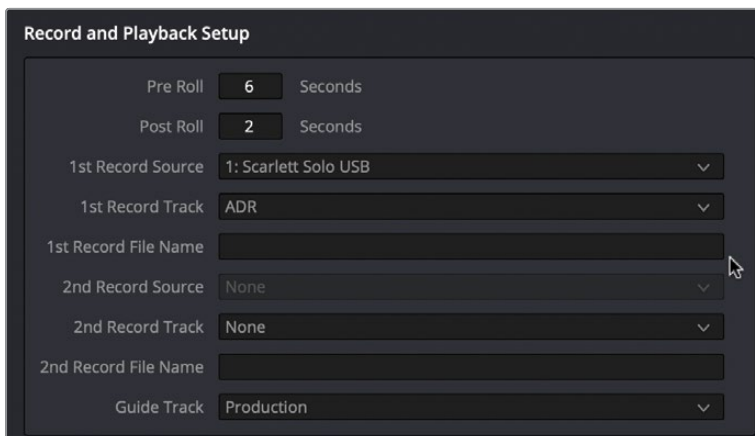
Next, let's move down to the Character Setup area in the center of the ADR Setup panel and add the character names.

13 Click the Add New button. In the selected character Name field, type **Harper**. When you're finished, press Return/Enter.

14 Repeat step 13, but type **Dad** in the Name field this time.
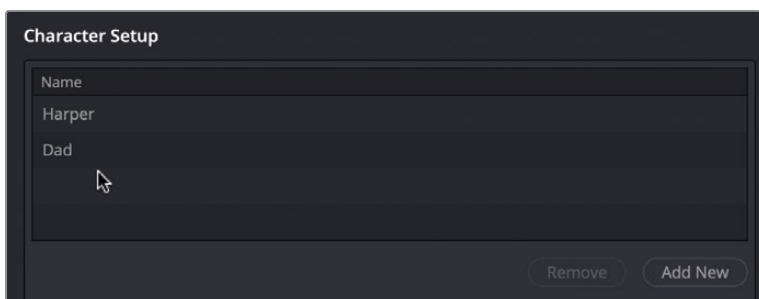
When working with professional talent in an ADR session, you'll find that each actor has unique personal preferences for working with cues. Some like to hear a series of beeps before they speak. Some prefer a visual count-in or a colorful streamer that moves across the onscreen text cue during recording, with no beeps. Others want no visuals and only a single beep just before they speak. Fortunately, the Fairlight ADR Setup panel includes a variety of audio and visual cues that you can mix and match to suit your sessions and your talent. In addition to switching the different audio and visual cues on or off, you can double-click the setting name to reveal the full controls for that element.

15 Click the switch to the left of the controls to turn them on: Beep to In Point, Beep at In Point, Count In, Video Streamer, and Smart Timeline, as shown.
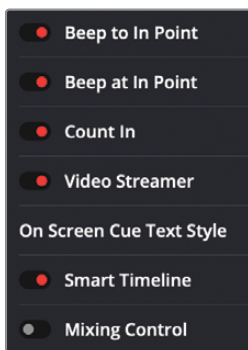
16 Click setting titles for the Beep to In Point and Beep at In Point settings to show the controls for those settings.
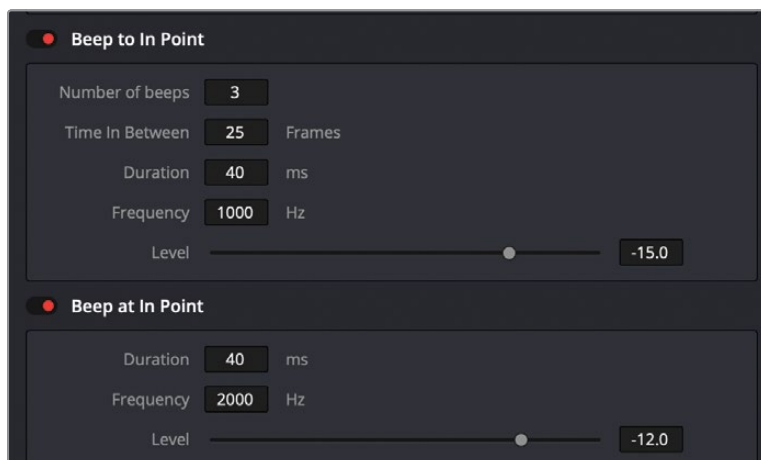
These Beep settings offer two audio cues to help the talent prepare to record their replacement dialogue lines. If you look closely at the settings for each, you'll see that the Beep to In Point is set to emit a 15 dB, 1000 Hz beep three times before the In Point for the recorded ADR Cue, while the Beep at In Point will emit a single 2000 Hz beep at -12 dB at the In Point where the recording begins. The slight difference in frequency and volume level between the two types of beeps gives the actor an easy-to-follow "one, two, three, go!" during rehearsal and recording.

To utilize the audible beep cues, you must create a track and assign the input to the Beeps in the built-in System Generator available via the Test Tones Settings in the Patch Input/Output window and Fairlight menu. You'll work more with the Test Tones Settings later in this lesson. For this exercise, the Test Tones Settings Beeps have already been assigned to the A12 ADR BEEP track, which is currently hidden from the timeline in the Tracks index. You'll take a closer look at this track later.

17 Click setting titles for the Beep to In Point and Beep at In Point settings to hide the controls for those settings.

18 Click the Count-In header to reveal the Count-In settings. Then, change the Count From field to **5**. Leave the "to" field set to 1.
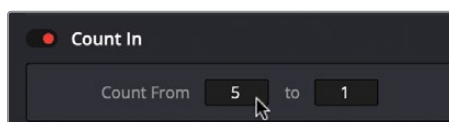
19 Click the On Screen Cue Text Style header to reveal the settings.

Here, you can change the Font, Size, and other style elements for the onscreen text cues.

You can enable the Preview button to see a live text preview while you adjust the text controls. Let's try it.

20 Click the Preview button in the lower left corner of the On Screen Text Style controls to enable preview.

21 Type **This is a live text preview** in the Text Sample field.

The sample text appears in the viewer.

22 Change the Font to Arial Black and the Size to 60.
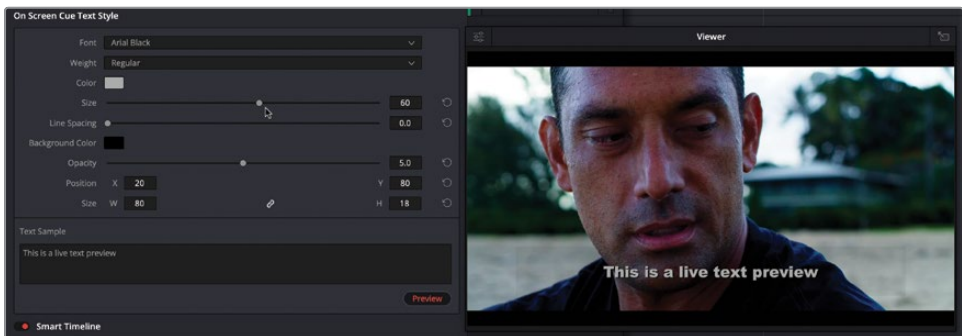
23 Feel free to experiment with other text style changes. When you're finished, reset the Size to 60 and turn off the Preview button.

24 Option-click (macOS) or Alt-click (Windows) any setup headers to hide all the opened Setup settings panels.

The ADR session is set up. Next, you'll set up the cues in the List panel.

> **NOTE** You can return to the ADR Setup panel at any time to modify your settings while you work.

Manually Creating ADR Cues

You can import an entire ADR cue list or manually create new cues as you go. Each cue has a unique Cue ID number that can be changed anytime. Cue ID numbers offer greater flexibility for importing and merging cue lists in collaborative workflows. In this exercise, you'll create four new cues in the timeline. To manually create cues, you simply mark an In point and Out point for the cue in the timeline and click the New Cue button in the ADR List panel. You can also drag a range to set the In and Out points. Once a cue is created, you'll add the text and character to the cue. Let's start with the first marker where Dad says, "Hey."

1   Check the Playback menu to make sure the Stop and Go to Last Position option is off.

2   Click the List tab to show the ADR List panel.
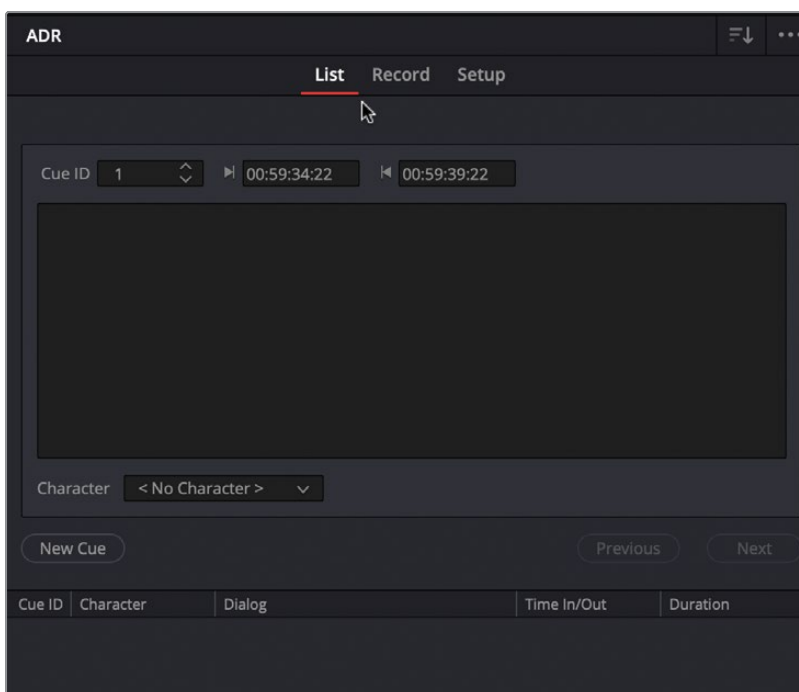
3   Select the A5 DX 2 Dad track so you can easily identify the original dialogue.

4   Move the playhead to the first marker. Press I to set an In point.

5   Play the clip in the A5 track and press O when dad finishes saying "Hey."

> **NOTE** Don't worry about setting the Out point on the exact frame where the line is finished. Your reaction time in setting the Out point will be similar to the reaction time of the talent when they need to record.

6 In the ADR list panel, click New Cue.
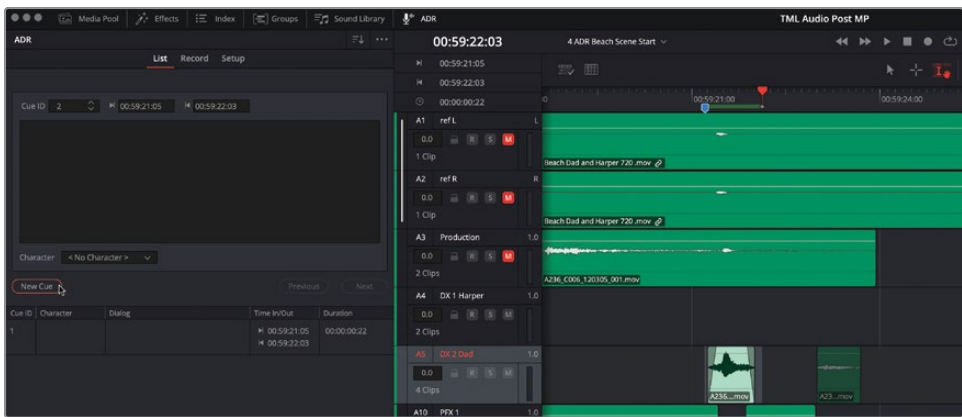
Cue 1 appears in the list. When a cue is selected in this list, you can modify its information in the cue editing controls above the list. Let's set the character for the selected cue.

7 Select the cue in the list, if necessary. Then, in the cue editing controls, in the Character dropdown menu, choose Dad.

The only element missing now is the dialogue.

8 In the dialogue field above the cue list, type **Hey.**
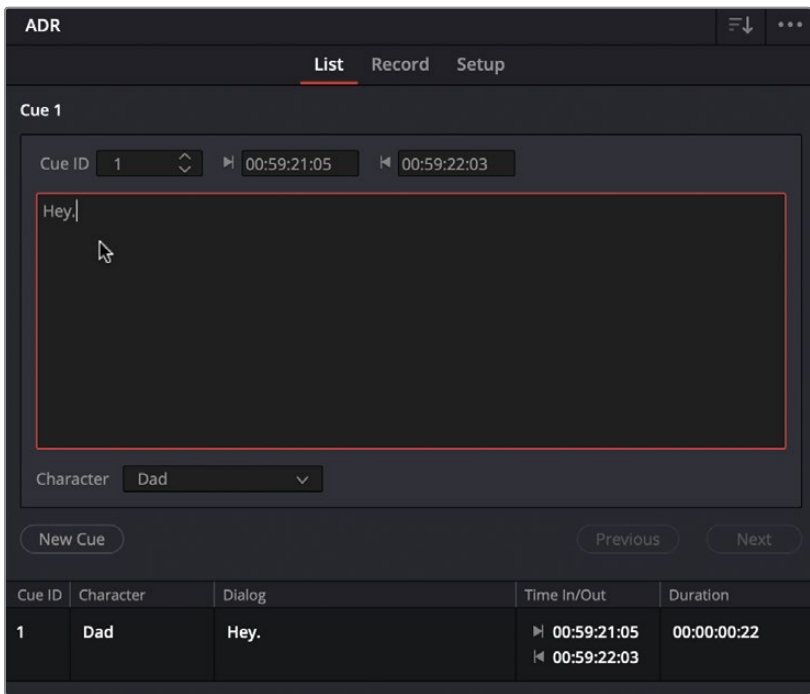
The text appears in the dialogue field in the cue list as you type. Now that you have created one cue, you can create the next one. Instead of marking In and Out points, you'll drag a range using the Range tool. Also, to keep things interesting, you'll type the dialogue before making the new cue.
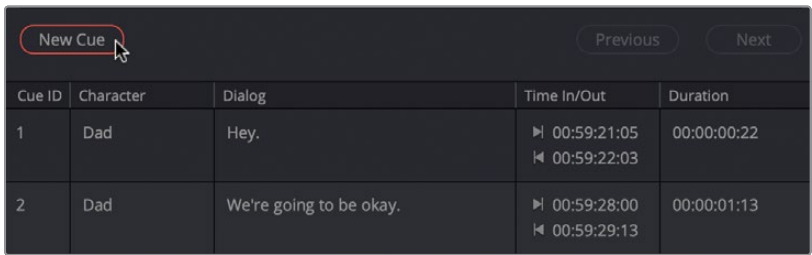
9 Press R to switch to the Range tool, if necessary.

10 Click the empty space below Cue 1 in the list to deselect the cue.

The Cue ID for the next cue is automatically set to the next sequential number, 2. You could change the cue number at this time or leave it. For this exercise, you'll create four sequential cues.

11 In the timeline, navigate to the next marker. Drag a range in the A5 track from the marker to the end of the clip after Dad says, "We're going to be okay." You do not need to clear the current In and Out points before marking new ones.

This time, you'll type the text in the dialogue field for Cue 2 before you click New Cue.

12 In the Cue 2 Dialogue field, type **We're going to be okay.**

13 Click New Cue to create Cue 2.

Cue ID	Character	Dialog	Time In/Out	Duration
1	Dad	Hey.	▶️ 00:59:21:05 ◀️ 00:59:22:03	00:00:00:22
2	Dad	We're going to be okay.	▶️ 00:59:28:00 ◀️ 00:59:29:13	00:00:01:13

You've finished setting the cues for Dad's dialogue. Next, you'll set the cues for Harper's dialogue.

Finish Setting the Cues

You know what to do! Create cues for Harper's dialogue as follows: Cue 3 "Well" and Cue 4 "Will you teach me how to surf?" Be sure to set Harper as the Character. You can also select the A4 DX 1 Harper track to make it easier to see her dialogue clips. When finished, clear any In and Out points if necessary. Your ADR session is ready for recording.

> **NOTE** If you didn't finish the previous ADR exercises, feel free to open the timeline **4a ADR Setup** to catch up.

Recording ADR Cues in the Timeline

Once you've set up your ADR session, you can simply go to the ADR Record panel to record. However, your talent will probably need to rehearse a few times before recording. In that case, you'll use the Rehearse button to the far left of the Record panel controls. In this exercise, you will open the ADR Record panel and select a cue to record. Then, after rehearsing the cue, you'll record three takes.

As with all recordings, you must also select a bin for them in the media pool; otherwise, they will appear only in the Master bin. Since this project doesn't have a Recordings bin, you can make one.

1 Show the media pool. Create a new bin and name it **Recordings**. Select the Recordings bin. Then, reopen the ADR panel.

2 Click the Record tab to go to the ADR Record panel.
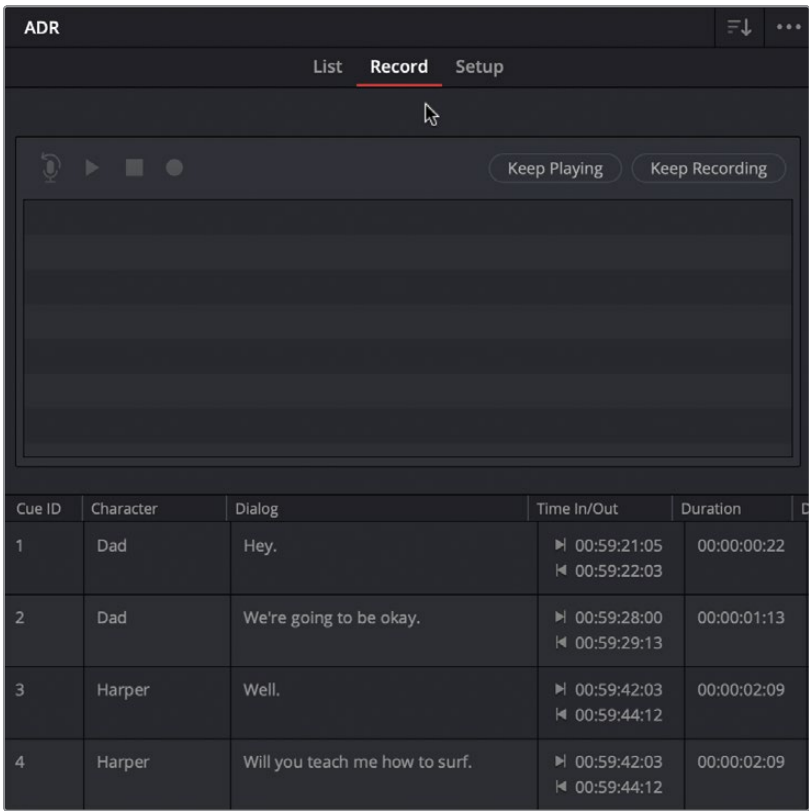
3 In the Record panel cue list, select one of the cues to record.

Notice that the playhead moves to the In point of the selected cue.

4 Move and resize the viewer as needed to clearly see the talent speaking onscreen. As you resize the viewer, remember that the only tracks you need to see during recording are A4, A5, and A13.

Also, keep in mind that once you click Rehearse or Record in the Record panel, the designated recording track will be armed automatically, and the mic will be live until you disarm the track manually.

5 In the Record panel, click the Rehearse button.
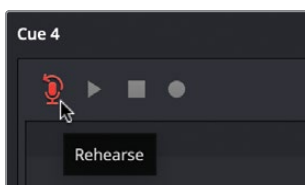
During the rehearsal, you will hear the audible cues in your headphones and see the visual cues in the viewer.
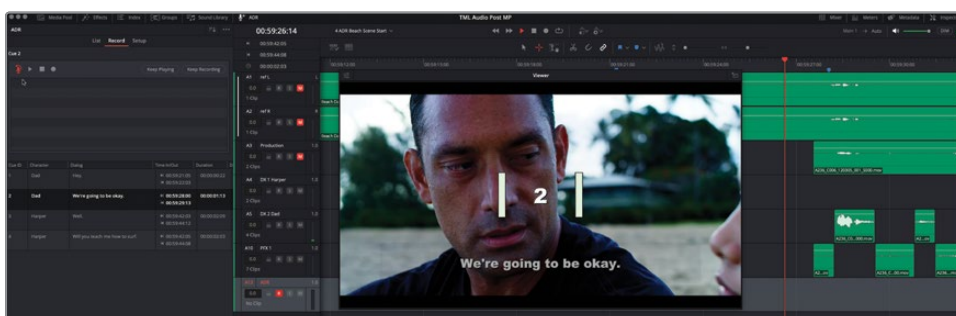
Chances are that your first rehearsal was a little rough. No worries; you can rehearse again. Just remember that when recording replacement dialogue in sync with the picture, you will need patience and many takes to get it right.

> **TIP** If you'd like to change the color of the Streamer and Cross, you can go to the ADR Setup panel, Video Streamer settings, and choose colors there from the color picker.

6   Rehearse the cue again as many times as you need. Don't worry about getting it perfect. When you're ready to record, move on to the next step.

7   Click the Record button and record the cue.

A newly recorded region, the exact length as your cued In and Out points, appears in the A12 ADR track.

8   In the Record panel, select Take 1 in the list and click the Play button to audition the recorded cue.

9   Rate your performance by clicking the stars to the right of the take in the list.
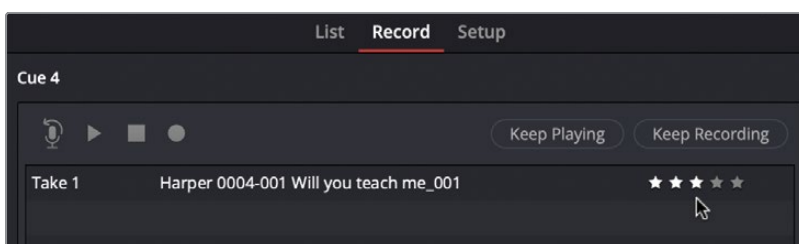
> **NOTE** If you look carefully at the recording's name in the list, you'll see that it starts with the character name, followed by the cue number, take, and the first words of the cue text. The number at the end of the record name identifies how many ADR recordings have been made in this timeline, including the current recording.

10   Repeat step 7 so that you have at least three takes. When finished, disarm the ADR track.

The takes are recorded in different layers in the same track and listed in the Record panel. You can play back any of the takes by selecting the take in the list and clicking the Play button on the ADR Record panel.

> **NOTE** The take list will remain active during the current recording session. Once you close the project, the take list will clear automatically. However, all the takes will remain in the timeline.

To see the clips for all the takes in your timeline, you need to show the audio track layers.

11 Choose View > Show Audio Track Layers. Adjust the track zoom as necessary to clearly see the multiple takes in the A13 track.
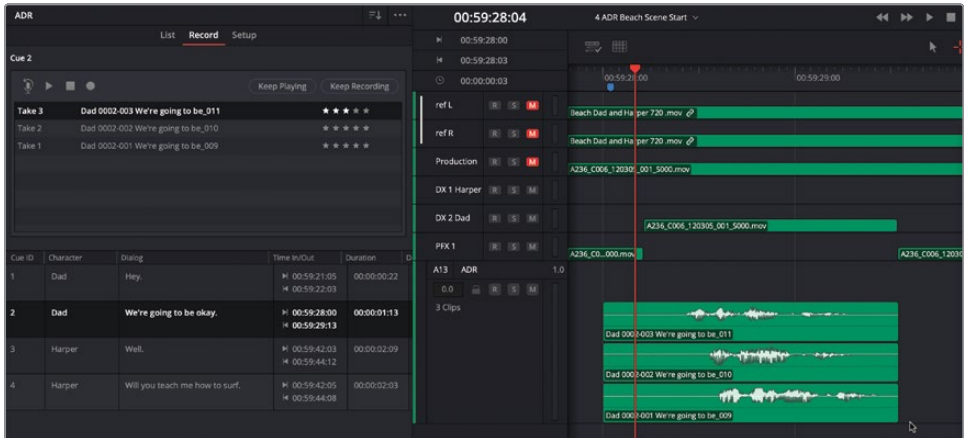
All your ADR takes are in the timeline and ready to use in your soundtrack. This exercise was just an opportunity to see your takes in the track. You already know how to edit audio track layers.

12 Hide the audio track layers.

13 When finished, select the box in the rightmost column to mark the cue as done. Then, deselect the Arm button on the A1 track.

> **NOTE** If you enjoyed recording ADR and want another go at it, feel free to practice by recording the other cue or additional takes.

Exploring the ADR Timeline

This timeline includes hidden tracks that contain actual ADR recordings for this scene. If you want to see and hear some of the actual recorded takes, go to the tracks index and show the hidden tracks, including DX ADR 1, DX ADR 1 Edit, DX ADR 2, and so on. There are at least two takes for each line of dialogue, which you can see by showing the audio track layers. Feel free to explore the takes and timeline as long as you'd like. When finished, move on to the next exercise.

> **NOTE** The A9 DX ADR 2 Elastic track will be the same as the DX ADR 2 track. You'll use DaVinci Resolve's Elastic Wave feature to better align that clip's waveform in Lesson 6.

Importing an ADR Cue List

DaVinci Resolve includes options for exporting and importing ADR cue lists. Not only can you create your own cues in the timeline, but you can also import a comma-separated values (CSV) file containing an ADR cue list and either merge or clear the current list during import. In this exercise, you'll import a CSV file with the dialogue cues for an entire scene. Rather than using the scene you were just recording, you'll import the cue list for a different surf scene with more characters and dialogue.

1   In the media pool, open the timeline **4b Harper Surfs Scene ADR Cues**.

    This is the surf scene checkerboard edit you worked on in Lesson 2 with the addition of A1 ADR 1 and A2 Beeps tracks.

2   Move the viewer to the bottom of the tracks area in the timeline.

3   Show the ADR panel for this timeline.

4   Click the List tab to go to the ADR List panel.

    As you can see, this timeline does not yet have any ADR cues.

    You'll find the options to import and export cue lists in the ADR panel Options menu in the upper right corner of the ADR panel.

5 In the ADR panel Options menu (…), choose Import Cue List. Navigate to R19 Fairlight Part 1 > Additional Media > **ADRCues_TML Harper Surfs Scene v2.csv** and click Open.
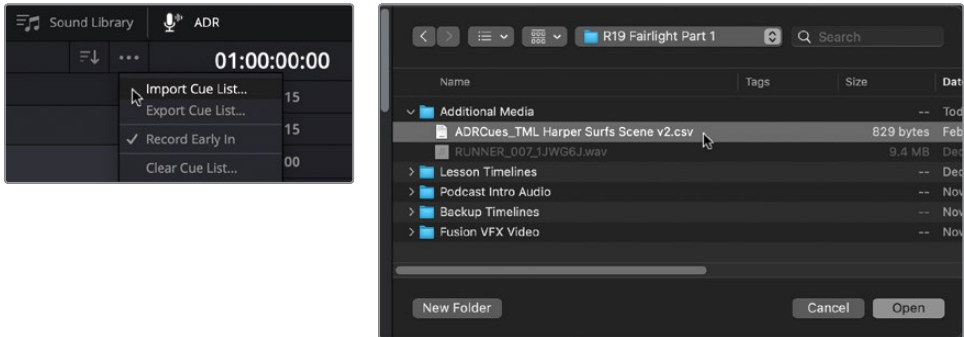
The .csv list opens into the ADR Setup window. Here, you can verify that the columns are in the correct order for ADR recording: Cue ID, In Point, Out Point, Character, Dialog, and Done.
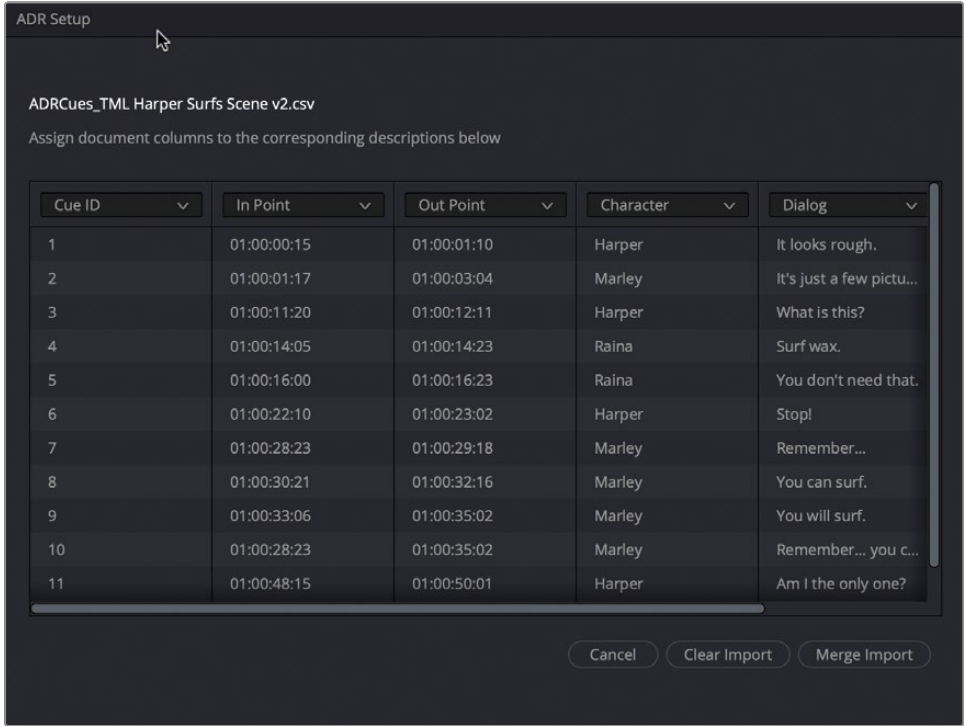
NOTE If the column contents do not match the column header in the ADR Setup dialog, you can use the menu at the top of the column to choose the correct header. There are also new columns for Cue ID, Done, and Ignore.

You could clear all existing cues or update the Cue ID on the existing cues to match the incoming list and preserve them without duplicating them. In this case, there are no cues in the ADR list, so either option will give the same result.

6 Click Clear Import.
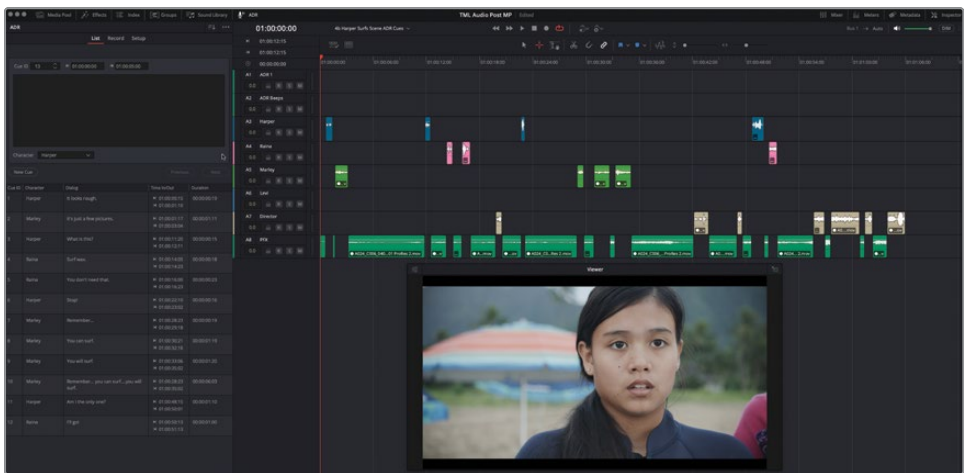
The ADR cue list has a full set of ADR cues for the entire scene. You can create, edit, and export CSV files in most spreadsheet programs. This list was created in the Fairlight ADR List panel and then exported for use in this exercise.

Sorting ADR Cues

Chances are, you will be recording your cues one character at a time, based on the availability of the talent. To simplify the sessions, you can use the Cue Sort menu at the top of the ADR panel to choose which cues are shown in the list. In this exercise, you'll use the Cue Sort menu to streamline the list to show only Harper's cues.

1 In the upper right corner of the ADR panel, click the Cue Sort menu icon to show the dropdown menu.
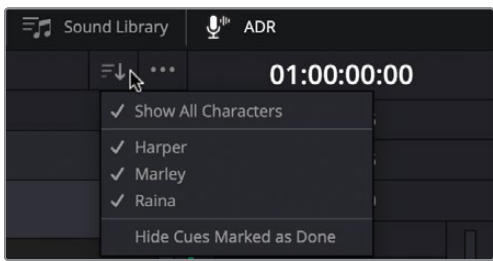
Here, you will see the option to Show All Characters, a list of characters, and the option to Hide Cues Marked as Done.

2   In the Cue Sort menu, click Marley to deselect her cues and hide them from the list.

3   In the Cue Sort menu, click Raina to deselect her cues and hide them from the list.
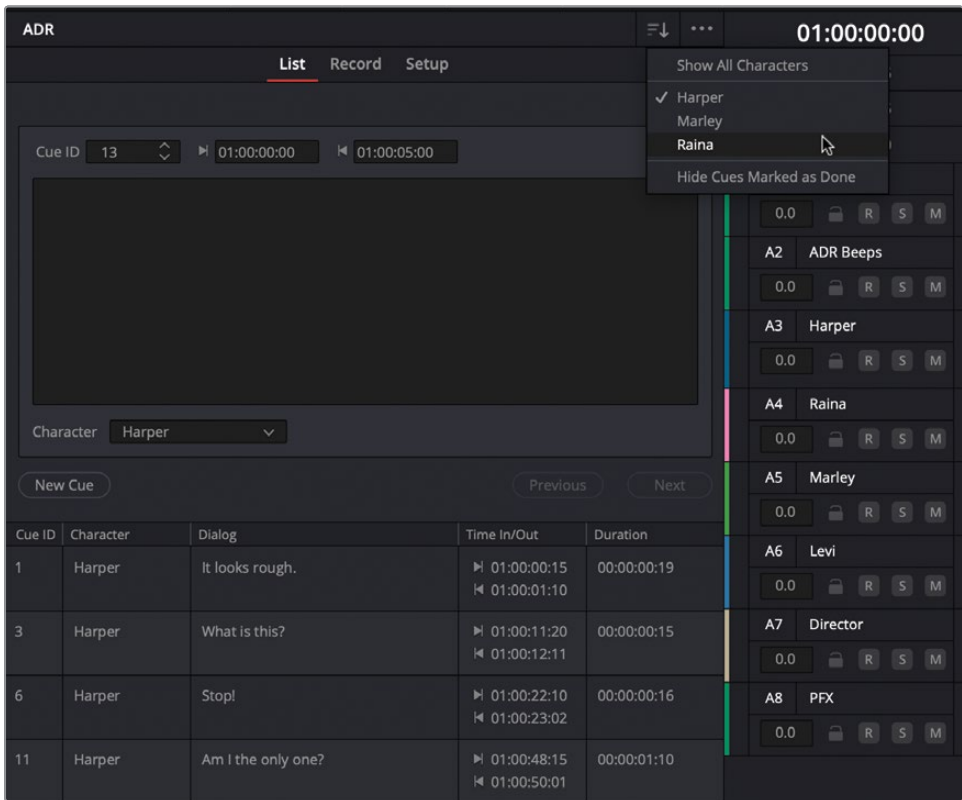
The list has narrowed to show only Harper's cues. You can use the Cue Sort menu to show or hide cues anytime. To show all the character cues again, you simply click that option in the Cue Sort menu.

4   In the Cue Sort menu, click the Show All Characters option.

You never know when you might need to record some ADR for your own projects. As you have just seen, DaVinci Resolve makes this process easy to set up and use at any time. ADR recording techniques also work great for recording Foley sound effects to match onscreen action.

> **NOTE** The AI tools in DaVinci Resolve 20 Studio include Create ADR Cues options in the right-click shortcut menu. Simply right-click an audio clip containing dialogue from one or more characters and choose AI Tools > Create ADR Cues or Create ADR Cues with Speakers. You can try this for yourself at the end of this lesson.

Revealing the Beep Track Patching

Now that you have firsthand experience with the DaVinci Resolve ADR tools, you probably recognize the value of the beeps for cueing talent during a session. For this lesson, the beep track was set up for you. However, in the real world, on your own projects, you'll need to be able to set up your own beep track. Luckily, this is an easy process, which can be saved as a preset that you can use on future ADR projects on the same system. In this exercise, you'll find the A2 ADR Beeps track in the mixer and then show the Input and Path Settings to see how to patch the built-in system generator for ADR beeps.

1　Hide the ADR panel.

2　Select the A2 ADR Beeps track.

3　Show the mixer.

At the top of the A2 channel strip in the mixer, you can see that the Input is Beeps.

The Beeps input source comes from the built-in System Generator. You'll patch and record sounds from the System Generator in the next exercise.

4　Click the A2 Input pop-up and choose Path Settings.
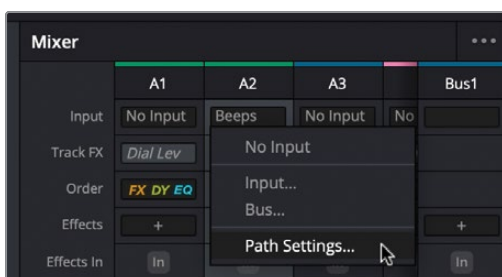
5 The Path Settings window opens and shows the Record Level set to Thru.

> **NOTE** Patched tracks can be set to Record (Rec) or Through (Thru). If a track is set to Thru mode, it has an open input that can be triggered by talkback or, in this case, the ADR Beeps. In DaVinci Resolve 20, you can click the Record Arm button to arm the track for recording. You can also Command-click (macOS) or Ctrl-click (Windows) the (R) Record Arm button on the track header to set the track to (T) Thru mode. The Record Arm button turns red with an (R) when in Record mode and green with a (T) when in Thru mode.

6 Close the Path Settings window.

For future ADR timelines you create in your own projects, be sure to create a track for the Beeps and patch it to the System Generator Beeps.

> **TIP** You can save global track settings for tracks, such as the ADR Beeps track, in the Preset Library via the Fairlight menu. Once saved as a preset, you can easily apply the global track preset to a track in another timeline or project to instantly turn it into an ADR Beeps track.

Recording the Built–In System Generator

Fairlight includes a System Generator that you can use to generate sounds such as white noise, beeps for ADR audible cues, or tones that you can transform into sound effects. In this recording exercise, you will create a new timeline, patch the System Generator, and record different sounds that you can use later for sound design.

For this exercise, you'll continue working with your TML Audio Post project. First, let's clean up the workspace and then create a new timeline and track.

1   Hide the mixer and viewer.

2   Show the media pool, if necessary. Select the Lesson 4 bin.

3   Press Command-N (macOS) or Ctrl-N (Windows) to create a new timeline.

4   In the Create New Timeline dialog, in the Timeline Name field, type **Sound Design FX**. Leave the default settings as they are and click Create.
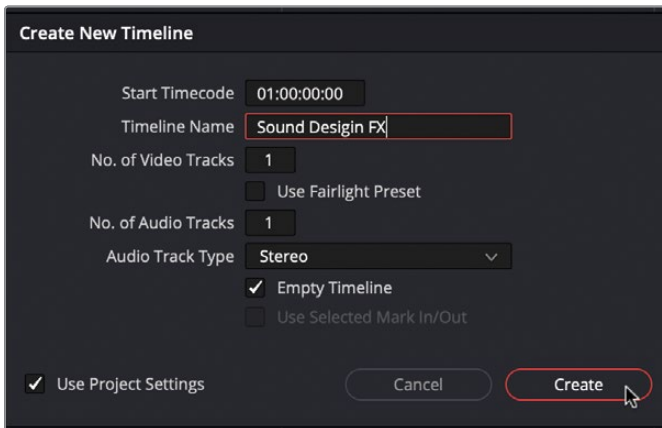
A new, empty timeline opens with one stereo audio track.

5   Name the A1 track **GEN FX**. Also, toggle off automation so you don't see the bus tracks in the timeline.
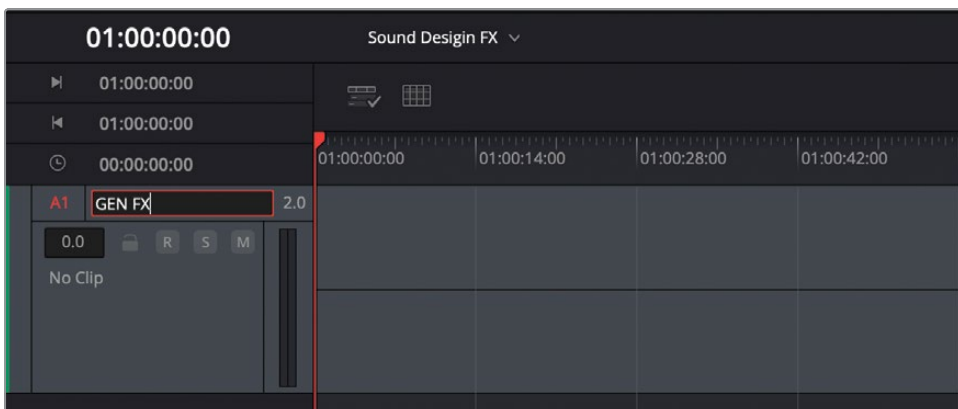
Now that the timeline is created, let's select the Recordings bin in the media pool. If you ever forget to select a specific bin for your recordings and no bin is selected, they will appear in the selected bin or under the Master bin. You can move them to another bin after you've finished recording.

6 In the media pool, select the Recordings bin. Hide the media pool.

You can use the Patch Input/Output window to patch the built-in System Generator to the track just as you would a microphone or other external audio device. Previously, you opened the Patch Input/Output panel from the mixer. This time, you'll do so from within the Fairlight page.

7 Choose Fairlight > Patch Input/Output.
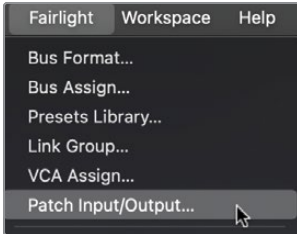
The Source Audio Inputs menu offers numerous options from which to choose, so you might need to scroll down in the Audio Inputs menu to find the System Generator.
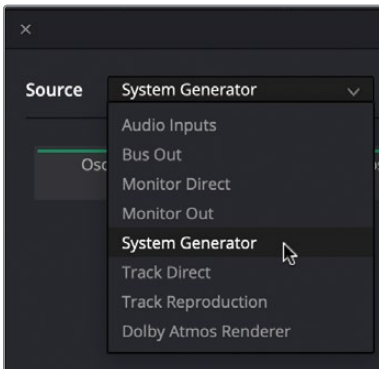
8 Choose Source > System Generator.

The System Generator can generate three types of sound that you can patch and record. Let's start with the Noise generator.

9 Click Noise as the System Generator Source. Then, choose Destination > Track Input. Because this is a stereo track, select both channels of the GEN FX track for the destination.
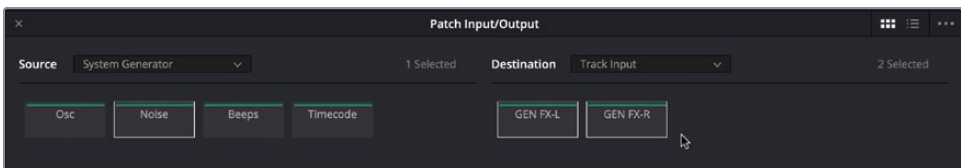
10 Click Patch and close the Patch Input/Output window.

> **WARNING!** Do not arm the A1 track yet. You just patched a noise generator to the track, so if you armed the track, you would immediately hear it just as though it were a live microphone. Let's first take a moment to find and use the master playback volume controls.

11 In the playback volume controls, click the DIM button to instantly lower the playback volume by 15 dB.
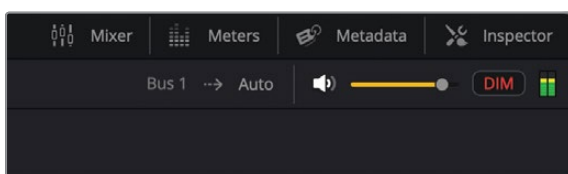
The playback volume fader turns yellow to indicate that the DIM button is on.

12 Arm the A1 track.
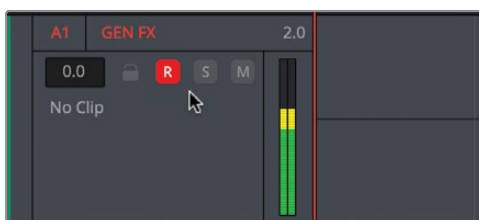
As promised, you can really hear that noise generator through your headphones or speakers, even with the playback dimmed by 15 dB. So how loud is the System Generator source? The System Generator generates sound at -15 dB. This is also the dialogue target level when you start editing dialogue and mixing.

13 In the playback volume controls, click the Mute button to mute playback.
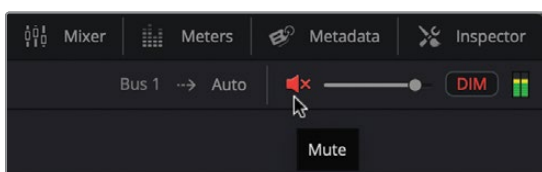
You can combine the playback controls to go from DIM to mute and back whenever necessary.

Changing the Test Tone Generator Settings

Resolve's built-in System Generator settings are available in the Fairlight menu. In this exercise, you'll open the Test Tone Settings for the System Generator and experiment with some of its controls.

1   Choose Fairlight > Test Tone Settings to open the Test Tone Settings window.

2   Unmute the playback volume controls. Leave the DIM button turned on.

   Feel free to mute or unmute the playback volume at any time.

   In the Noise controls (located in the middle of the Test Tones Settings window), you can change the noise type from White to Pink.

3   If necessary, lower the Tone Level until it reads -15. Click the Pink button to change from white noise to pink noise. Click back and forth between the two types of noise to compare them. When you're finished, leave the Noise set to Pink.
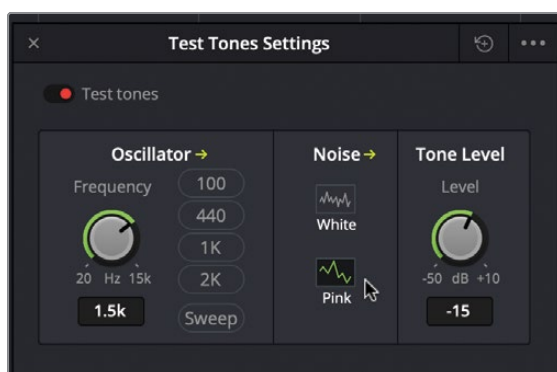
> **NOTE** Both white and pink noise include all the frequencies that the human ear can hear. The difference is that white noise has equal energy per frequency, similar to white light that contains all wavelengths of the visible spectrum at equal intensity. Pink noise is filtered white noise that has equal energy per octave. With pink noise, the intensity decreases as the frequency increases, which is how humans perceive sound; therefore, it's easier on the ears.

Now, let's record a bit of that noise.

4 Click the Record button to record about 10 seconds of pink noise. When you're finished, click the Stop button or press the Spacebar.
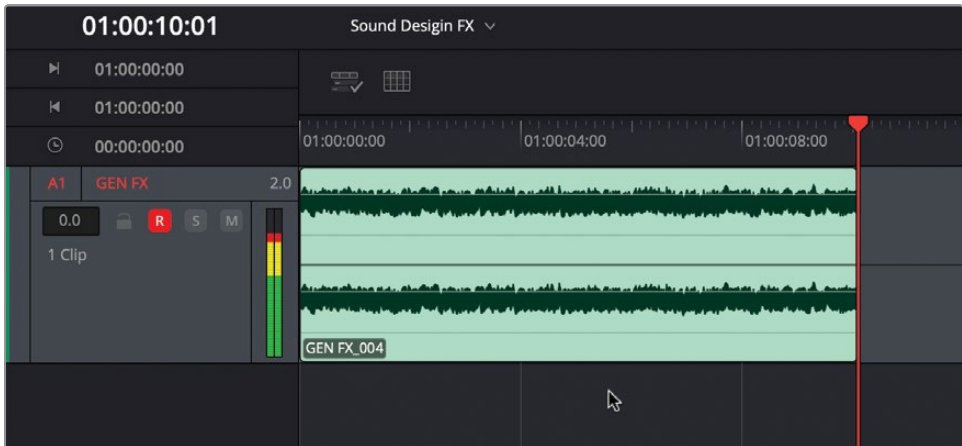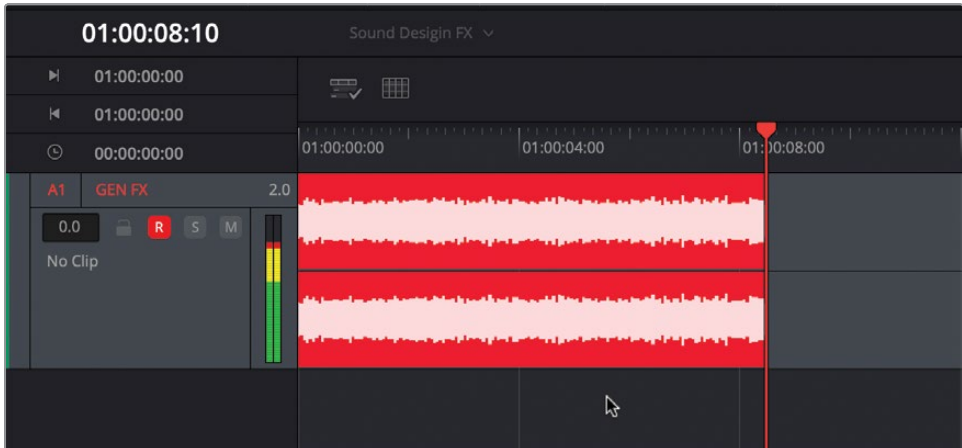
Now, let's record a tone that you can control using the oscillator. To do so, you'll need to change the patch input setting. This time, let's open the Patch Input/Output window from the Test Tones Settings window.

5 Click the Options menu (...) in the Test Tones Settings window and choose Patch Input/Output.
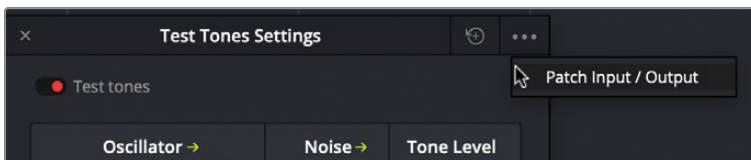
6   In the Patch Input/Output window, click Noise in the Source controls, and then click the Un-Patch button to unpatch the Noise generator.

7   In the Source controls, click the Osc button. Then, in the Destination controls, select both channels of the GEN FX track. When you're finished, click Patch.

> **NOTE** When you unpatch a track in the Patch Input/Output window, the corresponding track is automatically disarmed. Likewise, whenever you open the Patch Input/Output window, you must first select the source or destination before the option to Patch or Unpatch is available at the bottom of the window.

8   Close the Patch Input/Output window. Then, arm the A1 track.

The default oscillator tone is a 1.5-kHz tone.

9   In the Oscillator Settings, drag the Frequency knob counterclockwise to lower the frequency, and drag clockwise to raise the frequency.
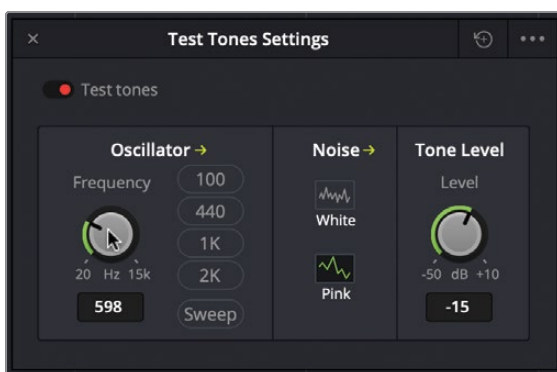
10   Click the buttons to the right of the Frequency knob to switch the Oscillator to that frequency preset.

> **TIP** You can double-click the knobs in the Test Tones Settings to reset them to the default settings.

11   Disarm the A1 track and save your project.

Although you might not need to record an oscillator sound every day, it's useful to know where it is and how to record it for your projects.

Practicing More FX

Because your oscillator is patched and handy, and the track is set up, let's record a few more sounds. In the following list, you'll see several sounds you can record using the oscillator. When you're finished, be sure to disarm the track and save your project. Also, as you go, it's a good idea to create markers over each type of sound that you record in the timeline so you can easily identify them later. While you're at it, change the clip colors as well. If your ears are sensitive to some frequencies, you can always record the oscillator with the timeline playback dimmed or even muted.

Record approximately 10 seconds of each of the following oscillator sounds. Leave at least 1 second between recordings in the track.

— 100 Hz

— 200 Hz

— 440 Hz

— 1000 Hz (or 1 kHz)

— 2000 Hz (or 2 kHz)

— Ascending frequencies from 20 Hz to 10 kHz (by dragging the knob while recording)

— Descending frequencies from 10 kHz to 20 Hz

— Droid – Quickly change the frequency while recording.

— White noise (This requires you to return to the Patch Input/Output window.)

When finished, disarm the track, close the Test Tone Settings window, turn off the DIM button, and save your project.

> **NOTE** If you'd like to see a finished version of the recorded frequencies, open the timeline **4 Sound Design FX Recorded**.

Exploring the Foley Sampler

In this lesson, you'll continue working with the TML Audio Post project as you explore the fourth and final recording technique. The Foley Sampler plug-in is a built-in sampler FairlightFX plug-in that makes it easy to add sound effects that you want to play using a keyboard, pad, or other MIDI performance device connected to your computer to sync with onscreen visuals. This powerful plug-in has also been designed to simplify the process of recording performed audio cues on the current track to which the sampler has been added.

In this exercise, you'll start by adding a clothing Foley sound effect to the Foley Sampler to see how it works as a sampled sound effect that can be performed with a MIDI keyboard or mouse. Then, you'll add Foley footsteps to the Foley Sampler to demonstrate how to map additional sounds to the sampler. Finally, you'll learn how to record Foley Sampler sound effects into a track in time to the footfalls onscreen.

The overall goal is to map Foley footstep sounds to the Foley Sampler so you can record them in sync with the video and then apply sound design so the recorded Foley Sampler footsteps sound as though they are happening within the context of the scene.

1   In the TML Audio Post project, open the **4c Foley Sampler** timeline.

2   If necessary, open the viewer as a separate window and hide the meters at the top of the interface.

3   Hide all other panels. Move the viewer below the tracks so you can see all five tracks plus the viewer.

4   Move the playhead to the blue marker.

5   Start playback and watch the viewer as Harper's dad walks across the sand toward her and then sits.

    In the next series of exercises, you will set up the Foley Sampler and record Dad's footsteps and the sound of him sitting next to Harper directly into the timeline. First, you'll add the Foley Sampler plug-in to the A4 FX Foley 1 track.

6   Show the mixer and the Effects Library.

7   Select the A4 track header so you can clearly see it in the timeline and mixer.

8   Drag the Foley Sampler plug-in to the A4 FX Foley 1 track header. Hide the Effects Library.
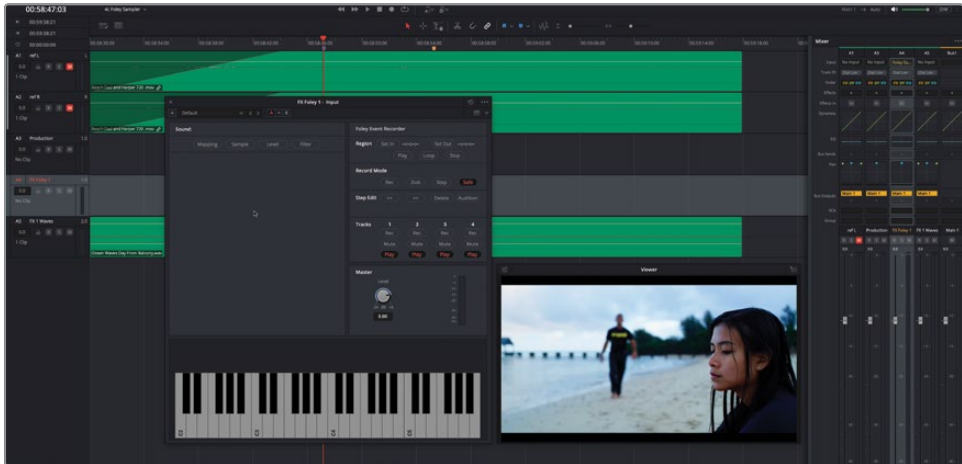
When you dragged the Foley Sampler to the A4 track, not only did the Foley Sampler window open, but it was also automatically patched as an input instrument ready for recording to the A4 track.

At this point, the Foley Sampler is ready to use, but by default, it has no samples loaded to play. Next, you'll add a sound effect from the media pool.

NOTE If you have a MIDI controller connected to your computer and properly configured, it will appear in the MIDI pop-up menu at the upper right corner of the Foley Sampler window (next to the Keyboard button). Choose your device from this menu, and the Keyboard button will highlight to show that it's enabled.

Adding Sound Effects to the Foley Sampler

There are three ways to add prerecorded sound effects to the Foley Sampler. You can drag and drop a sound effect from the Sound Library or media pool onto the Foley Sampler window. Another method is to click the Foley Sampler window's Option menu and choose one of the Add or Import sample options. Or, if the file you want to use is in the file system on your computer, you can locate it and drag it to the media pool. For this exercise, you'll drag a sound effect from the Sound FX bin in the media pool.

1   Open the media pool. Locate the TML Media > Sound FX bin.

2   In the Sound FX bin, select the **Taking Clothes Off** clip.

3 Drag the **Taking Clothes Off** clip to the Foley Sampler window.

Once you add a sound effect to the Foley Sampler, it is automatically assigned to the keyboard keys, starting at the C2 keys. If you look above the keyboard keys, you'll see a red bar indicating which keys the sound effect is currently assigned to. The first key plays the sound effect at its native pitch and speed. Subsequent keys to the right of the first key will play the effect incrementally faster and at a higher pitch.

4 Click and hold the first keyboard key (C2) at the far left of the Foley Sampler keyboard to play the sound effect in its native pitch and speed.

5 Click additional keyboard keys toward the middle and the far right to hear the differences in speed and pitch.

6 Right-click the C2 key to play the full sample automatically. Click the key again to deselect it.

Now that you know how to add and play a sample using the keyboard keys, let's modify the sample and mapping.

Modifying Sample Mapping

Although the default mapping works, it's important to be able to map the samples to the keys of your choosing. In this case, the clothes sound effect works well at its native pitch and speed and may also work a few keys higher for variety. However, it is unlikely that the very high and fast versions of this sample will be useful in the *Too Much Life* soundtrack. To modify the key mapping, you simply go to the Keys controls at the top of the Mapping panel.

At the top of the Foley Sampler, you'll find four panel buttons that can be used to show different panels of controls: Mapping, Sample, Level, and Filter. In this exercise, you'll work with the Mapping and Sample controls to remap the sample to the first 12 keys and change which part of the sample is played when you press a key.
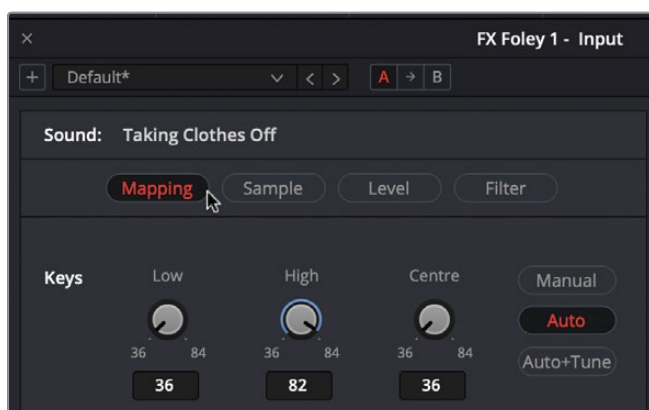
The Low, High, and Centre control knobs determine which keyboard keys are assigned to the sample.

1   In the Keys controls, drag the High knob toward the left to a value of 47. The red bar over the keyboard keys stops after one octave (12 keys), which is just before the C3 key.
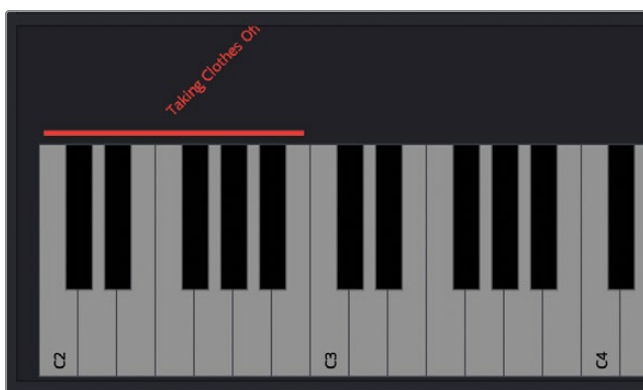
2 Change the Centre knob value to 41, which is the key in the middle of the mapped keys between the lowest key, 36, and the highest key, 47.

3 Right-click the fourth white keyboard key from the left (beneath the name of the sample) to play the sample at its native pitch and speed. Feel free to click any of the other keys within the mapped area to hear how the sample has been remapped, with subsequent keys to the left playing lower pitch and slower, and keys to the right playing higher pitch and faster.

Next, you'll look at the sample and change which part of the sample is played when you press a key.

4 At the top of the Foley Sampler, click the Sample button to show that panel.

The Sample panel controls show the sample waveform and include controls for determining which part of the sample is played and whether it is played once or looped. White vertical lines on the far left and right side of the waveform indicate the Start and End points of the sample that are included when you play a key. Your goal for this exercise is to change the Start and End points of the sample so that it includes only the loudest section.

5 Right-click one of the keyboard keys beneath the red line to play the sample. As the sample plays, you can see the blue playhead move across the sample's waveform.

6   In the Range controls, drag the Start knob toward the right until the white vertical line is just before the loudest part of the waveform (around 68.75). You can leave the End in the default position.

7   Click one of the mapped keyboard keys to play the modified sample.

As you have just demonstrated, it is easy to add and modify a sound effect sample in the Foley Sampler.

> **NOTE** The Foley sound effects you are working with for this scene may not be the exact sounds you would choose if you had a vast sound library to work with. However, they are perfect for learning how to use the Foley Sampler in the Fairlight page.

Manually Mapping and Splitting Additional Sounds

The Foley Sampler can accommodate additional sounds that can be mapped to different parts of the keyboard so they can be played and recorded in sync to the picture. For example, in the current scene with Dad walking across the beach to join Harper, you could map sound effects for waves, seagulls, and the surf crashing on the shore in addition to Dad's footsteps. To keep it simple, let's just add some footsteps. First, you'll need to set the Foley Sampler Keys controls to Manual mode. Otherwise, the sample mapping will override

your previous mapping and automatically split the keyboard evenly between the previous sample and the new sample.

1   At the top of the Foley Sampler, click the Mapping button to show the Mapping panel.

2   In the Keys controls, click the Manual button.

3   In the media pool Sound FX bin, locate the **Boots on Rocky Dirt Footsteps** clip.

This professional Foley sound effect is literally named and comes from the Fairlight Sound library.

4   Drag the **Boots on Rocky Dirt Footsteps** sound effect from the media pool to the keyboard area of the Foley Sampler. The new sample is mapped to all the keys to the right of the first sample in the keyboard.

5   Click a few keys mapped to the footsteps sample to hear what it sounds like.

Once again, each key incrementally plays the footsteps faster and at a higher pitch, which isn't really useful if you are recording footsteps to picture. What you really need is for footsteps to be mapped so that you can play them individually or in sets. You can do this by splitting the sample from the Options menu. When you split a sample, the sampler will automatically map the original full-length sample to the first set of keys, followed by a spacer without sound, and then the split sound effects are assigned to keys based on how many keys remain on the keyboard. That way, the operator has the option to play the full sample or split parts of the sample.

6 At the top of the Foley Sampler, click the Sample button to show the sample waveform.
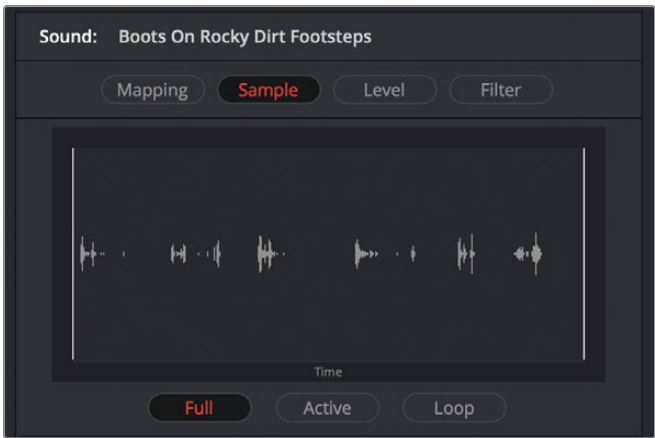
Here, you can clearly see the waveform and footstep sets that include picking up the foot and putting it down within the sample. You can also see that some footsteps are louder than others.

7 Click the Options menu in the upper right corner of the Foley Sampler. This is where you'll find additional options to do things like Add, Rename, and Delete samples. In the Options menu, choose Split Sample.
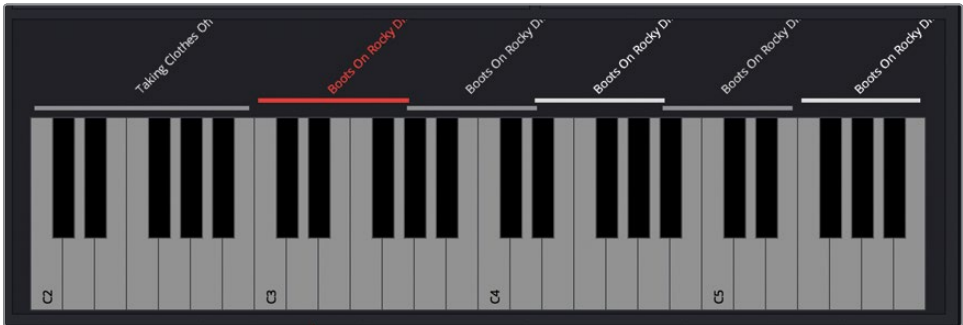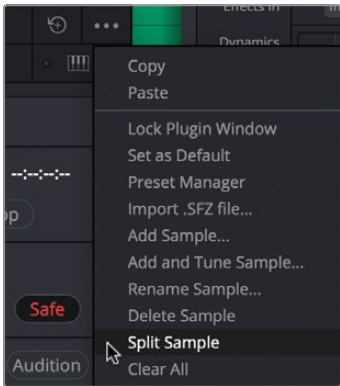
The split footstep groups are now mapped to keys in order from left to right. Let's look at the split samples to see the resulting waveforms.

8 In the keyboard, click the line above each of the Boots on Rocky Dirt samples from left to right to see the respective waveform in the sample waveform area.
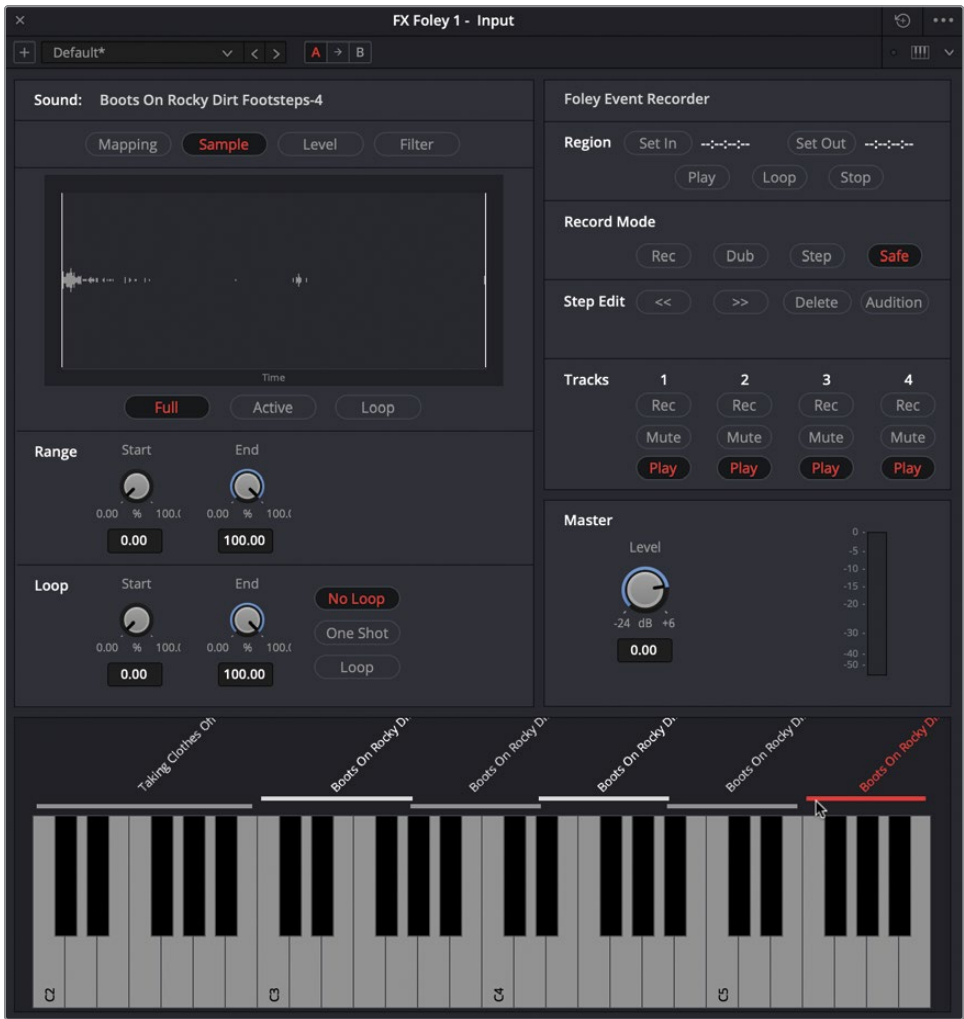
As expected, the last three split samples vary from two steps to an individual step to a step and lift of the other foot. Knowing the difference between the different split samples will make it easier to perform the steps to picture when the time comes.

Recording Foley Sampler Footsteps to Picture

With the keyboard mapped, it's time to move on to recording the Foley samples to picture. Keep in mind that this takes some skill to master, so for the purposes of these exercises, just do the best you can. In this final Foley Sampler exercise, you'll start by setting a looped playback range so that you can practice performing footsteps via the keyboard to picture. Then, you'll record a take in the timeline. To simplify the process, a blue marker indicates where Dad lifts his foot to take the first step, and a tan marker indicates where Dad sits. Feel free to add more markers for each step if that helps you.

1   Hide the media pool and mixer if necessary to streamline your interface.

2   Use the zoom controls so you can clearly see the timeline between the blue and tan markers. You'll also need to position the viewer window and Foley sampler so that you can see the video and click the keys on the keyboard.

3   Set a range in the timeline that starts before the blue marker and ends around 00:58:9:00 after Dad has had time to sit. Once the range is set, press A for the Arrow tool to maintain the range while you work.
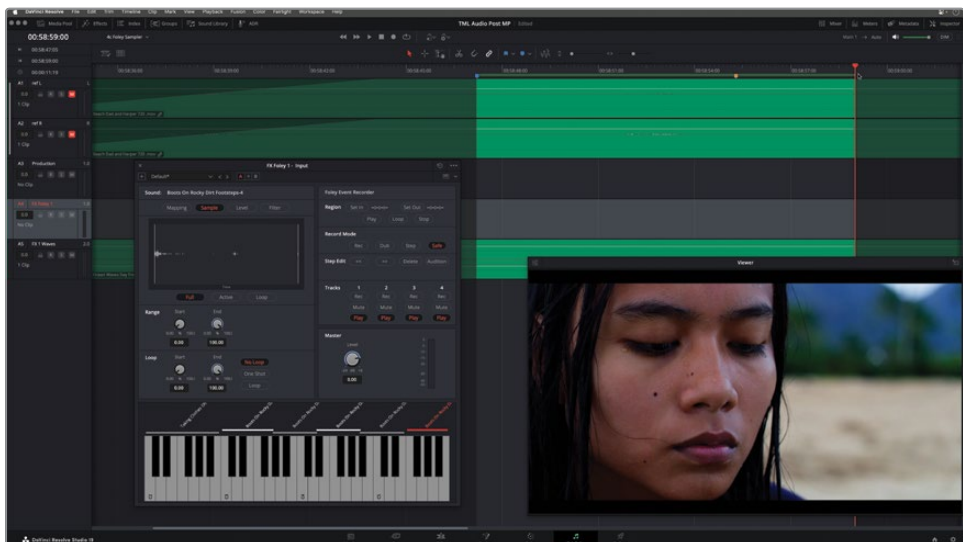
4 Turn on the Loop button in the transport controls to enable looped playback.

5 Press Shift-I to move the playhead to the beginning of the range. Start looped playback in the timeline and practice playing the samples using the viewer guide. If you are feeling ambitious, you can also try clicking a key in the first sample area of the keyboard to add a sound for Dad sitting.

You probably noticed that the third sample in the middle of the keyboard is blank. Selecting it will make it show up as red, which is a good reminder not to click those keys while you record.

6 In the Foley Sampler, click the horizontal line above the third sample in the middle of the keyboard to select it.
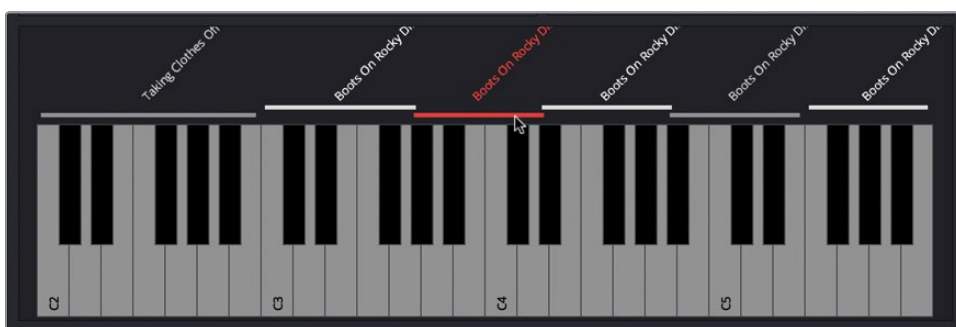
Instead of recording right at the blue marker, let's move the playhead earlier to add a little pre-roll time before you have to perform.

7 Move to the beginning of the range. Press Shift-Left-Arrow three times to move the playhead 3 seconds before the blue marker. Press-I to set the new In point for the range.

8 Click the Arm button (R) on the A4 track header to arm the track for recording.

9 When you are ready to record a take, click the Record button in the transport controls above the timeline. Press the Spacebar to stop recording when you are finished.
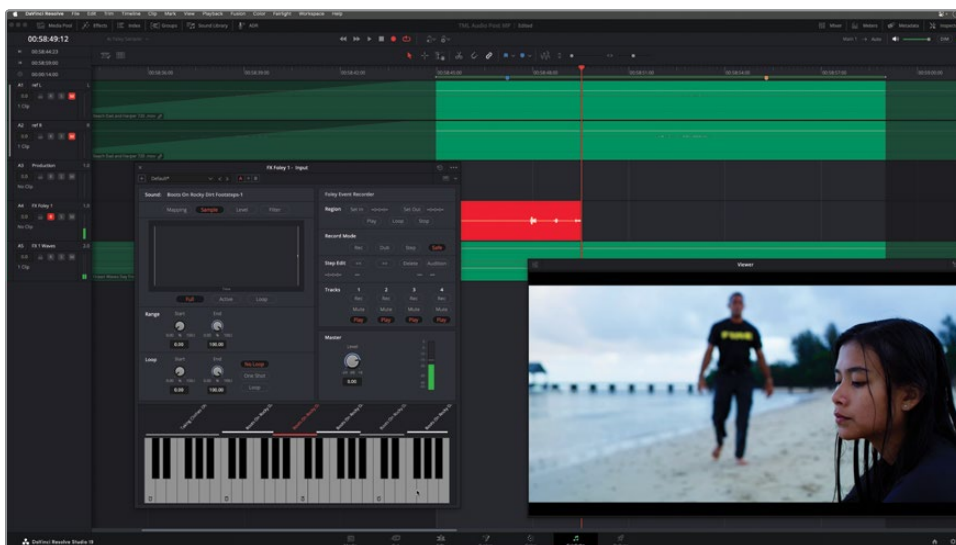
> **NOTE** If you want to try another take, you can undo the previous recording or simply record another take on top of the first. Each take will be stored in the track in audio track layers with the most recent take on top.

You can record additional takes later. For now, let's move on to the last part of the exercise. Once you have recorded a take, you can easily split the clip to adjust the timing of the footfalls or adjust the clip level as needed.

10 Close the Foley Sampler window and disarm the A4 track.

Finishing the Foley Footsteps

The last step for finishing the footsteps for this scene is to change the clip gain level with keyframes so it sounds like the footsteps are moving closer.

1 In the timeline, increase the height of the A4 FX Foley 1 track. Zoom as needed for a clear view of the newly recorded clip in the A4 track.

2   Move the playhead to the beginning of the range, or before the blue marker.

In Lesson 1, you worked with the clip gain line to increase or decrease the volume level of a clip. Adding keyframes to the clip gain line allows you to bend the line as needed to accommodate different levels within the clip. You'll work more with clip levels in the next lesson. For now, your goal is to add two keyframes and lower the first to create a gradual volume increase in the footsteps as Dad approaches Harper. To set a keyframe on the clip gain line, you Option/Alt-click the line.

3   Option/Alt-click the gain line beneath the blue marker, before the first footfall starts.
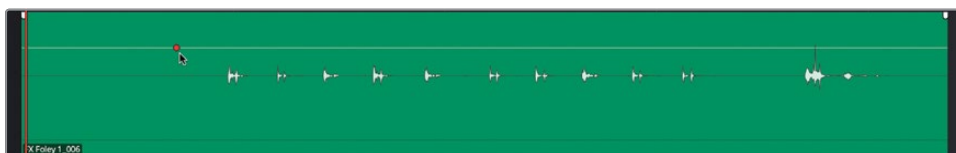
4   Set another keyframe at the tan marker position, before Dad sits.

> **NOTE** To delete a keyframe, Command-Option-click (macOS) or Ctrl-Alt-click (Windows).

5   Using the tooltip as a guide, drag the first keyframe downward to decrease the level by about -18 to -20 dB.
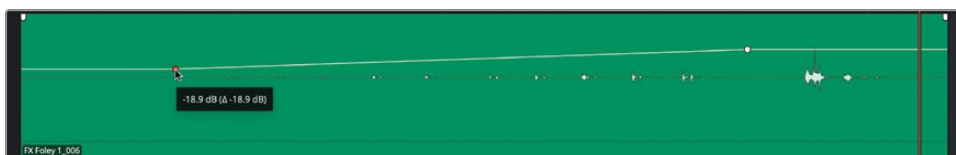
6   Play the clip to hear the level changes. Adjust the keyframes as needed to taste.

There you have it. You have successfully executed four different types of recording in the Fairlight page. Don't worry if your Foley Sampler recording isn't perfect. As long as you know how to perform these operations, you can use the Foley Sampler on your own soundtracks.

> **TIP** You can save a Foley Sampler instrument with all the samples and mapping to the Preset Manager so you can use it again in other timeline tacks or even other projects on the same system. This is incredibly useful if you are working on a project with a lot of repetitive Foley sounds, such as football tackles, helmets crashing, and crowd cheers for a football-themed movie.

Creating ADR Cues with AI Tools (Studio Only)

Earlier in this lesson, you worked with the Fairlight ADR tools, created new cues, and imported a cue list. If you are working with DaVinci Resolve 20 Studio, you can automatically create ADR cues from a dialogue clip in the timeline. In this exercise, you'll continue working with the TML Audio Post project as you open the ADR timeline and use the AI Tools to create cues for the scene. The cues you make automatically will be added to the existing cue list. To simplify this exercise, you'll create cues from the finished reference mix in the A1 and A2 tracks.

1   Open the **4a ADR Setup** timeline.

2   Unmute tracks A1 and A2, then solo A1 and A2.

3   Right-click the clip in the A1 track and choose AI Tools > Create ADR Cues with Speakers.

4 Open the ADR panel.

5 Click the List tab to see the updated ADR list.

Cues 1-4 are still at the top of the list, just as you created them earlier in the lesson. Cues 5-9 are the new cues created by the AI tools. As you can see, the text is the same; the primary difference is that the speaker names need to be updated to character names, and there is a cue labeled Music.

Lesson Review

1 After connecting a microphone to your computer, what two steps are necessary before you can record to a specific track?

   a) Patch the audio source to the track and select the track.

   b) Select the track and Shift-click the Record button.

   c) Patch the audio source to the track and arm the track.

   d) Select the track and click the Record button in the track header or mixer.

2 What happens to a recorded clip in the timeline when you record another take in the same track?

   a) The new take overwrites the previous take.

   b) You create a punch-in recording.

   c) The new take is recorded in an audio track layer above the previous take.

   d) The new take is recorded in an audio track layer below the previous take.

   e) The new take temporarily replaces the previous take, but all takes can be recovered by choosing the Restore Takes option in the right-click menu.

3 Where do you set up an ADR session?

   a) In the media pool Preview player

   b) In the Setup tab on the ADR panel

   c) In the Cue Index tab on the ADR panel

   d) In the Sound Library, ADR Cue tab

4 True or False? To record beeps, noise, or tones, you must first open the Test Tones Settings bin in the media pool.

5 Identify the two types of noise available in the Test Tones Settings window. (Select two.)

    a) White noise

    b) Brown noise

    c) Pink noise

    d) Noise print

    e) Ambient noise

6 What file format can you use to import and set up an ADR Cue list?

    a) .TXT

    b) .XML

    c) .CSV

    d) .CUE

7 What creates the beeps, noise, and tones that you can generate on the Fairlight page?

    a) Velociraptor

    b) Noiseinator

    c) Noise FX plug-in

    d) Oscillator

    e) Beep generator

8 Which Fairlight FX plug-in is a built-in sampler that makes it easy to add sound effects you want to play using a mouse, keyboard, pad, or other MIDI performance device connected to your computer to add timed sound effects to sync with onscreen visuals?

    a) FX Sampler

    b) Foley Sampler

    c) Foley Tracker

    d) Sound Library Sampler

Answers

1 c. To record a connected microphone to a specific track, you must patch the audio source to the track in the Patch Input/Output window and arm the track.

2 c

3 b

4 False. To record beeps, noise, and tones, you must first patch the Test Tone Settings as the audio source in the Patch Input/Output window. The Test Tones Settings window is in the Fairlight menu.

5 a and c

6 c

7 d

8 b

Balancing Clips and Panning Tracks

Balancing your soundtrack starts with adjusting clip levels. Whether you're working on a podcast, radio spot, documentary, interview, or feature film, the first step after editing is to ensure consistent clip levels. You can adjust them as you go or wait until editing is complete, but either way, it's crucial to balance the levels within each track before moving on to mixing.

In this lesson, you'll focus on balancing dialogue clips, sound effects, and music beds. Once the clips are properly balanced, you'll explore panning sound effects tracks to match the scene's context and onscreen positioning.

Time

This lesson takes approximately 50 minutes to complete.

Goals

Previewing the Scene for Context

In this lesson, you'll work with the "Learn to Surf" scene from the film *Too Much Life*. The dialogue edit has come a long way since you worked on it. If you recall, this is the scene where you performed a checkerboard edit in Lesson 2 and determined that the dialogue needed to be replaced. Let's start by opening the project and previewing the beginning of the scene.

1 If necessary, open the TML Audio Post project.

2 Choose Workspace > Reset UI Layout.

3 In the media pool, select the Lesson 5 bin. Then, change the media pool to List view.

4 Open the **5 Balance Dialogue Clips** timeline. Undock the viewer as a floating window. Hide the media pool and meters.
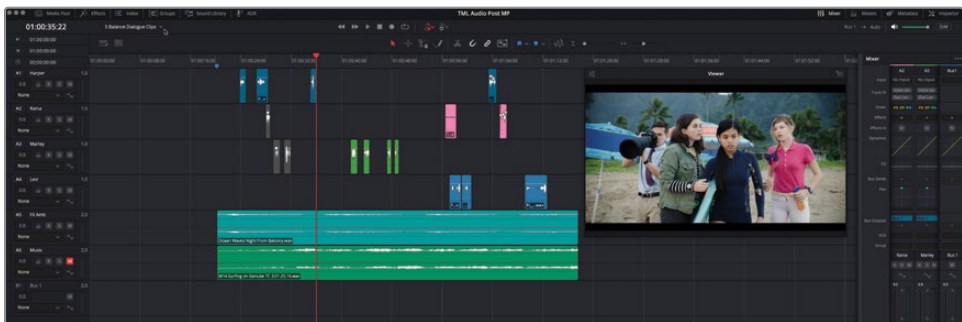
The timeline is a simplified version of the scene from your checkerboard edit. The original production dialogue has been replaced with ADR recordings and is ready for balancing. The A5 FX Amb and A6 Music tracks have been added, and the A6 Music track is muted.

5 Move the playhead to the blue marker.

6 Right-click the Stop button and choose Stop and Go to Last Position to turn on that option.

7 Play the timeline and listen to it once with only dialogue and the ocean waves sounds.

Now, let's listen once more with the music and without the sound effects. This time, you'll watch the timeline in the full-screen Cinema viewer.

8 Mute the A5 track and unmute the A6 track.

9 Press Command-F (macOS) or Ctrl-F (Windows) or choose Workspace > Viewer Mode > Cinema Viewer.

10 Press the Spacebar to start playback. Watch and listen to the dialogue with only the music. When finished, press Esc to exit Cinema view.

What are your thoughts? Did you notice how the scene felt serious with only the sound of waves crashing? Then, when paired with just the music, it became more comical. This shows the power of audio in a soundtrack. As you just experienced, a simple music choice or ambient sound effect can completely change the mood of a scene. Now that you're familiar with this scene and have heard it with music and sound effects, let's balance the dialogue clips.

Resetting Clip Levels

Because these exercises are based on real-world workflows, this is a good time to learn how to reset volume levels to their default settings. Why would you do this? Because, in the real world, most dialogue editors and audio professionals prefer to start with "clean" unaltered audio so they can personally determine which tools and processing are necessary to prepare the best-sounding dialogue tracks for mixing—just as colorists clear all editor-applied grades and plug-ins before they begin grading, and makeup artists start with a clean makeup-free face instead of adding makeup on top of performer-applied makeup.

So please remember that if you are an assistant editor who spends tireless hours normalizing, keyframing, and tweaking dialogue levels on your scenes before passing them along to the audio department, your efforts are appreciated by the picture editor and anyone who screens the edit.

Meanwhile, seasoned dialogue editors will likely begin each new scene with clean dialogue by resetting all the levels and removing any plug-ins or EQ applied to the timeline clips. This is quite easy to accomplish in the Inspector or the Remove Attributes dialog. For this exercise, you'll use the Remove Attributes dialog to reset all the clips in the timeline.

1 If necessary, click any empty timeline space below the last timeline track to deselect all clips and tracks.

2 Press Command-A (macOS) or Ctrl-A (Windows) to select all clips in the timeline.
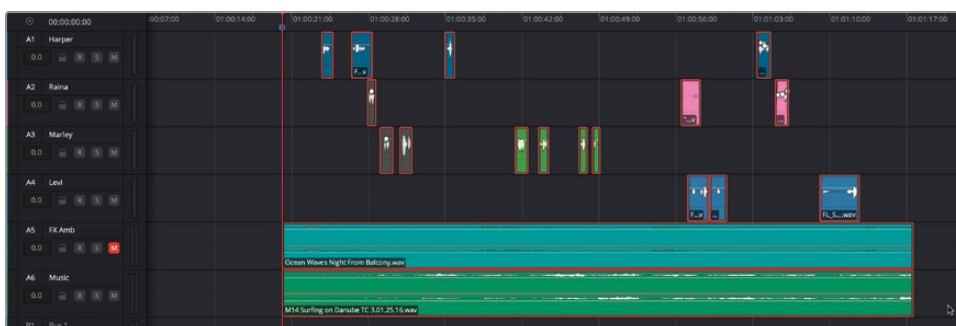
As expected, the clips are all selected. Notice that the tracker controls are also showing in the viewer. You just discovered a secret shortcut for showing and hiding the tracker controls in the viewer. You'll work more with those later in this lesson.

3 Right-click the selected clips and choose Remove Attributes.

4 In the Remove Attributes dialog, check the Audio Attributes option to automatically select all three options: Volume, Plugins, and Equalizer.
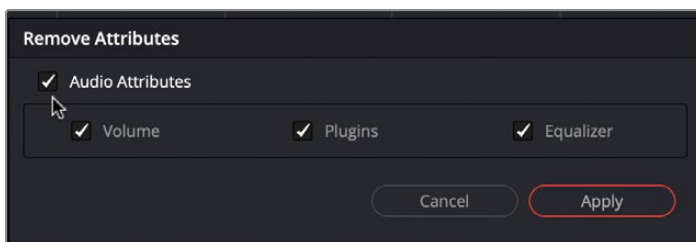
5 Click Apply.

6 Press Command-A (macOS) or Ctrl-A (Windows) to deselect all the clips and hide the tracker controls in the viewer.

The clips have all been reset.

7 Mute the A6 Music track.

Let's also double-check that the pre-fader metering is unchecked in the project settings.

8 Press Shift-9 to show project settings.

9 In the Project Settings, click Fairlight in the sidebar. In the Audio Metering settings, uncheck "Pre fader metering on tracks."

Now, the meters in the timeline, track header, monitoring panel, and mixer all reflect the clip gain levels in the track as well as any changes made to the faders in the mixer. You are ready to evaluate the dialogue clips.

Balancing Dialogue Clip Levels

Finally, you have reached the last major step of dialogue editing. You need to balance the dialogue levels for the entire scene so they are consistent throughout. To do so, you'll check the levels of each audio clip while watching the track meters in the mixer and adjust the clip gain as needed. During this process, you'll also apply keyframes to the clip gain line when necessary and apply clip normalization to automatically set the peak levels on some clips. Once clip levels are set within a track, you can evaluate how the different dialogue tracks sound together.

To further understand the task, let's look closer at the Fairlight mixer and the target levels for dialogue.

1   Show the mixer, if necessary. Drag the inner-left edge of the mixer to the left to extend it until you see all six tracks (A1 through A6) plus the Bus 1 output (B1).

   The Fairlight mixer opens to the right of the timeline. You can easily identify each track by the color bar at the top and the track name in the middle.

2   If necessary, move the playhead to the blue marker.

3   Select the A1 Harper track.

   As you can see, the corresponding channel strip is also selected in the mixer.

4   In the mixer, in the A1 channel strip, click the Solo button to solo the A1 track.

   The Solo button in the A1 track header is also in the on position.

5   Press R for Range mode.

6   Select the first clip in the A1 track to set a range. Press A to switch to Pointer mode.

> **NOTE** From this point forward, selecting a clip with the Range tool to set a range and then switching to the Arrow tool to maintain the range while working will be referred to as "marking the clip."

7 Zoom as needed until you can clearly see the selected clip and its waveform.
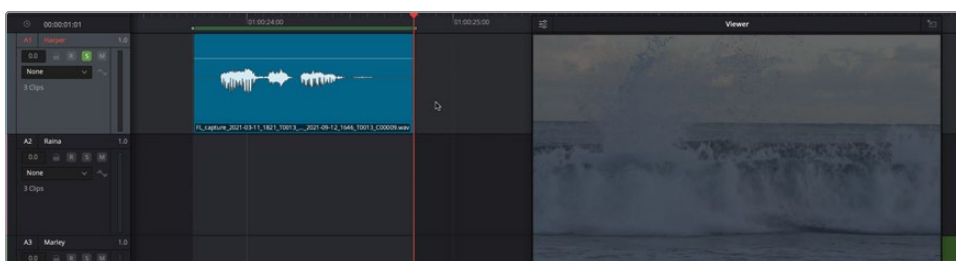
You'll work more extensively with the mixer later. For now, focus on the meters at the bottom of each channel strip.

Reading the Meters for Dialogue

Not only are the meters in the Fairlight mixer easy to read, but they are also color coded so you can watch numerous tracks at once and quickly see if they are within the target range.
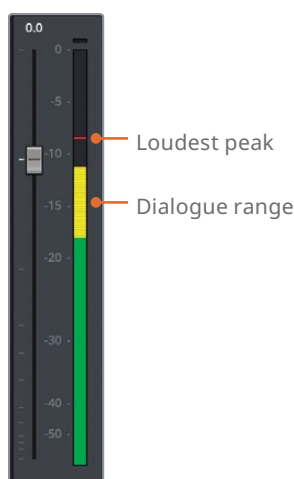
The solid color in the meter shows the current volume level on a decibel scale. These peak meters are "sticky," meaning they have a thin horizontal line that sticks to the loudest peak level, even when the current level is lower than the recent peak. Peaks within the green level are safe and cannot be too loud. Yellow peak levels are good targets to aim for when working with dialogue. Red peak levels are getting close to being too loud and *clipping*, or becoming distorted. When you get to the final mix, it is OK to let some of your peaks go into the red as long as they don't go too far into the red and don't remain there too long. However, your dialogue levels should be well within the yellow range at this point in the process. Exceptions might be a loud scream or whisper, but neither is in this scene.

Establishing Target Dialogue Levels

Whether your scene is narrative, voiceover, or a talking-head interview, you manage the dialogue level on each clip in the same way.
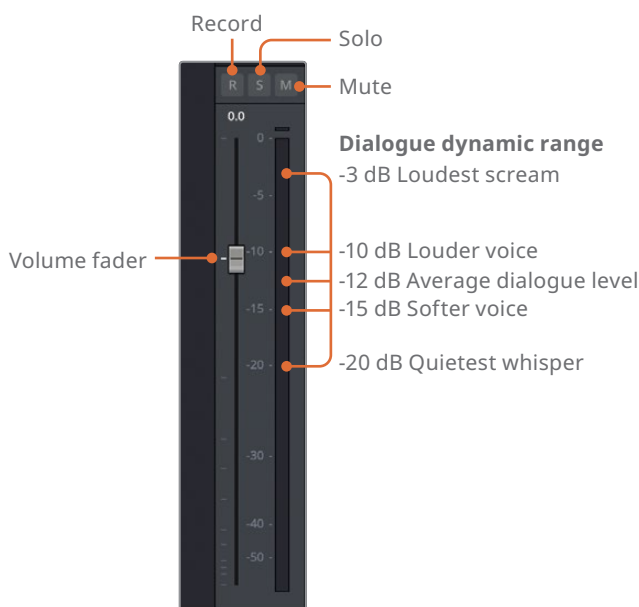
The average level should be around -12 dB on this peak meter. However, context is also important. If you have bigger and louder characters, their levels might be closer to -10 dB. A quieter voice might sound better around -15 dB because it is a speaking voice. Shouting might reach -8 dB to -6 dB. Bloodcurdling screams could be as high as -3 dB, while hushed whispers might be as low as -20 dB.

> **NOTE** The dialogue clips in this scene are composed of ADR recordings created in the Fairlight ADR tools. The best takes were edited and bounced as a new file.

Let's see where Harper's dialogue falls on the meters in her first clip.

1   Turn on looped playback if necessary.

2   Start looped playback.

3 In the mixer, look at the meter in the A1 channel strip to determine the current dialogue level. During playback, watch the solid bar in the meter to see the average level. Also, look for the highest peak, based on the horizontal peak mark in the meter.

4 Stop playback.

Depending on the actor's voice and inflection, some fluctuation will occur between the peaks and the average. In this clip, the average (solid bar) is around -12 dB, while the peak is near -8 dB. The average level in the first dialogue clip is from around -10 dB to -12 dB, while the peak is near -8 dB. These are strong levels, but in context, they may be a bit too loud since Harper is just making a statement. Lowering it by a few decibels may give you more room for other more energetic clips to be louder if needed.

You have enough information to go ahead and start adjusting the clip's level. However, the Fairlight page includes two additional tools that you can employ to make evaluating and adjusting clip levels even easier, including the Clip Volume display and the Meter plug-in. You worked with the Clip Names and the Volume display once before in Lesson 1.

5 Choose Fairlight > View Clip Info Display and click the Clip Name and Volume options to select them. Click OK.
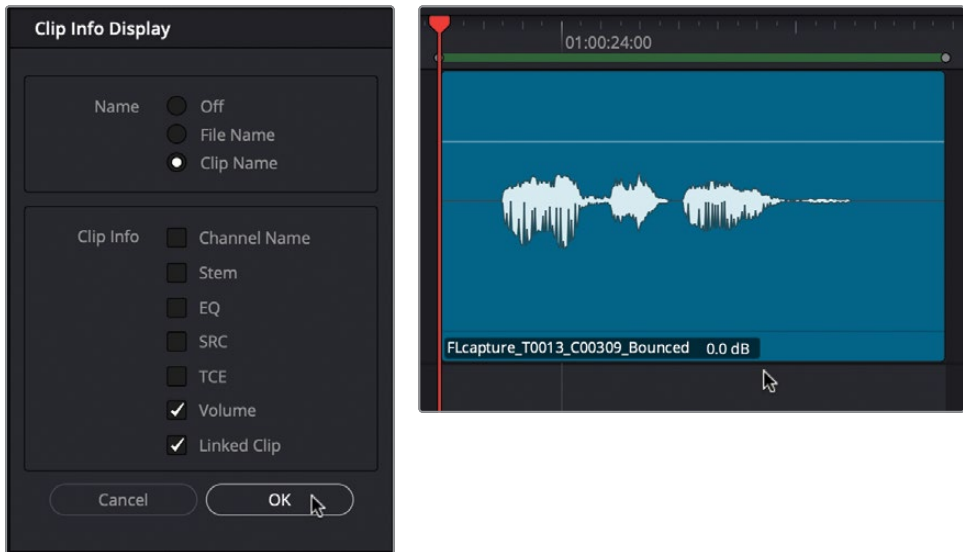
The clip gain level now appears in the header at the bottom of each clip after the clip name. In this case, since you reset the clip levels, the dialogue clips are all at the default level of 0.0dB, indicating that no change has been applied to the clip levels.

6 Show the Effects Library. In the Fairlight FX list, drag the Meter plug-in to the A1 track header. Hide the Effects Library.
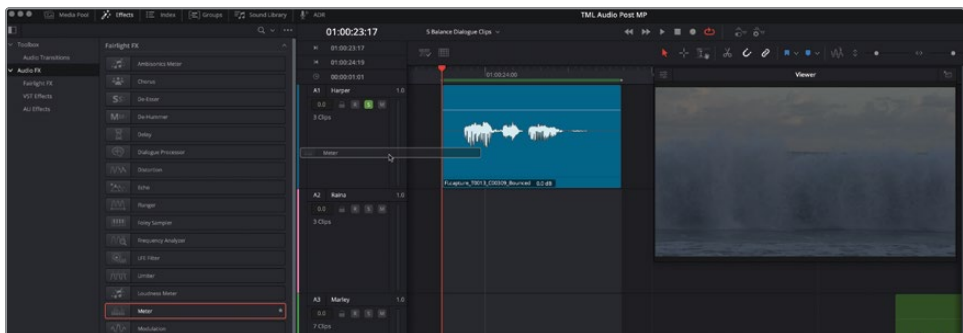
A floating Meter window named after its corresponding track, Harper, appears in the middle of the timeline.

7   Drag the Harper meter to the A1 track and place it near the clip that you're evaluating.

> **NOTE** The Meter plug-in is an SPPM (Sample Peak Program Meter) that shows the Sample Peak Level during playback. You can apply this plug-in to any track for an easy readout of the current sample peak levels. You can also apply the plug-in to your main output and busses. To resize the floating meter, drag the lower right corner. If you close the floating meter, you can reopen it any time by clicking the Customize button for the meter plug-in in the mixer or Inspector. You can also delete the Meter plug-in when you no longer need it.

8   Start looped playback and watch the floating Meter window to see the peak and average levels.
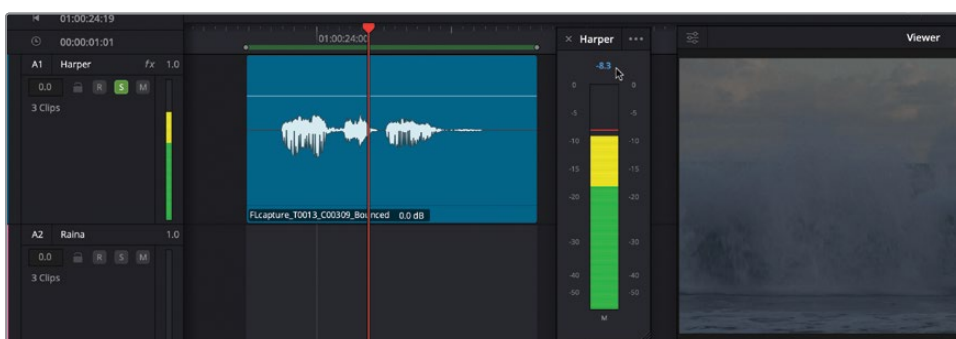
With the help of the floating meter, you should easily be able to see the levels of the clips during playback.

You can also manually scrub the playhead across the clip to see the levels of specific parts of a clip.

9   Stop playback. Choose Reset to Default from the Options menu (...) at the top or the Meter window to reset the meter.

10 Move the playhead to the last half of the clip, and then drag the playhead back and forth over the last part of the waveform to scrub the clip and see the levels in the meter.

Scrubbing the clip allows you to focus the meter on specific areas of the waveform to check the levels.

11 Scrub the first part of the clip to see the levels.

Using this technique, you can see that the first part of the clip is louder and peaks at -8.3 dB.

Now that you've seen how the meter works and know what to look for, let's check the other two clips in the Harper track.

12 Mark the second clip in the A1 Harper track. Start looped playback and check the levels.

13 Repeat step 12 to check the levels on the third clip.

The last two clips are pushing the boundaries of being too loud. The second clip, where Harper shouts "Stop," should be louder than normal conversational dialogue. However, it's peaking at -3 dB, which is the loudest any soundtrack element should ever get, including a scream—and she isn't screaming. If you watch her delivery, you'll notice she barely shouts. She is being assertive, yes, but definitely not screaming. In the third clip, she also breaks the sound barrier with -3.7 peaks for a simple question. Sure, they are a few feet away, so she must raise her voice, and she may be nervous but, once again, not to the level of screaming. If conversation and slightly raised voices are at -3 dB, what is left if she actually screams at some point? Context and consistency matter. Luckily, adjusting levels is easy.

> **NOTE** You do not need to balance dialogue clips that have been disabled. The director no longer wants to include them in the scene. However, as a good dialogue editor, you'll leave the clips in place (disabled) in case the director or anyone else changes their mind.

Adjusting Clip Levels

Now that you know the levels of Harper's first three dialogue clips and the level you're aiming for in the meters, you can start adjusting each clip's gain line overlay to lower that clip's level. Later, when you start pre-mixing tracks, you can use the volume fader in the mixer to raise or lower the overall level of each track. You've already worked with clip levels in Lesson 1. This time, you'll use several different methods to adjust clip levels, including manual and keyboard shortcuts.

1   Mark the first clip in the A1 Harper track.

   Feel free to move the floating meter and viewer as needed.
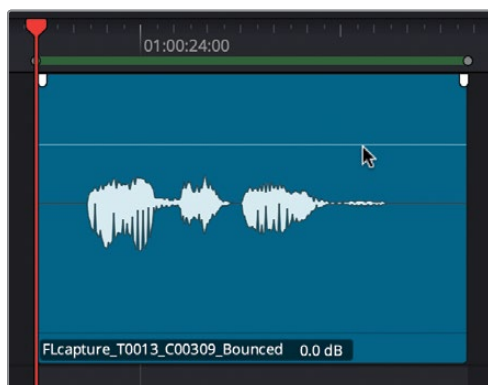
2   Play the clip once again to see the current levels.

   Your goal for this first clip is to lower the clip gain by 2 dB. Then, check the meters to see the results.

3   In the timeline, drag the Clip Gain line downward until the tooltip reads -2.0. Hold Shift while dragging for finer incremental level control.
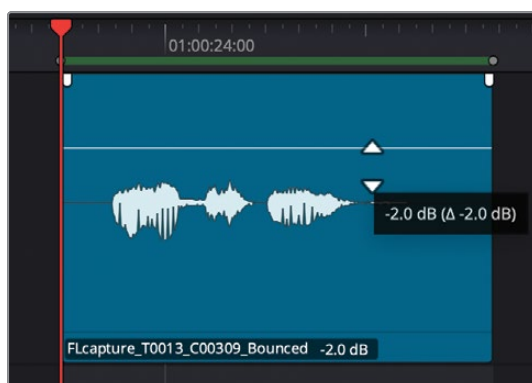
   Notice the clip gain level in the clip display.

4   Play the marked clip and watch the meter to see the new levels.

The average is still right on target; it's just a bit lower, and the peak is near -10.0.

Now you can move on to the next clip. This time, you will adjust it on-the-fly during playback using keyboard shortcuts from the Clip menu.
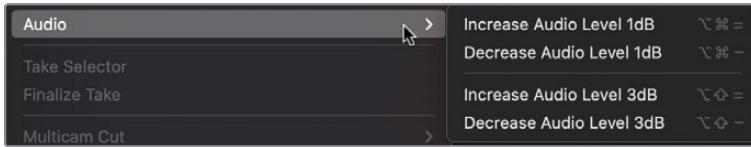
5   Mark the second dialogue clip in the A1 Harper track. Then, select the clip with the Pointer tool.

6   Start looped playback. During playback, press Option-Command-= (equals) (macOS) or Alt-Ctrl-= (equals) (Windows) and Option-Command-–(minus) (macOS) or Alt-Ctrl--(minus) (Windows) to increase or decrease the level of the selected clip. Continue adjusting the level until the peak is between -8.0 and -9.0.
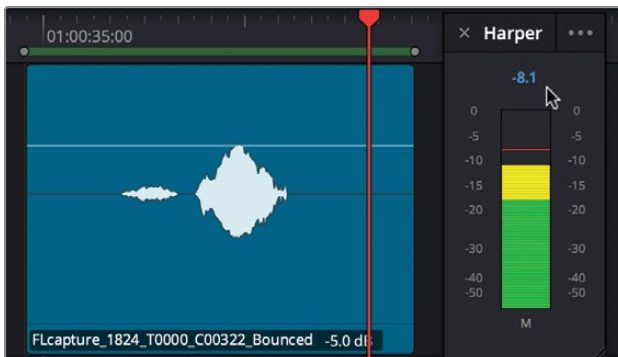
7   When you are finished, stop playback.

The clip gain level in the clip display should be near -5.0 dB. Remember, the numbers in the clip display represent the percentage of change (gain) applied to the original level of the source material. They do not specify the actual volume level of the output.

Don't worry about finding the perfect number. As long as Harper's dialogue levels are consistent and those levels reflect the context of the scene, it should be fine. Later, you can finesse the levels of the entire track when you start mixing.

8   Scroll down to the last clip in the A1 track.

9   Mark the clip.

This time, just by looking at the waveform, you can see that there is quite a difference in levels between the beginning and the end of the clip. You'll need to use keyframes to balance the clip.

Using Keyframes to Change Clip Levels

In Lesson 1, you used keyframes to lower part of the drinking coffee sound effect in the podcast intro soundtrack. In this exercise, you'll use keyframes to change the volume levels within a dialogue clip. When making these kinds of changes, it's a good idea to first find an average level that works for most of the clip's dialogue and then apply keyframes to raise or lower only those sections that need further adjustment.

For this exercise, you'll set the level for the first part of Harper's clip where she says, "Am I the only one?" Then, you'll add two keyframes before the louder section of the waveform so you can lower the level of the last part of the clip.

1   Start looped playback and watch the levels. When finished, stop playback.

    Looking at the waveform in the third clip, you can clearly see that the beginning of the clip is much quieter than the end. Let's start setting the level for the first section. Then you'll need to lower the level of the last word, "one," without changing the earlier section.

2   Reset the meter.

3   Scrub the playhead over the clip or press the JK or KL keys in combination to see the levels of the first section.

    These levels are good, but the middle part is on the low side for dialogue, and she is talking to people behind her. So her voice could be a little louder in the beginning. Let's increase the level between 1.0 dB and 2.0 dB.

4   Drag the gain line upward to increase the clip level by 1.0 dB to 2.0 dB.

5   Play the clip.

    The first part of the clip should still be solid yellow in the meters, peaking near -10.0 dB.

6 Locate the part of the clip waveform just before the waveform increases dramatically.

This is where you will set a pair of keyframes one at a time by Option/Alt-clicking the line.

7 Option/Alt-click the gain line to add the first keyframe. Repeat to add a second keyframe to the left of the first.

Now that you have a pair of keyframes, you can lower the gain line to the right of them as needed. Better still, lower the levels during playback so you can see the meter while listening to the results. Remember, yellow is a healthy dialogue volume level in the meters. Red is loud. If the levels are red, they need to be motivated by the context onscreen and controlled if necessary.

8 Start looped playback and watch the meter as you lower the level of the last part of the clip. When you've finished, the gain level for the last section should be somewhere between -5.00 dB and -6.00 dB.

9 Stop playback and clear the range. Press A to return to Pointer mode.

How do you know the clip gain levels once there are changes within the clip? Simply select a keyframe or the gain line to view a tooltip.
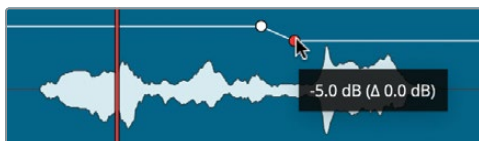
Excellent work. Hopefully, by the third clip, you were more comfortable with the workflow and confident in your clip level settings. One of the wonderful things about audio post work is that it is fairly straightforward once you understand what you need to do and why.

> **NOTE** You can also adjust clip volume, set and delete keyframes, and even navigate between keyframes in the Inspector. Working with keyframes in the Inspector is based on the current playhead position and the selected clip.

Here are some basic guidelines for setting and deleting audio keyframes:

— As the name suggests, keyframes set values on specific frames. So you can create and move them based on full frames, regardless of your zoom level.

— Pairs of keyframes between sections of dialogue make it easier to raise or lower each section as you go.

— To set keyframes one at a time, Option-click (macOS) or Alt-click (Windows) the volume gain line.

— After creating a keyframe, you can move it or select and delete it.

— Command-Option-click (macOS) or Ctrl-Alt-click (Windows) a keyframe with the pointer to delete it.

— To clear all the keyframes on a clip, click the Clip Volume Reset button in the Inspector.

Balancing a Range of Clips

You can balance the levels of an active range of clips as if they were a single clip. Simply drag a range with either the Focus mode multi-tool or the Range tool, and then adjust the gain line on any of the clips to adjust them all relative to the one you are changing.

Let's balance the clips for a different character, Levi, who is seen in the background with Raina trying to manage the comically heavy camera. Since he is farther from the camera, his lines should be audible but quieter than Harper's, who is both louder as a character and closer to the camera in the scene.

Levi's dialogue levels need to be on the lower end of the dialogue range, closer to -15 dB with peaks around -12 dB to -13 dB and possibly dipping into the green on the meters. To keep things interesting and continue adding new skills, you'll use the Range tool to select and balance two clips at the same time.

First, you'll add a Meter plug-in to the A4 Levi track. However, instead of adding a new plug-in, you can simply drag the meter plug-in from the A1 track to the A4 track in the mixer. That's right: you can drag and drop or Option-drag to copy plug-ins from track to track. Let's try it.

1   In the mixer, unsolo the Harper track. Solo and select the Levi track.

2   At the top of the mixer, locate the Meter plug-in on the A1 channel strip.

Notice that the Insert button (In) on the A1 channel strip is yellow, indicating that a plug-in effect has been applied to the track.

3   In the mixer, drag the Meter plug-in from the effects list in the A1 channel strip to the effects list in the A4 track.

The Insert button on A4 shows that there is now a plug-in on that track, and the floating meter is named Levi, just like the A4 track. If you don't see the floating meter or closed the meter by mistake, no worries. Just hover over the Meter plug-in on the mixer channel strip and click the Controls button to open the plug-in window.

> **NOTE** Besides indicating that a track has plug-ins applied, the Insert button can also be used to toggle all of a track's plug-ins on and off with a single click.

4 In the timeline, play the three clips on the A4 track.
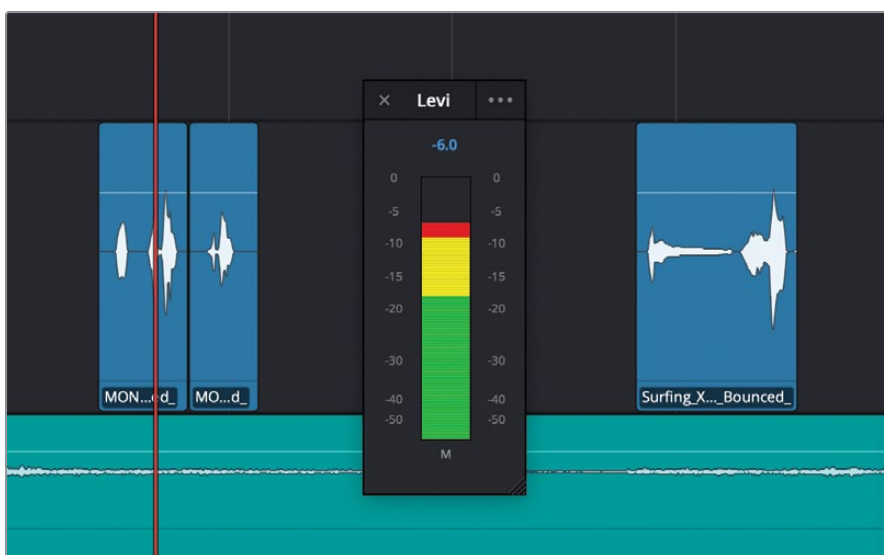
The first two clips are dialogue of Levi saying, "Here, I've got it" and "I've got it." The third clip is Levi grunting under the weight of the camera. Nonverbal noises still constitute dialogue; you just don't have to be as concerned about clarity and intelligibility.

5 With the Range tool, drag a range that includes the first two clips in the A4 track.
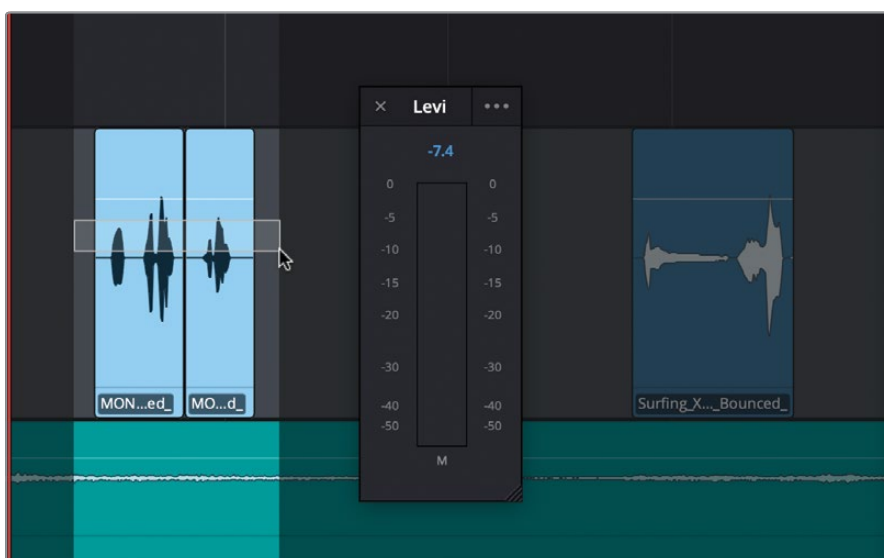
6 Zoom as needed for a clear view of the range, meter, and viewer.

7 Start looped playback. Drag the gain line on the second clip downward to lower the level of both clips at the same time. Lower the level between 6.0 dB and 7.0 dB.
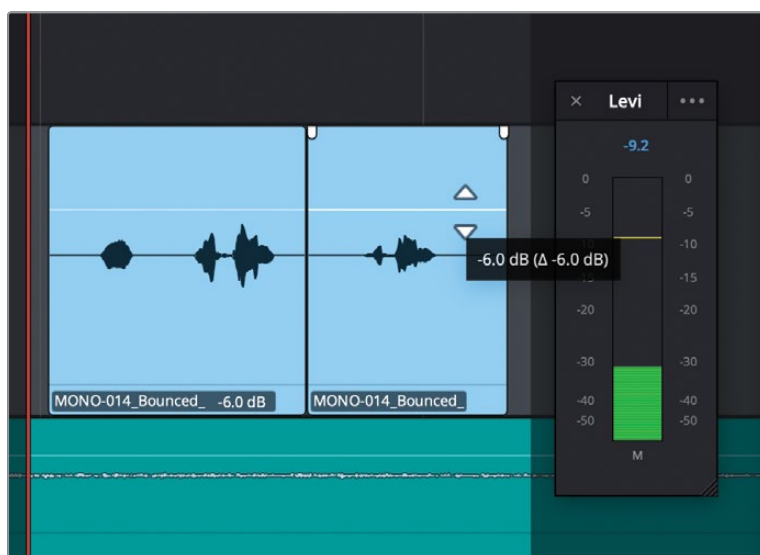
You probably noticed the first time he says, "I've got it" is louder than the second time. Normally, this would be fine. However, since it is essentially a background line, and he isn't even in focus at the time, we might as well lower the level of that phrase. Instead of manually adding keyframes, let's just drag a range around the phrase and lower the level within the range. Adjusting clip gain levels of a range automatically sets bounding keyframes to maintain levels outside of the range.

8 Click the empty space near the first to clip in the A4 track to clear the range.

For this exercise, try using the waveform in the neighboring sections outside the range as a guide.

9 Drag a range over the waveform in the second half of the first clip. Lower the gain level of the range, using the waveform as a guide.
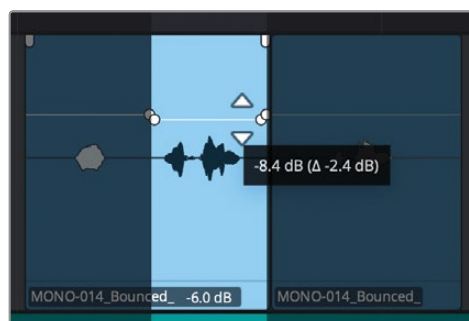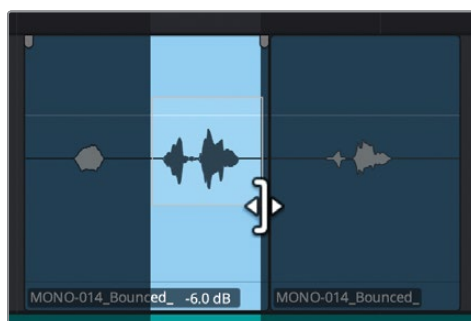
10   When finished, click any empty timeline space to clear the range.

11   Play the first two clips in the A4 track to hear how they sound and check the levels. Feel free to finesse the levels if needed.

More Clip Level Balancing

Let's test your skills on the last clip in Levi's track, where he grunts under the weight of the massive camera lens. Play the clip a few times while watching the video. Lower the clip level during playback and use keyframes to reduce the second part of the clip as needed. Keep in mind that these sounds have the potential to be either funny or distracting, depending on the full mix with the other sounds. Have fun.

Now that you've got the hang of clip balancing, go ahead and balance the A2 Raina track as well. Start by adding a Meter plug-in to the A2 track. You can add a new one, take the one from the A4 track, or Option/Alt-drag the meter from Levi's track to make a copy and add the copy to the A2 track.

The A2 track has two clips to balance. Raina's line "Oh, it's heavy" is in the background with Levi, so the levels should be lower. Her second clip, where she enthusiastically says, "I'll go!" is delivered as she bounds toward Harper (and the camera) but is stopped midway by Marley. That means her levels need to be set based on the context of where she is and her delivery. To balance Raina's first clip, it's a good idea to unsolo Levi's track so you can hear how they sound together since it is an exchange between them.

Don't do anything with the A3 Marley track. You'll work with that in the next exercise.

> **NOTE** If you did not complete all the balancing exercises up to this point, open the **5a Normalize Dialogue** timeline to catch up.

Applying Auto-Leveling to Balance Clips

If you think balancing dialogue levels is agonizing and tedious, DaVinci Resolve offers two "cheats." Resolve includes automatic clip volume normalization and an AI-based track effect: the Dialogue Leveler. Let's start with normalization.

Clip normalization is available in both the edit and Fairlight pages for quickly setting the peak levels in a clip without considering the scene's context or performance. Auto clip-normalization is like using the Auto-White Balance tool in the color page. It's an easy way to set a starting point for an editor who must quickly set levels on audio clips.

Of course, now that you're a seasoned dialogue editor, you probably have no interest in using auto-normalization. However, it's still worth knowing about, and in fact, one circumstance in which auto-normalization is effective is when you are working with a voiceover track, interview, or character who speaks with little inflection or dramatic change in emotion. And it just so happens this timeline has such a track—you're in luck. In this scene, the Marley character on A3 plays the comic deadpan role where she tries to keep herself in control, even when surrounded by highly energetic people and circumstances.

In this exercise, you'll apply normalization to the clips in the A3 Marley track.

1 Clear the range if necessary. Select the A3 track and mark the first clip.

2 In the mixer, drag the Meter plug-in from the A2 channel strip to the A3 channel strip.

3 Show the Meter window, if necessary. Hide any open panels.

4 Adjust the zoom levels in the track until you can clearly see the clips in the A3 track.

5 Play the clip and look at the meters.
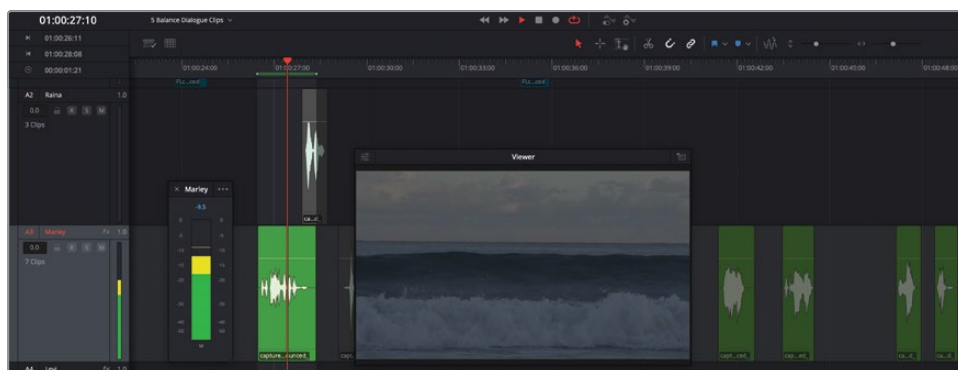
At a glance, you can see that her levels are on the high end of the dialogue range. Plus, she is off-camera, so we don't know proximity or context. In situations like this, it's good to aim for the middle of the dialogue range, with an average around -12 dB or less.

6   Right-click the first clip in the A3 track and choose Normalize Audio Levels to open the Normalize Audio Level panel for that clip.
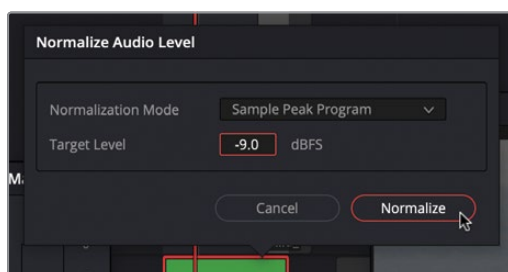
In the Normalize Audio Level dialog, you can select a peak Target Level in dBFS (decibels full scale). If the average level should be around -12, then the peaks might be closer to -9. Let's try it.

7   Set the Target Level to -9 dBFS, the default level, and click Normalize.

In this case, the clip gain line and waveform in the clip are increased slightly. So what actually happened? Normalization sets the volume gain so that the highest peak in the clip is at the volume level you designated (-9 dBFS). This would be perfect if the clip levels were low or if there was a wider dynamic range between the average and peaks. The dynamic range of this clip is only a few decibels, so you'll need to set the normalization to a lower target if you want this dialogue to ride in the middle around -12 dB.

8   Right-click the clip again and choose Normalize Audio Levels.

9   In the Normalize Audio Level dialog, set the Target level to -12 dBFS. Click Normalize, and then start playback to check the new levels in the meter.

The levels for the first clip are good. Remember that you can always change the levels later if needed.

10 Clear the range.

One added benefit of using Resolve's auto-normalization is that you can apply it to multiple clips at once.

11 Select all the remaining clips in the A3 track, including the disabled clips.
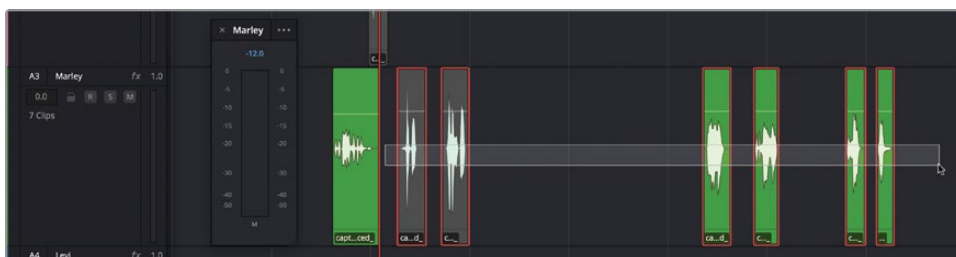
12 Right-click one of the selected clips and choose Normalize Audio Levels.

This time, the Normalize Audio Level pane includes two Set Level options: Relative and Independent. The Relative option treats the group of selected clips as if they were one clip, so the highest peak among the clips determines all their relative levels. Independent, on the other hand, normalizes each clip separately based on each clip's peaks.
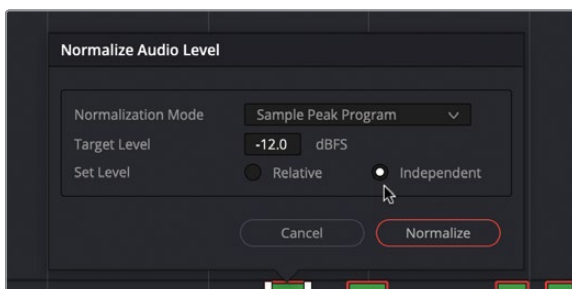
13 Leave the Target Level at -12 dBFS and select Independent for the Set Level. Click Normalize.

The selected clips have all been normalized independently.

14 Solo the A3 track and play all Marley's clips to hear her levels.

As you can see and hear, all Marley's clip levels are balanced. You might have noticed that one of the clips seems louder than the others. Specifically, the last clip where she says, "surf." If your instinct while listening was to stop and investigate or manually adjust that clip's levels to improve it, you have the makings of a dialogue editor!

In case you didn't notice, the last clip "surf" sounds a little too prominent. Sometimes, even when the levels are good the sound can be perceived as too loud or too quiet.

15   Lower the level of the last clip in the A3 track by 2 dB.

16   Close the Meter. Unsolo any tracks if necessary.

Let's play all the dialogue clips together, along with the A5 FX Amb track. If you recall, the ocean wave sounds are too loud for this scene, so this is a good time to normalize that clip to -20 dB. Setting the peak level for background sound beds is one way to ensure that the loudest peak in the ocean waves is lower than the quietest dialogue.

17   Unmute the A5 track. Right-click the Ocean Waves Night clip and choose Normalize Audio Level. Set the Target Level to -20 dBFS.

18   Zoom as needed and move the viewer where you can see it along with the other tracks.

> **NOTE** If you did not complete all the previous clip balancing exercises, open the **5b Dialogue Balanced** timeline.

19   Play the timeline from the blue marker, watch the viewer, and listen to the balanced dialogue tracks with the ocean sound bed.

Nice! Now, it just needs the music that drives the scene.

20   Unmute the A6 track. Normalize the music clip to a -18.0 dBFS target level.

21   Turn off Stop and Go to Last Position.

22   Play the scene. Enjoy.
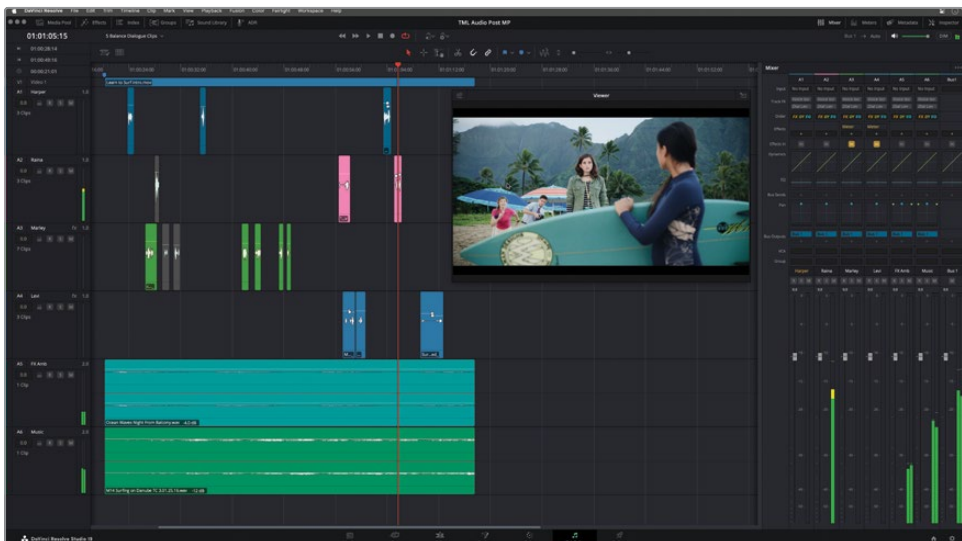
Wow! What a difference a little balancing makes in improving the soundtrack. Although balancing clips is only the beginning, you are off to a good start! Now, let's move to an entirely different scene and employ the powerful DaVinci Neural Engine AI to process and level dialogue automatically.

Working with the Dialogue Leveler

DaVinci Resolve includes a built-in Track FX called the Dialogue Leveler. This effect is available in the cut, edit, and Fairlight pages. The Dialogue Leveler recognizes the human voice and balances the levels for natural-sounding results using three different processes to reduce loud dialogue, lift soft dialogue, and reduce background noise. In this exercise, you'll play a clip that was balanced with keyframes to see the levels in the meter. Then, you'll duplicate the track, remove keyframes and level changes from the copy, and apply the Dialogue Leveler instead to see and hear the results.

1   Open the **5c Dialogue Leveler** timeline. Show the mixer and viewer. Hide the media pool.

The timeline opens with one track showing that contains one balanced clip complete with keyframes.

> **NOTE** This clip is from a scene shortly after Harper and Raina crash a golf cart into the centennial palm tree. Vice Principal Garret is making an announcement over his portable PA system. In Lesson 7, you'll apply creative plug-ins to this dialogue to make it sound like it is coming through a portable speaker.
> For now, you'll focus on balancing the clip levels using the Dialogue Leveler.

2   In the mixer, click the Custom button on the Meter plug-in to show the meter.

3   Zoom and arrange the clip, meter, and viewer so they are all easy to see.

4   Mark the clip in the A1 track. Play the clip in the timeline to see meters and video.
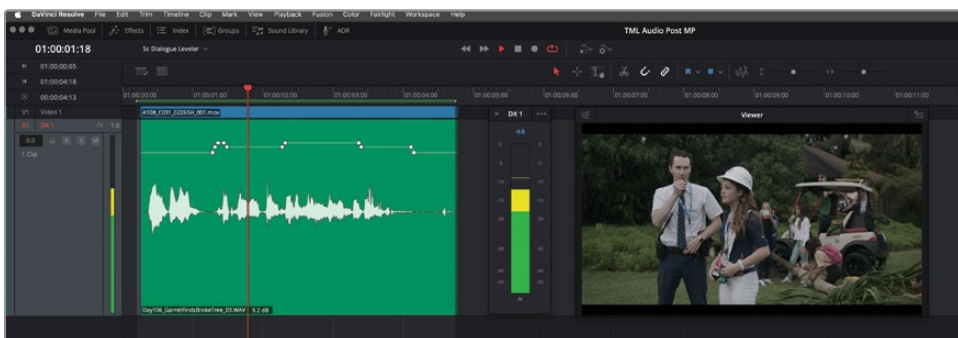
As you can see and hear, the clip is balanced. Let's duplicate the track and clear the level changes and keyframes from the copy.

5   In the timeline, right-click the A1 DX 1 track header and choose Duplicate Track.

There is now an A2 DX 1 Copy track. Next, you'll remove the level changes on the clip.

6   Right-click the clip in the A2 track and choose Remove Attributes. In the Remove Attributes dialog, select the Volume option and click Apply.
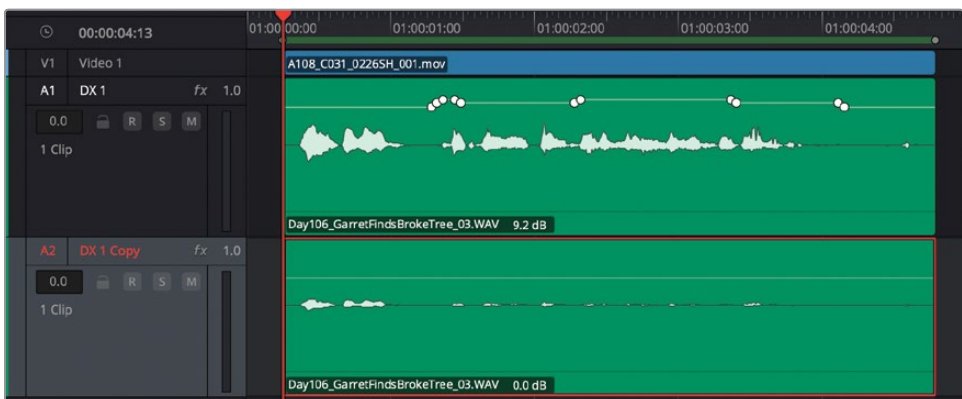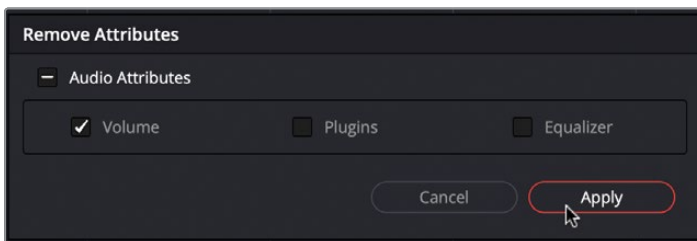
All the keyframes and level changes have been removed.

7   Click any empty space to deselect the clip in the A2 track.

8 Mute the A1 track. Show the meter for the A2 track and start looped playback to see and hear the clip without level changes.

Principal Garret's levels are mostly green in the meters and well below optimal dialogue levels. Let's start by normalizing the clip to increase the overall level and then use the Dialogue Leveler to balance the levels within the clip.

9 Right-click the clip in the A2 track and choose Normalize Audio Levels. Set the Sample Peak Program Target Level to the default -9.0 dBFS.

10 Play the clip to see and hear the normalization results.

The beginning of the clip is now -9.0 dBFS; however, most of the clips' levels are low. Now, let's add the Dialogue Leveler.

> **NOTE** When working with a processing effect like the Dialogue Leveler, it's important to distinguish between applying the effect to a clip and applying it to a track. One effect applied to an entire track requires less processing than individual effects on every single clip within the track. In this case, since we are balancing an entire track, it is logical to enable the effect at the track level. You'll work more with clip and track effects later in this book.

You can choose which Track FX are showing in the Mixer options menu.

11 In the Mixer options menu, choose Visible Track FX to see the list of available Track FX. Select Dialogue Leveler, if necessary, to show it in the mixer Track FX area.
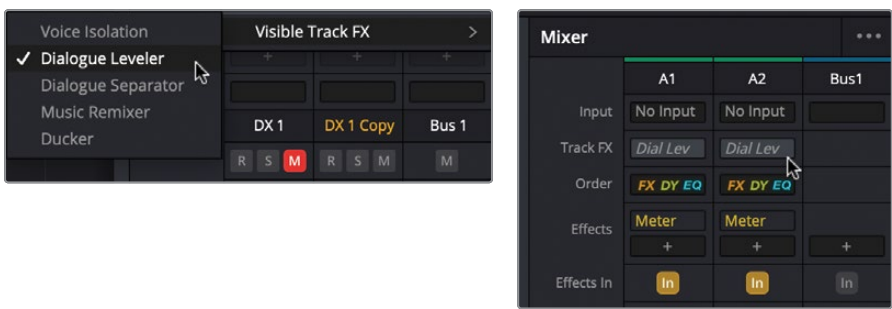
You should now see the Dialogue Leveler at the top of each channel strip in the Track FX area.

12 Locate the Track FX area near the top of the channel strips.

When an effect is on the track but not enabled, the name will be italicized, as shown in the Dialogue Leveler as *Dial Lev* in the Track FX list. Once enabled, a track effect can be toggled on or off during playback from the customization window or in the Inspector.

13 Hover over the Dialogue Leveler effect in the A2 channel strip until you see the buttons to Enable (left) or Control (right) the effect. Click the Enable button.
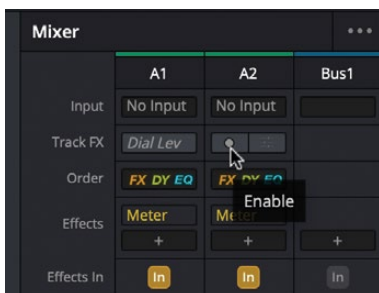
The Dial Lev text turns yellow and is no longer italic to indicate it has been enabled.

14 Hover over the Dialogue Leveler effect in the A2 channel strip again and click the Controls button (right) to open the Dialogue Leveler control window.
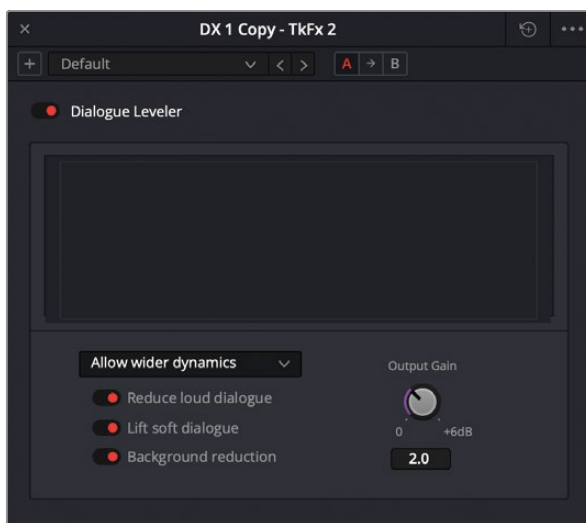
Now, let's play a section of the DX 1 track that previously required a lot of keyframes to balance and use a Meter plug-in to see the results.

15 Open the Meter plug-ins on both the A1 and the A2 tracks to compare them. Arrange the Meters and Dialogue Leveler controls windows below the A2 track.

16 Zoom to your taste. Start looped playback and watch the levels while listening to the playback.
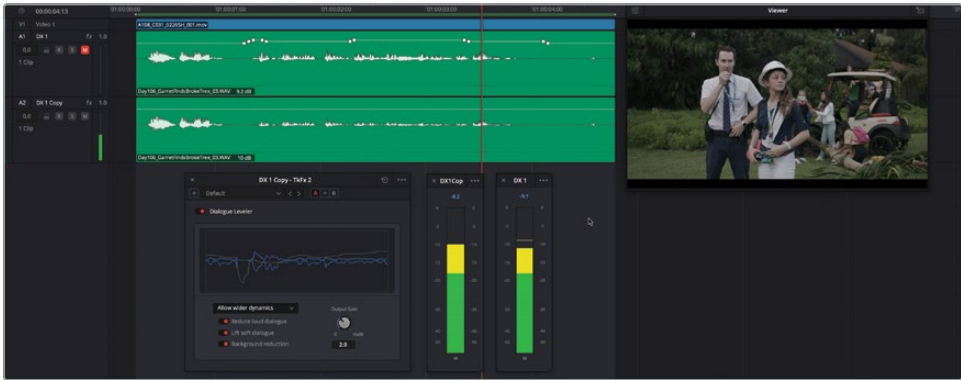
It's like magic. The levels sound nearly identical to what you achieved when meticulously keyframing each section. Did you notice the live waveforms in the Dialogue Leveler controls that show the waveform in blue and the processed level changes in white? The levels in this clip are all over the place, and the Dialogue Leveler balances the levels seamlessly. Now, let's toggle the effect off and on during playback to see and hear the before and after.

17 Start playback from the same position. This time, click the red Bypass switch in the upper left of the Dialogue Leveler to toggle the effect off and on during playback.

Dialogue Leveler bypassed   Dialogue Leveler on

18 Feel free to experiment with the other Dialogue Leveler settings to see and hear the effects on this track. When finished, click the Reset button at the top of the window to return to the default settings.

19 Stop playback and close the Meters and Dialogue Leveler controls windows.

As you can see, the Dialogue Leveler is a powerful balancing tool for your dialogue tracks. Next, you'll return to the "Learn to Surf" scene, where you'll play a more complex example of a dialogue scene and explore track panning.

> **NOTE** To use the Dialogue Leveler on the edit or cut pages, you must access it through the Inspector.

Placing Audio in the Panoramic Sound Field

Pan controls place a track's audio within a panoramic sound field. They enable you to compose the spatial arrangement of audio elements just as a cinematographer composes the visuals of a shot. You can precisely locate mono tracks to sound as if they come from an offscreen source or virtually anywhere within the frame. DaVinci Resolve includes advanced pan controls in both the edit and Fairlight pages that support 2D (stereo) audio, multichannel surround, and immersive (object-based) audio placement.

In this set of exercises, you'll use the pan controls to change the perceived position of a camera sound effect to match the picture. Then, you'll open a different timeline to experiment with various panning options to narrow the panoramic spread of airplanes doing a flyby. Next, you'll use the viewer to automate the sound of the airplanes manually. You'll also test-drive the auto-panning controls available in DaVinci Resolve Studio. Finally, you'll edit pan automation for the dragon sound effects in the Podcast Intro project.

1 Open the timeline **5d Pan Track Start**. Hide the media pool. Reduce the track height as needed to move the viewer below the tracks.

2   Play the timeline to see and hear the end of the "Learn to Surf" scene.
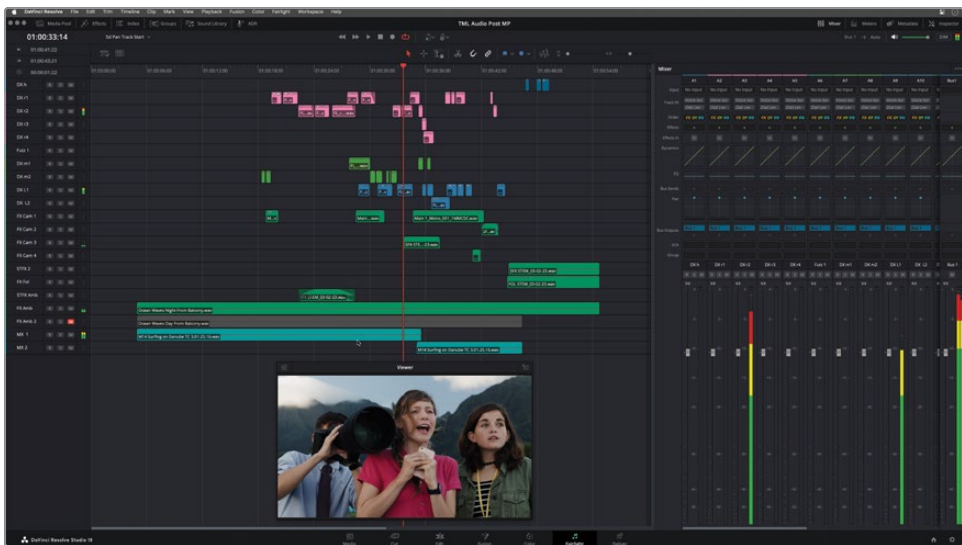
Now that you are familiar with balancing clip levels, you probably can appreciate all the balancing necessary to get the levels to this point. Notice that some characters have multiple dialogue tracks to accommodate overlapping sound and quick fades to hide the edits between dialogue clips.

Let's solo the FX tracks to focus on how they work with the picture. First, select the tracks so you can solo them all at once.

3   In the timeline, select all eight FX tracks, starting at FX Cam 1 and ending with FX Amb, including four FX Cam tracks. Option/Alt-click the Solo button on one of the selected tracks to solo them all.

4   Play the timeline once, listening only to the sound effects.

What do you think? The sound effects work fine for a stereo mix. However, context and the perceived position of a sound can make a difference. For example, if someone is standing off to the right of the screen shooting pictures, it makes sense that the camera sound would also seem to be coming from that position. This is the case with the FX Cam 2 track.

5   Unsolo and deselect all tracks.

6   Solo and select the FX Cam 2 track. Zoom and scroll as needed to clearly see the FX Cam 2 track clip.

7   Mark the clip in the selected track. Start playback and watch where Levi is standing with the camera.
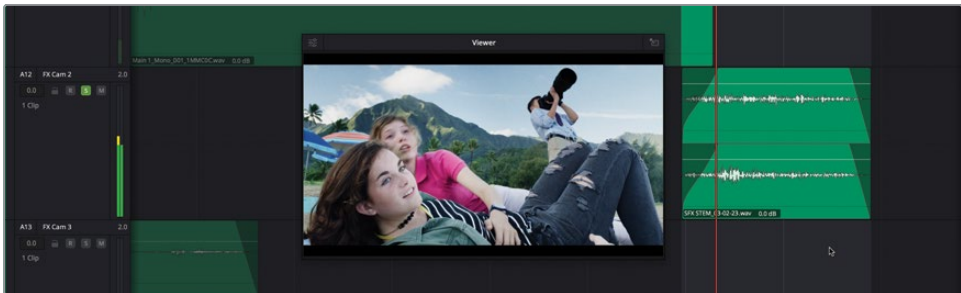
8   Stop playback.

Now, let's look at the panning controls for the FX Cam 2 track in the mixer.

In the mixer panning controls, the green dots represent the spread and positions of the speakers for each audio channel. The blue square is a handle that you can use to move the sound to a specific position in mono tracks or between speakers in multichannel tracks.

The FX Cam 2 track is in the default position with the left and right channels in the front (upper) left and right positions, and the blue handle is equidistant between them. During playback, the A12 FX Cam 2 meter and Bus 1 output meters also indicate an equal amount of sound from the left and right channels.

9 Start looped playback.

10 Using the mixer's pan controls, drag the blue handle for the A12 FX Cam 2 track to the upper left corner of the panning control in the control strip. Then, drag the panning handle to the upper right corner of the control to pan the sound fully to the right speaker.

Stereo track panned to the center (default)

Stereo track panned fully to the left speaker

Stereo track panned fully to the right speaker

In each example, you can hear the sound more prominently in either the left or right speaker or the headphone earpiece. While the track's meter stays the same regardless of the panning position, the Bus 1 output meter shows twice as much sound from the left or right channel based on the panned position. When the sound is louder in one speaker, it gives the aural illusion of the sound coming from that position.

11 Continue looped playback. Pan the track to the right so the camera sounds like it is on the right side of the frame. Stop playback.

To bypass the panner, Command-click (macOS) or Ctrl-click (Windows) the pan control in the mixer. This works with all mixer controls. The control turns gray when bypassed. Let's try it.

Pan control on   Pan control bypassed (gray)

12 Start looped playback. During playback, Command/Ctrl-click the panner to toggle it off and on to hear the before and after. When finished, be sure to turn on the pan control.

Now that you are familiar with the mixer's pan control, you are ready to explore the full pan control window.

Controlling a Track's Stereo Spread

In addition to panning sound between the left and right speakers, you can also narrow the perceived placement of the sound within the stereo field and reduce the size of the source. In this exercise, you'll narrow the spread of a stereo sound effect for more precise control of the sound's placement. You'll start by listening to the sound without watching the viewer to understand what is happening in the stereo clip. Then you'll play it again with the video.

1 Open the **5e Pan Window Start** timeline.

2 Choose Workspace > Reset UI Layout.

3 In the monitoring panel, drag the bottom and left edges of the viewer to enlarge the monitoring panel and viewer without undocking it.

This timeline contains a single video clip of two jets flying. The sound is a stereo track that was recorded in the camera.

4 Hide the monitoring panel, including the viewer.

5 Play the timeline to hear the sound and see the jets fly by. During playback, listen for any clues about where the planes are onscreen.

Exciting, right? The clip sounds great! You may have perceived that the planes are traveling left to right but have no idea specifically where they are onscreen.

6 Show the monitoring panel. Play the clip again; this time, listen while watching the video.
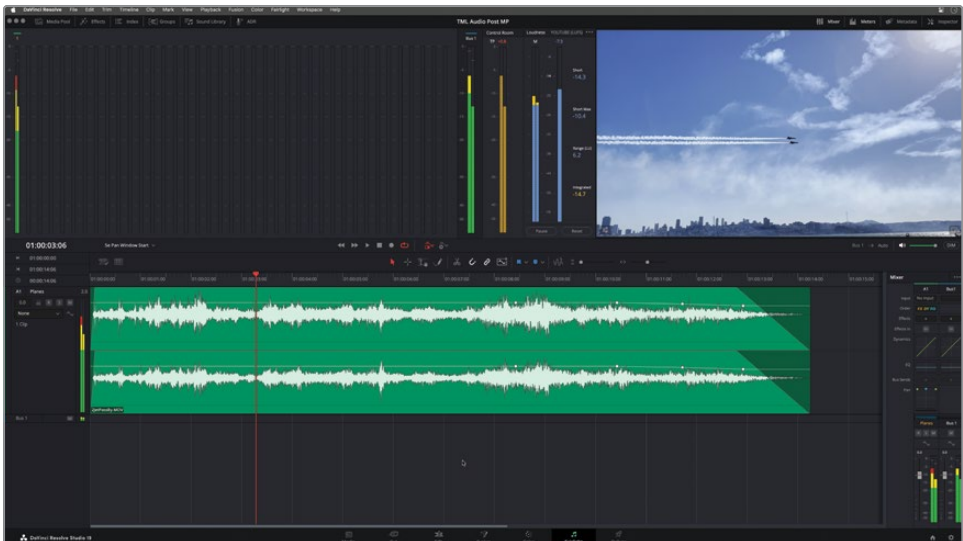
7 In the mixer, double-click the track's Pan controls to open the Audio Pan window. Move the Audio Pan window to the upper part of the screen to the left of the viewer.
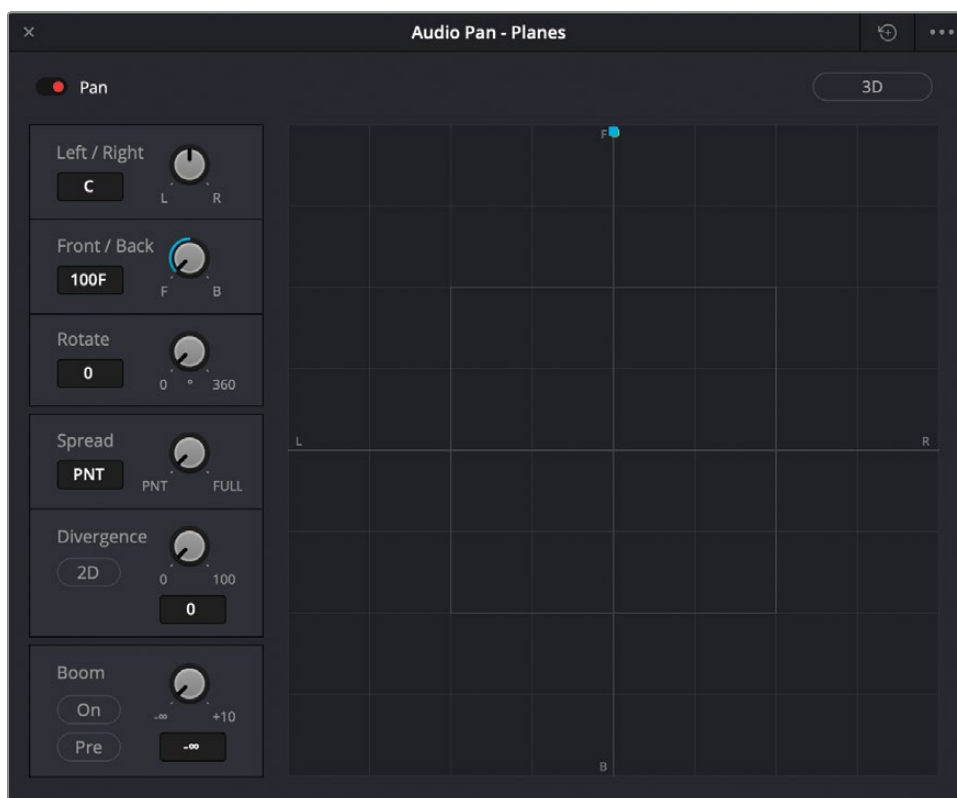
These Audio Pan controls work with standard channel-based tracks ranging from mono and stereo to traditional 5.1 or 7.1 surround sound configurations, depending on your setup and project. The center of the graph represents the audience's perspective from which they can hear sounds placed in the surround sound positions around them. The top center position, the default position for the blue panning handle, is the center channel in surround formats and the *phantom center* in stereo tracks because there isn't a center speaker, only the illusion of a center speaker in a stereo mix. The small letters F, R, B, and L—positioned clockwise around the space in the top, right, bottom, and left positions—represent the Front, Right, Back, and Left positions in the panoramic field, respectively.

Where you place audio tracks within this panoramic space will reflect where the audience will locate each audio source. The Spread control is for linked sources. Divergence determines the distribution of the audio signal to additional speakers in a stereo or surround mix, and Boom determines how much of a track's sound is sent to the low-frequency effect (LFE) speaker.

The A1 Planes track is currently panned to the front, with the left channel going to the far-left front speaker position, and the right channel going to the far-right front speaker position.

8 Drag the Spread control counterclockwise from the FULL position to the PNT (point) position. As you change the control, notice that the green dots representing the left and right channels move toward each other until they become a single point.

The sound of the left and right channels is now more focused in the center.

9 Increase the spread to around 6 to slightly separate the sound. Then, drag the Divergence control clockwise to around 20.
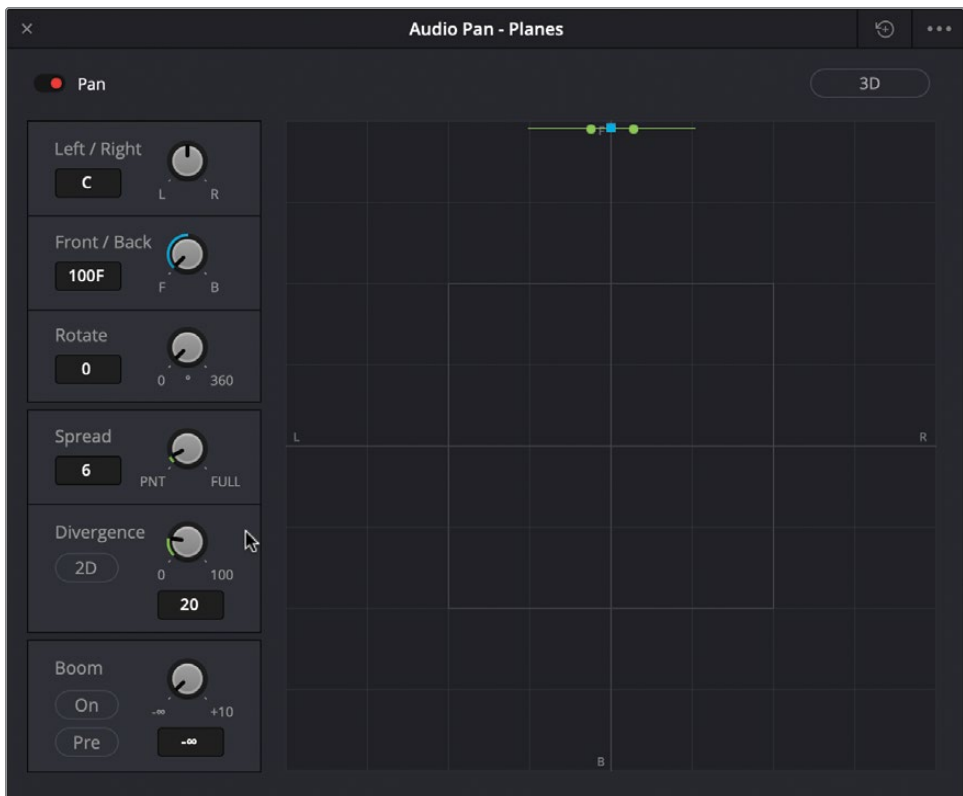
The green line indicates the perceived size of the source sound—in this case, the jets.

You can now position the sound using the blue pan handle, just as you would with a mono track.

10 Mark the clip and start looped playback. In the Audio Pan window, drag the blue pan handle from the center to the left and then all the way to the right to hear the sound follow the position of the panner. Stop playback.

Next, use the Left/Right control to position the panner to match the starting point of the planes onscreen.

11 Move the playhead to the beginning of the timeline. Drag the Left/Right control to 50L.

Pan coordinates are easy to use. The Center is zero and increases left up to 100L and right up to 100R. On the first frame, the planes are approximately halfway between the left edge of the frame (100L) and the center. That makes their coordinates approximately 50L on the Left/Right control. The same idea applies to Front/Back and Up/Down panning in 3D.
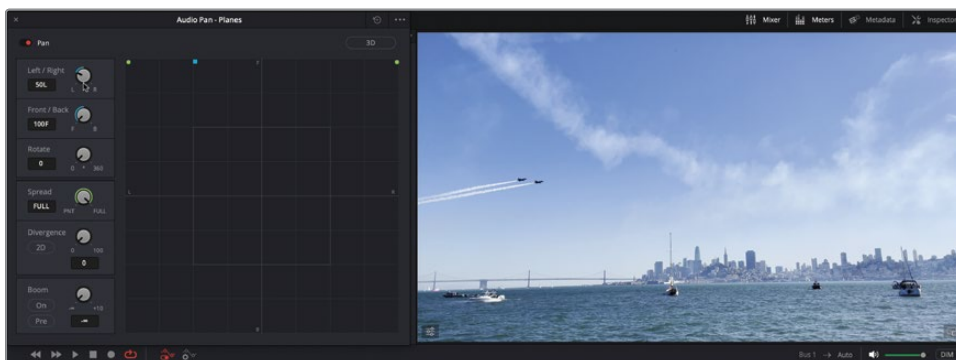
Instead of guessing the position of the planes, let's use the pan tracker in the viewer.

NOTE Stereo mixes are limited to the left/right axis between the left and right speakers. To pan up/down or back/front, you need a multi-channel output bus such as 5.1 or 7.1 or an immersive format such as Dolby Atmos.

Using the Pan Tracking Controls in the Viewer

At the end of Lesson 1, you used the pan tracker in the viewer to move the mower sound effect from right to left without ever touching the pan controls. For this exercise, you'll use the tracking controls in the viewer to show the precise location of the planes. You'll also use these controls to manually automate their movement. Finally, you'll use the IntelliTrack-powered Audio Panning to Video, which writes panning automation based on the movements of objects in the Fairlight viewer in DaVinci Resolve Studio.

1   In the lower left corner of the viewer, click the Controls menu and choose Show Tracker Controls. Then, enable the Left-Right and Down-Up control buttons.
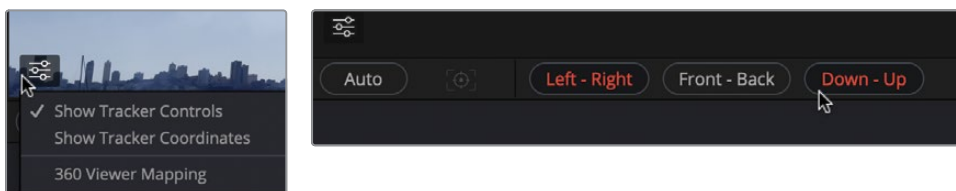
The tracker visually represents the audio panner's position in the viewer.

2   Select the A1 Planes track to see the tracker's current position based on the current panner controls Left/Right 50L.
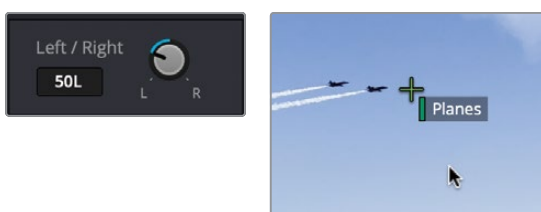
The tracker is labeled Planes based on the name of the selected track. It is close to the planes but not exactly on one of the planes. That is easy to fix. You can just drag the tracker into position.

3   Drag the Planes tracker to the nearest plane. Then, look at the Left/Right controls in the panner to see the results.

The Left/Right pan controls are set, but what about the up/down axis? That's right. In addition to moving left to right, the planes move up and down in the frame. To see those controls in the Panner control window, you'll need to switch to the 3D panner.

Exploring the 3D Pan Controls

In addition to the conventional 2D panner for standard stereo, 5.1, and 7.1 channel surround panning, DaVinci Resolve includes 3D audio pan controls for channel- and object-based spatial audio positioning. The 3D panner can be used for any project to visualize the panoramic field from different perspectives. Click the 3D button at the top of

the Audio Pan window to switch the interface to the 3D Cartesian view, offering controls for working with immersive audio formats such as Dolby Atmos and Ambisonics. In this exercise, you'll switch to the Audio Pan window to the 3D panner view so you can visualize and set panning controls on the Left/Right and Up/Down axis.
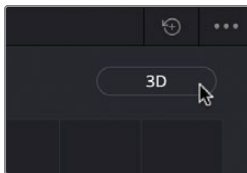
1 Click the 3D button at the top of the Audio Pan window to switch to the 3D Panner control window. Resize the Monitoring panel and arrange the 3D Audio Panning window as needed.

Like the standard surround panning controls, these controls include a panner viewer that displays a large 3D representation of the listener's perceived sound stage, with a blue sphere representing the track audio positioned within that sound stage.

To the right of the panner viewer are the 2D Front, Side, and Top panner controls for placing sound on specific axes. The controls at the bottom left of the 3D Panner include Left/Right, Front/Back, and Down/Up. Perspective buttons located in the lower left corner of the Panner viewer let you view the room from different preset angles.

2 Click each Perspective button to see the different preset angles. When finished, click the first Perspective button.
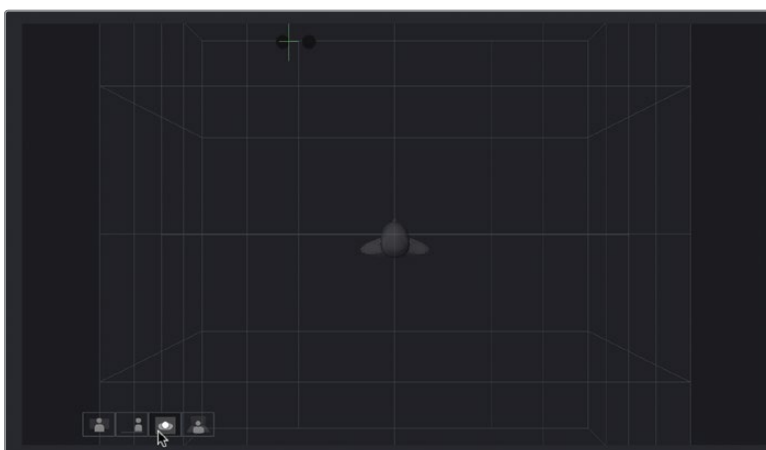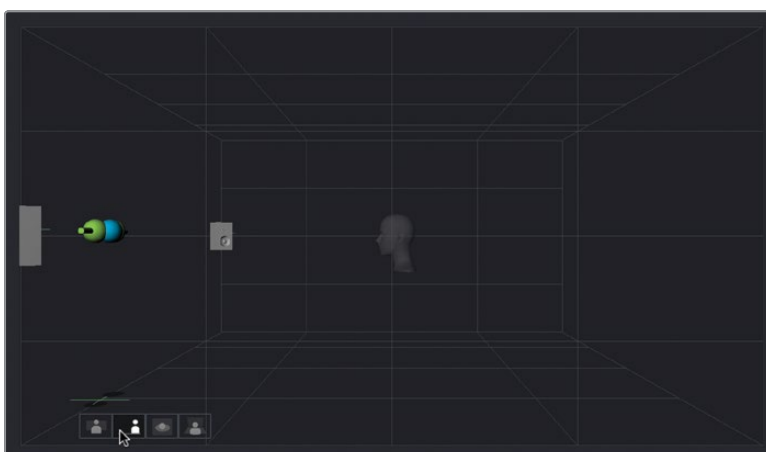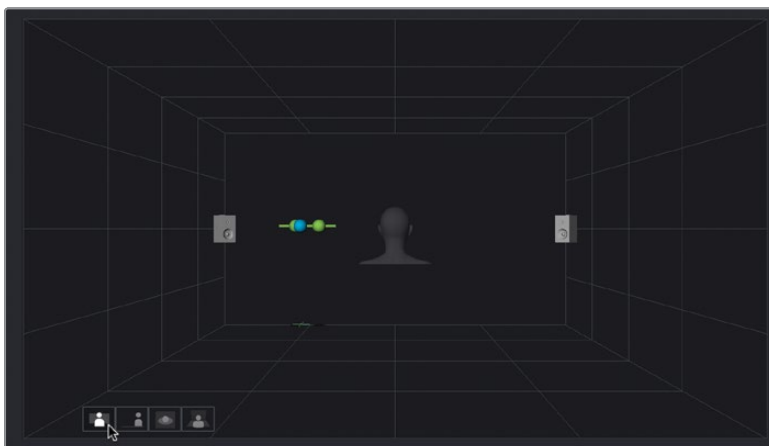
NOTE You can freely rotate the perspective by holding down Command-Option-Shift (macOS) or Ctrl-Alt-Shift (Windows) while dragging. Holding the middle mouse button and dragging will also freely rotate the room's perspective.

Let's manually automate the panning to match the movement of the planes left/right and up/down.

To move the tracker to a specific position and set an automation keyframe, simply Option/Alt-click the viewer where you want the track. Let's try it.

3 Move the playhead to the first frame.

4 In the Audio Pan window, double-click the Left/Right and Up/Down controls to reset them to center.
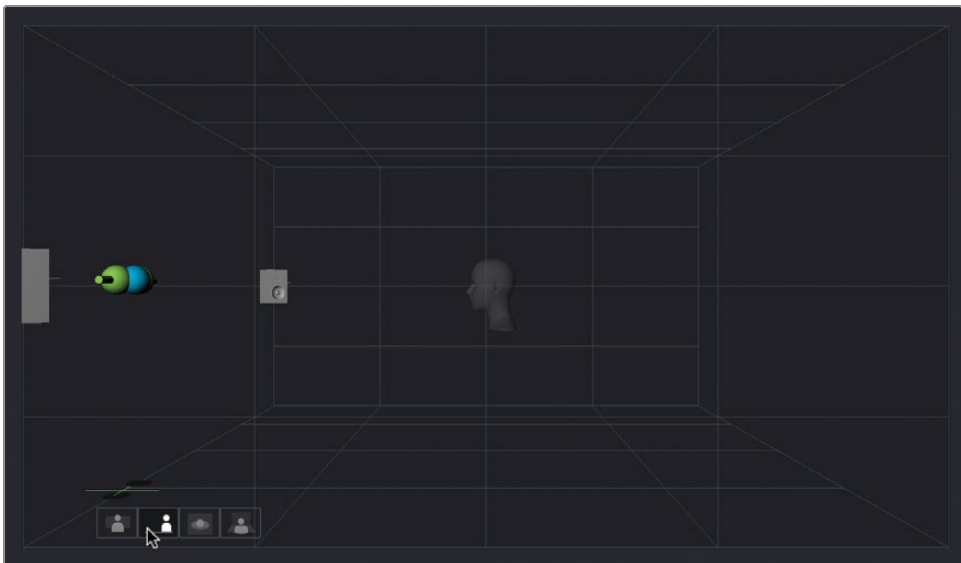
5 In the viewer, Option-click the nearest jet plane to set the tracker position and corresponding automation keyframes.

The green under the Left/Right and Down/Up controls indicate that automation data has been added for that parameter. Now, let's move forward by 1 second and move the tracker again.

6 Press Shift-Right Arrow to move the playhead 1 second forward. Option-click the same plane to set the tracker position.

7 Repeat step 6 as many times as necessary until the planes disappear from view in the distance.

8 Play the clip from the beginning to see and hear the results in the viewer and panning viewer.

Awesome! Mission accomplished. The planes and their sound move in tandem across the screen in the viewer, along with the tracker, and the pan controls follow the same path as the planes across the panner viewer.

You can show the automation curve for any parameter by right-clicking the parameter. Let's try it.

9 Right-click the Left/Right control in the 3D panner to see the Left/Right automation curve in the A1 track.

10 Right-click the Down/Up control in the 3D panner to see the Down/Up automation curve in the A1 track.
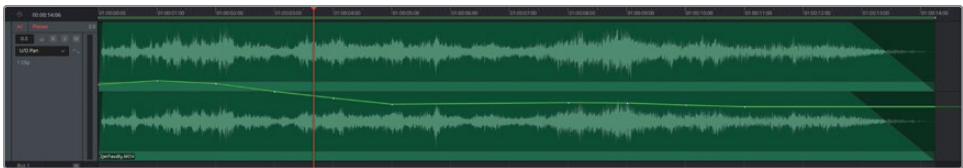
> **NOTE** To clear all the automation from a track, right-click the track header and choose Clear Track Automation.

Just like that, you were able to use the viewer to pan your audio to match the movement onscreen. Feel free to experiment with the panning controls and tracker. You'll work more with automation and panning tracks in later lessons.

Auto-Panning to Video (Studio Only)

The DaVinci Resolve auto panning to video is unique to DaVinci Resolve Studio. It allows you to set an initial position for the tracker on the viewer, and the IntelliTracker will do the rest. The three requirements for using the auto pan controls are DaVinci Resolve Studio, a selected track, and a marked range. That's it. Seeing is believing. In this exercise, you'll clear the track automation and then follow the steps to automate the panning in a few clicks.

1 Right-click the A1 track header and choose Clear Track Automation. Click Reset in the Clear All Automation dialog.

2 Mark the clip in the A1 track, if necessary, and select the track.

3 Move the playhead to the beginning of the clip.

4 In the 3D panning controls, right-click the Left/Right control to show that curve in the timeline.

5 In the viewer, show the Tracking controls if necessary.

6 In the tracker controls, enable the Auto, Left-Right, and Down-Up buttons.

7 Move the tracker to the nearest plane.

8 Click the Tracker button to start the auto tracker.
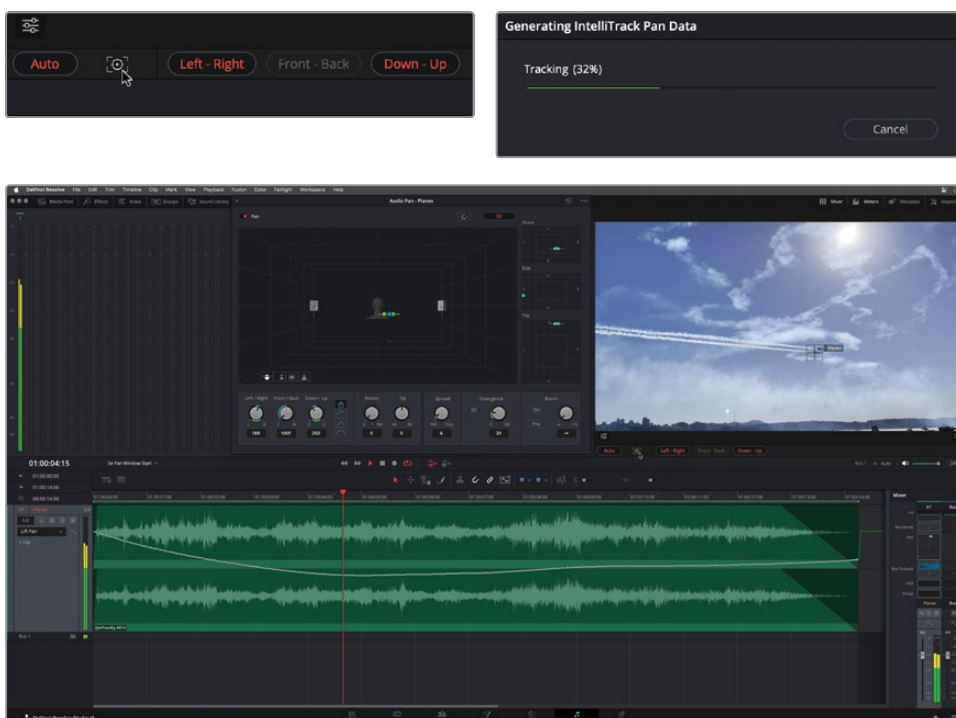
The Generating IntelliTrack Pan Data progress dialog indicates how long the tracking will take to complete. When finished, the automation curve appears in the timeline if showing.

9   Play the track to see and hear the auto-tracking results.

Voilà! Instant pan automation without touching the panner. DaVinci Resolve Studio is the first application to combine audio panning with video tracking. This feature alone could save hours panning objects. Now you can try it on your own projects.

Viewing Multiple Pan Trackers

For this last pan tracking exercise, you'll return to the Post Park Normal podcast intro, where you'll explore manual pan tracking applied to each sound effect right in the viewer. Then, you'll look at the automation curve for one of the sounds and adjust the settings in the automation curve. Let's start by opening the balanced project with all the dialogue and sound effects in place. The only track that has panning automation is the BGFX1 Mower track, which you manually panned with the tracker at the end of Lesson 1.

1   Open your Podcast Intro Combo project.

2   Open the timeline **5 Intro Combo to Pan**.

3   Show the tracker controls in the viewer if necessary.

4   In the timeline, select the A14 BGFX1 Mower track to see the tracker in the viewer.

5   In the mixer, open the Audio Pan controls window for the selected track. Set the panner to 3D view.

6   Arrange the 3D Audio Pan window next to the viewer in the monitoring panel.

7 Play the mower clip from the beginning to see the current tracking in the panner and viewer.
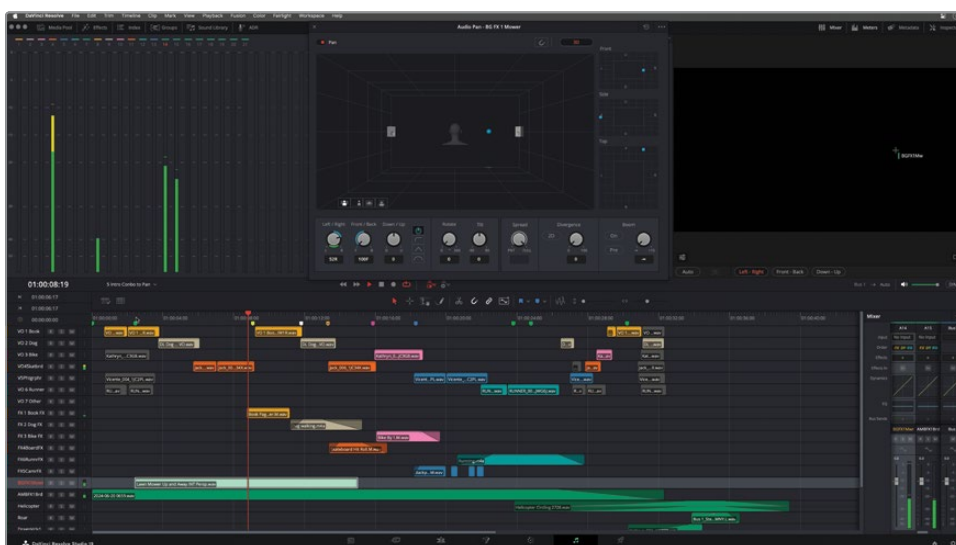
As you can see, the mower sound moves from right to left in the tracker and panner. Now, let's look at the trackers for all the other sound effects tracks.

8 Select all the sound effects tracks from A8 FX 1 Book FX to A21 Wing Flaps to see their trackers.
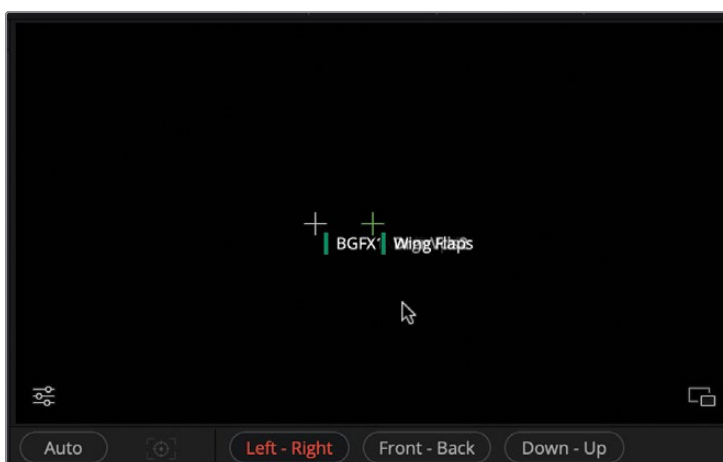
Where are the trackers? They are all stacked up at the center position, where they are all currently panned. Trackers turn gray when no clip is currently beneath the playhead on their corresponding track.

9 Extend the mixer to see the channel strips for the selected tracks.
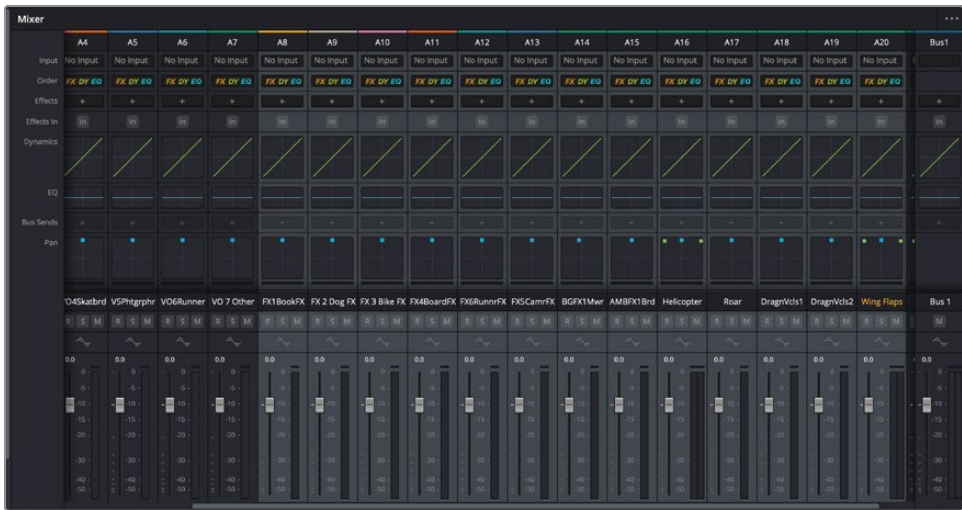
The pan controls on the channel strips clearly show that the tracks are all panned to the center. Notice that most of the sound effects tracks are mono, except the Helicopter and Wing Flaps, which are both stereo sound effects.

Now, let's open a different version of this timeline, with pan automation added to the sound effects.

10 Open the **5a Intro Combo w Pan** timeline. Move the playhead to the beginning of the timeline if necessary.

11 Select the sound effects tracks and look at the viewer.

The viewer shows the starting pan positions for all the selected tracks. If you are wondering why all the trackers are aligned from left to right, stereo mixing only allows for the left/right pan axis. If you want to manipulate sound up/down or front/back, you'll need to work with a surround or immersive format. Don't worry, you'll get to do that soon in a later lesson! Stereo is a great starting point.

12 Play the timeline to see the trackers in action and listen to the clips move along the way.

Pretty cool. Did you happen to notice that the roar at the end sounded like it was coming from the far left, while the dragon flaps and other sounds were closer to the center? If you did, you have good ears. Let's fix it in the automation curve on the timeline.

Editing the Pan Curve in the Timeline

Automation keyframes are incredibly flexible and can be added, deleted, cut, copied, pasted, or manually drawn as needed. In this exercise, you'll show the Left/Right pan curve on all the dragon sound effects tracks so you can compare their automation curves. Then, you'll edit the curve on the Roar track to match the position of the other dragon sounds.

1 Deselect all tracks. Select the last four sound effects tracks from A18 Roar to A21 Wing Flaps.
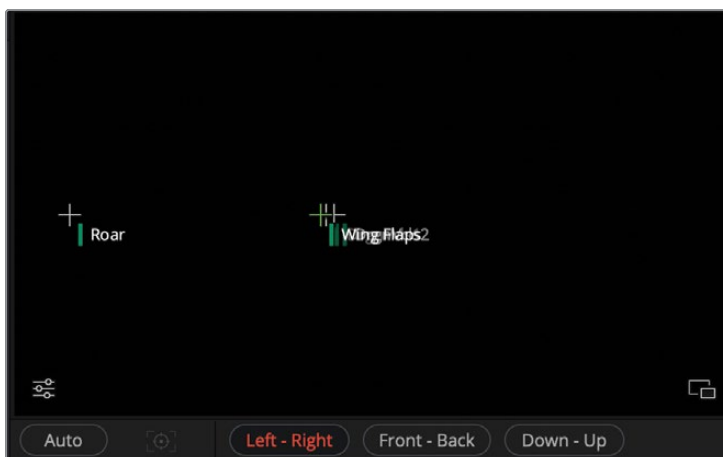
In the tracker, you can see that the Wing Flaps and other trackers are near the center, while the Roar is at the far left.

2 Zoom the timeline as needed to clearly see the clips in the A18 to A21 tracks.

3   Open the Pan window for the A18 Roar track.
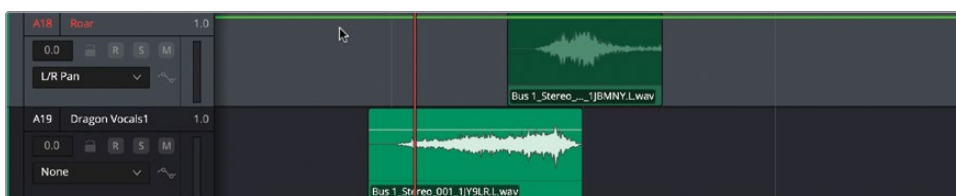
The horizontal green line running across the track is the L/R Pan curve, which is currently a straight line near the top of the track.

> **NOTE** Once the Audio Pan controls window is open, it will always show the controls for the most recently selected track. You don't need to close it and open the pan controls for a different track.

4   Click the curve line to see a tooltip with the current value 86L.

Now, let's show the pan curves for the other dragon fx tracks. To show the curves for multiple selected tracks at once, you'll hold the Option/Alt key while right-clicking the control in the panners. You can also choose the curve you want to see using the Automation dropdown menu in the track headers.

5   Select the A19 – A21 tracks. Option-right-click the Left/Right Pan control on the open Pan window to show that curve on the selected tracks.

As you can see, the selected tracks have the same automation curve, so they will pan in unison during playback. You can move the pan keyframes up, down, left, or right. You can also Option/Alt-click the curve to add keyframes and Command-Option-click (macOS) or Ctrl-Alt-click (Windows) to remove keyframes. The Focus mode multi-tool also allows you to select a range of keyframes and nudge, cut, copy, paste, and delete as needed.

6   Click the first keyframe on the A19 Dragon Vocals 1 track to see the value, 13L.
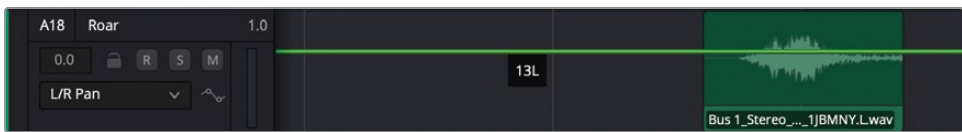
7   In the A18 Roar track, drag the L/R curve down to 13L. Hold Shift while dragging if needed to gear down the movement as you drag.

8   Locate the first keyframe on the other dragon fx tracks. Option-click the L/R curve on the A18 Roar track to set a keyfame with the value of 13L.

9   Check the value of the second keyframe on the other dragon fx tracks, 42R.

10 Set a second keyframe on the A18 Roar track in the same position as the other dragon fx. Then drag downward on the new keyframe until the value is 42R.

Done!

11 Select the four dragon fx tracks and play the clips to see the trackers move together in the viewer.
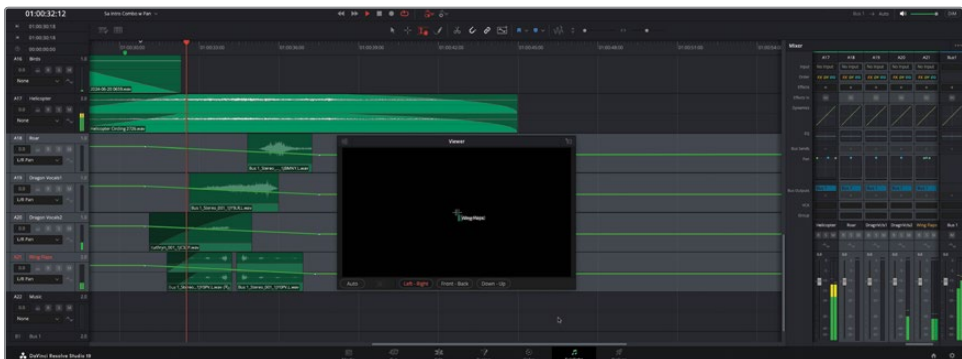
There are slight differences in the tracker positions to emulate the scale and movement of the dragon. However, they all move together as if coming from the same flying beast.

More Balancing and Panning

That's it! You've successfully balanced dialogue clips and panned tracks across various scenes and projects. No matter the timeline's size or the project's complexity, the goal remains the same: delivering great-sounding audio that both listeners and clients will enjoy.

Your mission, if you choose to accept it, is to open the **5 Intro Combo to Pan** timeline and add some panning to the sound effects, such as the skateboard, dog walking, bike, and runner. Along the way, feel free to check the dialogue levels on the tracks. If a sound effect seems too loud or too quiet, adjust to taste. Trust your ears and the meters as you go.

Lesson Review

1   Which right-click menu option allows you to reset all keyframes and volume level changes applied to a group of selected clips in the timeline?

   a)   Clip Attributes

   b)   Normalize Audio

   c)   Remove Attributes

   d)   De-Leveler

2   What color is visible in a track's meters when the levels are optimal for dialogue?

   a)   Yellow

   b)   Green

   c)   Red

   d)   Blue

3   Which new built-in effect can be used to automatically balance dialogue levels in clips or tracks?

   a)   Dialogue Balancer

   b)   Levelinantor

   c)   Magic Meter

   d)   Dialogue Leveler

4   True or False? You should balance the volume levels of individual clips in the timeline before adjusting track levels in the mixer.

5 In the Fairlight page, where can you set or adjust the left/right pan for a stereo track? (Choose all that apply.)

   a) Mixer

   b) Pan window

   c) Viewer when Tracker controls are showing

   d) Timeline track L/R pan curve

6 In the Pan window, how do you enable the 3D view for a stereo track?

   a) Click the 3D button.

   b) Option/Alt-click the Pan Bypass button.

   c) Hold 3 and press D.

   d) There is not a 3D pan view for a stereo track.

Answers

1   c

2   a

3   d

4   True

5   a, b, c, d

6   a

Audio Repairs with Native Processing and Plug-Ins

In the previous lesson, you focused on balancing dialogue clips and basic track panning. In this lesson, you'll tackle other common clip issues, including powerline hum and noisy clips. These issues require additional tools such as clip EQ, dynamics processing, Fairlight FX repair plug-ins, and Track FX.

Finding the Problem

In most cases, audio problems and their solutions fall into two categories: *dynamics*, which relate to volume issues, and *equalization*, which involves unwanted or missing frequencies.

The Fairlight page provides three methods for applying EQ to your soundtracks: Clip EQ, located in the Inspector (used for this exercise); Track EQ, accessible in the mixer (which affects the entire track); and the new EQ plug-in, offering custom frequency control, can be applied to either clips or tracks.

First, let's open and examine the timeline that was created for the first three examples. This timeline includes three clips, each placed in a separate track. Each clip presents a common audio issue, and the tracks are named according to the process used to reduce the problem.

— Track A1 contains an ambient background clip recorded in a suburban neighborhood. This clip was chosen for the Post Park Normal podcast intro because of the audible bird sounds. However, the clip is dominated by a low rumble of traffic and noise.

— Track A2 features a voiceover recording that has a distracting low-level crackle contaminating the audio.

— Track A3 includes a dialogue clip that suffers from a noticeable powerline hum.

Your goal in this first set of exercises is to improve the clips quickly so you can continue working before the clients arrive. In real-world scenarios, you might apply a quick fix initially and later replace a problematic clip if necessary.

1 Open your TML Audio Post project.

2 In the Lesson 6 bin, open the timeline **6 Quick Fixes Start**. Close all open panels, including the viewer.
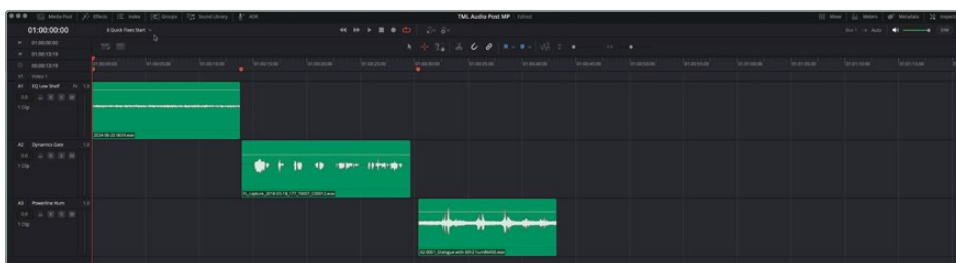
3 Play a few seconds of each clip to hear each distracting issue.

4 Move the playhead to the beginning of the timeline.

5 Turn on the Loop button, if necessary.

6 Mark the clip in the A1 EQ Low Shelf track.

The first clip is ready for repair, and as the track name suggests, you'll use EQ for this quick fix.

> **NOTE** If the clip name Birds is not showing on the first clip, choose Fairlight > View Clip Info Display and select the Clip Name option.

What Does a Dialogue Mixer Do?

In audio post-production, a dialogue mixer focuses on delivering great-sounding dialogue tracks at optimal levels to add to the rest of the mix. In doing so, dialogue mixers take the edited dialogue tracks to the next level by introducing compression to narrow the dynamic range and attenuate (reduce) detracting frequencies while boosting frequencies that enhance the clarity of each voice.

What Is Dynamic Range in Audio Post-Production?

When working with audio, the dynamic range is the difference between a signal's loudest and quietest levels. A track's dynamic range is very similar to the visual contrast within a shot. A dialogue track with a high dynamic range has very loud and very quiet elements within the track, such as a character whispering and then screaming in the same scene. A dialogue track with a low dynamic range is fairly flat, such as in a commercial voiceover in which the volume level of the talent is even from start to finish.

Dynamic range also comes into consideration when performing noise reduction because the range between the noise level and the dialogue levels can affect how much noise reduction you can apply. The signal-to-noise ratio (SNR) is a mathematical calculation based on the dynamic range between the noise level and the dialogue level and is expressed in decibels (dB). For example, if your voiceover track has an SNR value of 50 dB, it is 50 times louder than the noise in the same track. The higher the SNR value, the better sounding the signal and the less prominent the noise.

Using Clip EQ to Reduce Low Frequencies

For this exercise, you'll use Clip EQ to adjust the sound. Additionally, you'll work with the Frequency Analyzer plug-in, a visual metering tool that shows active frequencies during playback. The Frequency Analyzer plug-in has already been added to the A1 track, so you can use it to monitor and adjust your EQ settings more accurately.

This setup will help you quickly identify and fix frequency issues in your audio.

1   Show the mixer and the Inspector.

2   In the timeline, select the A1 clip to load it in the Inspector.

3 At the top of the A1 channel strip in the mixer, locate the Frequency Analyzer plug-in.

4 Click the Controls button on the Frequency Analyzer plug-in in the A1 channel strip to open the plug-in window.

5 Hide the mixer.

6 In the Inspector, locate the Equalizer controls for the selected clip. Move the EQ window to the left of the Equalizer controls.

Both the Frequency Spectrum window and the Equalizer in the Inspector show the same graph, which includes the frequencies within human hearing capabilities from about 20 Hz to 20 kHz horizontally from left to right, respectively. The numbers running vertically reflect the volume level, with zero in the middle representing the initial level of a clip. Negative numbers are attenuated (lower) than the starting point, while numbers above zero are raised (higher) than the starting point.

7 In the Inspector, turn on the Equalizer. Then, start looped playback of the clip in the A1 track. During playback, look at the Frequency Spectrum window.

The large shaded blue area to the left of the Frequency Analyzer graph is the low-frequency rumbling noise, while the peaks around 3 kHz to 6 kHz are the bird chirps.

To quickly reduce the level of the low noise from 20 Hz to 800 Hz, you can use the Clip Equalizer's low-shelf filter in Band 2. By default, Bands 2–5 are enabled when you switch on the Clip Equalizer in the Inspector. The default setting for Band 2 is a Low Shelf, which is designed to lower all frequencies within the range of the shelf in the graph.

— Graphical EQ controls

— Band enable button
— Band filter type
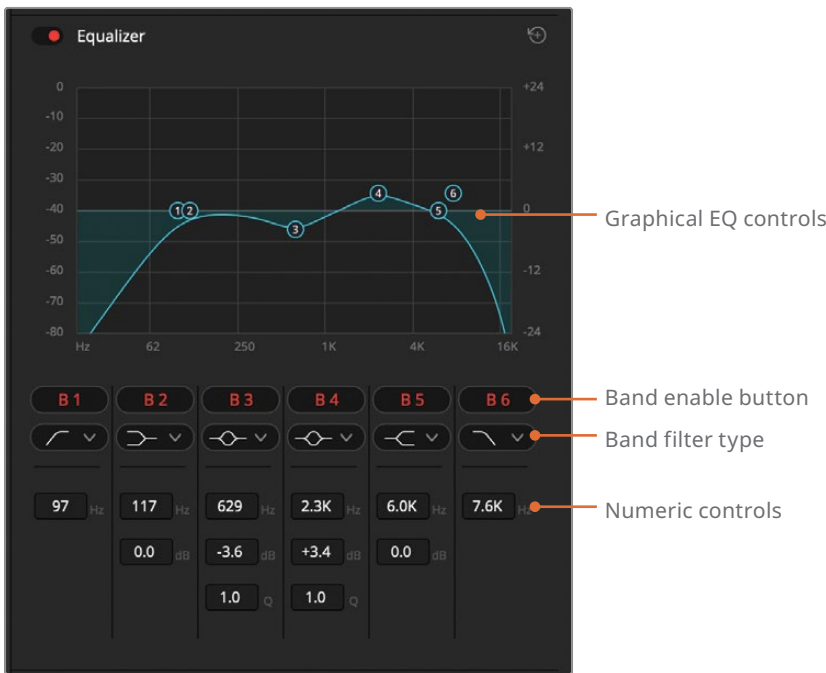
— Numeric controls

In the graphical EQ controls area, you can see and manipulate the frequency graph. The numerical controls at the bottom of the equalizer give you more precise control over the frequencies and gain of each band.

8   Click the Band Filter Type dropdown menu below the Band 2 button to see the types of frequency filters available for Bands 2 and 5.

— Low-shelf filter
— Bell-curve filter
— Notch filter
— High-shelf filter
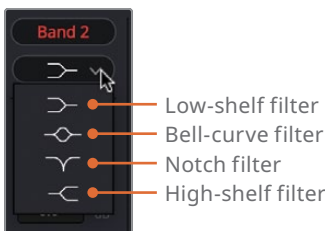
High- and low-shelf filters are similar to high- and low-pass filters, but the shelf filters attenuate (lower) unwanted frequencies, whereas the pass filters completely block unwanted frequencies. You can apply bell-curve filters to boost or attenuate frequencies anywhere on the graph and narrow or widen their range of influence using the Q control. A notch filter is used for completely removing, or cutting, specific frequencies.

For this exercise, you'll attenuate the low frequencies using the Band 2 low-shelf filter to attenuate frequencies during playback.

> **NOTE** During playback, dragging the graphical controls left or right through the EQ graph is called *sweeping* and is the most effective way to hear changes and identify areas that need work.

9   Start looped playback. During looped playback, drag the low-shelf Band 2 handle down to -70 dB and toward the right until the bottom of the shaded blue area in the graph reaches the 1 kHz line.
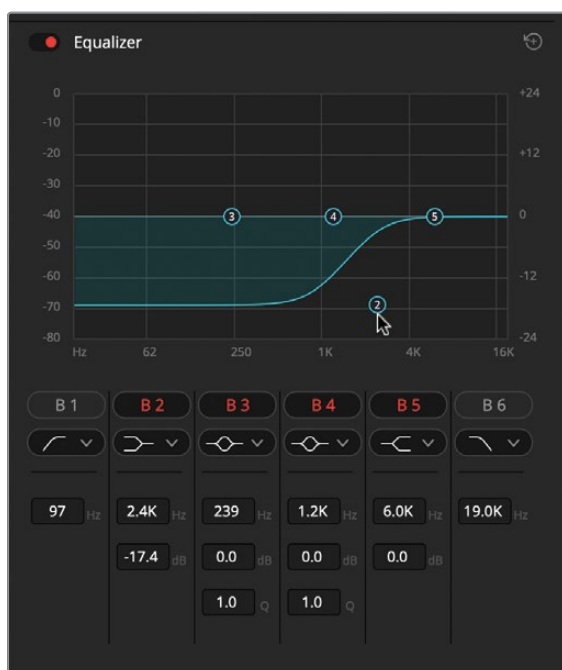
10   Continue playback. In the Inspector, toggle the EQ control off and on to hear the before and after results of the low-shelf Clip EQ filter.

Hopefully, you can hear the dramatic difference. The clip's background noise goes from a low roar to a slight background noise with the built-in low-shelf filter in the clip's EQ.

11 Stop playback.

12 Close the Frequency Spectrum window.

This is just one quick use of clip equalization. You'll work more extensively with equalization in Lesson 9.

> **NOTE** Clip equalization in the Fairlight page adjusts the tonal quality of individual clips, whereas track equalization in the mixer adjusts the entire track.

Gating Low-Level Noise

Let's look at another common mixing tool that you can use to reduce or eliminate low-level background noise. The noise in this exercise is very common and can be caused by poor connections, damaged cables, or weak microphone batteries.

1 Select the A2 Dynamics Gate track and mark the clip.

2 Start looped playback and listen to the clip.

The low-level crackling noise makes this clip unusable as is. Luckily, there is a quick fix in the track Dynamics toolset designed specifically for reducing noise.

3 Stop playback. Show the mixer.

4 In the A2 channel strip, double-click the Dynamics controls to open the Dynamics controls panel.

The Fairlight mixer includes the four most common dynamics processors in one easy-to-use panel. The compressor narrows the dynamic range by lowering the loudest peaks and bringing them closer to the lowest peaks. The expander, in contrast,

enlarges the dynamic range to increase the difference between the loudest and quietest peaks. The limiter and gate work on opposite ends of the signal to avoid exceeding a target level (limiter) and to prevent sounds lower than a set threshold from being heard (gate).

Let's focus on using the gate to reduce or silence the part of the signal below a given threshold.

Let's turn on the gate while listening to the clip.

5   Start looped playback to hear the clip with low-level noise.

6   Click the Gate button to turn on the gate dynamics processing.

The noise is no longer audible, and the voiceover sounds pretty good. The dialogue sounds processed in a few places, but it's a start. What happened?

In the controls beneath the Gate button, you'll see that the Threshold is set to the default level of -35 dB, which means the gain (volume) of any signal below -35 dB is reduced.

7   Watch the Gain Reduction meter during playback. You'll see that the Gain Reduction is active between dialogue phrases whenever there is no talking and the signal falls below the threshold.

The Range control sets the maximum amount of gain reduction applied to the signal when it falls below the gate threshold.

8 Drag the Range control to the right to increase the amount of reduction by the highest amount, 60 dB.

The graph and Gain Reduction meter show that the signal below the Threshold (-35 dB) receives the highest gain reduction (-60 dB). That's overkill for this signal.

9 Double-click the Range control to reset it to the default level.

Gating your low-level signal is very effective. However, it's best to set the Threshold as close to the noise level as possible. Otherwise, you will also remove all the breath sounds and syllables that taper off below the Threshold.

> **TIP** When adjusting audio controls, it's often easier to start with the controls set to their extreme levels, either high or low, and then slowly back them off or add them during playback until you achieve your goal.

10 During looped playback, adjust the Threshold level to lower it all the way to the left (-50.0 dB). You'll hear the background noise again. Then, slowly raise the Threshold until you no longer hear the noise.

11 Drag the Range control all the way to the left and slowly increase the Range value until you no longer hear the background noise during playback.

12 When you're finished, stop playback.

Notice that the graph in the channel strip matches the graph on the Dynamics panel.

13 Close the Dynamics panel and hide the mixer.

Now that you have used the built-in clip EQ and Gate processing to reduce different types of noise in two different clips, let's move on to repair plug-ins.

Repairing Dialogue with Fairlight FX Plug-Ins

DaVinci Resolve includes a full set of built-in Fairlight FX plug-ins and supports third-party macOS Audio Unit plug-ins. DaVinci Resolve Studio extends support to third-party VST plug-ins.

In this next series of exercises, you'll work with two powerful Fairlight FX repair plug-ins: De-Hummer and Noise Reduction. Plug-ins can be applied to clips, tracks, or busses. You'll work more with track- and bus-level FX and processing in Lesson 9, "Mixing and Sweetening the Soundtrack." For now, you'll focus on applying plug-ins to specific clips.

1 Mark the clip in the A3 track. Play the clip once.

A clear background hum contaminates the entire clip. This problem is fairly common and can have several causes, including poor audio cable shielding, incorrect power grounding, or audio or power cables haphazardly overlapped on the set. This hum can't be removed with keyframes or editing. Instead, you'll employ one of Resolve's powerful new Fairlight FX repair plug-ins.

2 Show the Effects Library.

The Fairlight FX plug-ins appear at the top of the Audio FX list.

3 In the Fairlight FX list, drag the De-Hummer plug-in onto the clip in the A3 track.

The De-Hummer dialog opens with controls to specify the type of hum in the clip. You don't have to be a hum expert to determine the frequency. Chances are, it's a powerline hum. If so, it will have a 60 Hz frequency in America or 50 Hz in other parts of the world.

The graph across the bottom displays low frequencies to the left and high frequencies to the right. The purple notches in the graph indicate which frequencies are currently reduced. The default De-Hummer setting is for a fundamental frequency of 50 Hz followed by harmonic frequencies. *Harmonics* are naturally occurring multiples of the fundamental frequency, often called *overtones*. These harmonic frequencies give sound its added color and character. However, when it comes to annoying hum contaminating your dialogue, you'll probably want to eliminate the fundamental and harmonic frequencies. Luckily, the Fairlight FX De-Hummer does most of the work for you.

Notice that the controls in the lower left of the De-Hummer include presets for 50 Hz and 60 Hz.

> **NOTE** Power cables and audio cables can coexist when recording as long as they run parallel to each other and cross at perpendicular angles.

4   In the Frequency section, click the 60 Hz button to set the De-Hummer to notch out the 60 Hz frequency.

The notch filters (purple notches) shift toward the right so that the deepest notch (fundamental) is now 60 Hz, and the ensuing harmonics have shifted accordingly.

> **NOTE** When you're working with a hum that is not at 50 Hz or 60 Hz, you can click the Variable setting and adjust the Frequency dial until you reduce the correct frequency.

5 Start looped playback.

6 While listening to playback, drag the Amount dial to increase the amount of the frequency that is removed. Drag it until you no longer hear the hum.

You can control the slope of the harmonics, also referred to as the *bias*, with the Slope dial. Depending on the dominant overtones, you might need to use the Slope dial to shift the slope toward higher frequencies. You can also tweak the slope to remove the harmonics while retaining the fundamental frequency.

7   Drag the Slope dial slightly toward the right to strengthen the different harmonic notch filters until you hear the least amount of hum during playback.
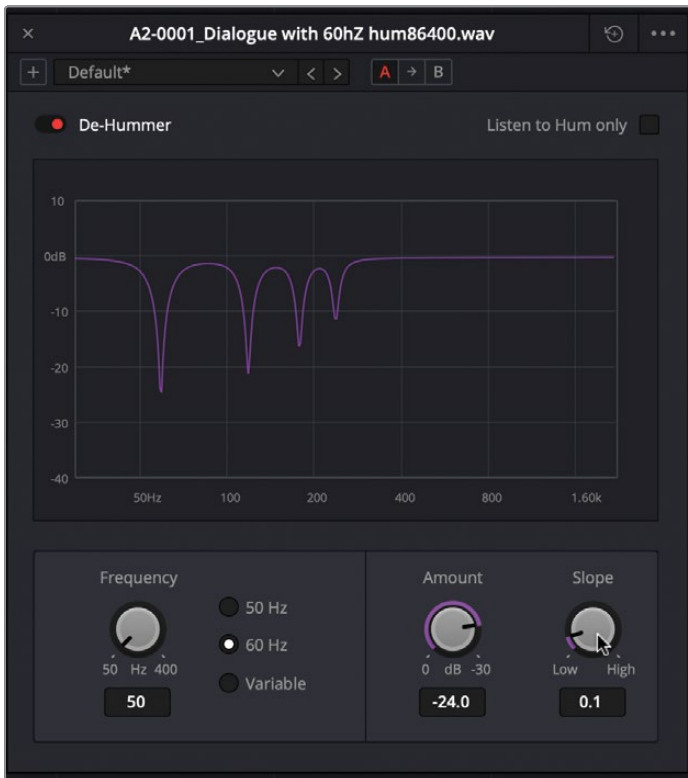
Let's use the Bypass switch to toggle the plug-in off and on to hear the before and after versions of the clip. The Bypass switch is red when the filter is turned on.

8   In the upper left corner of the De-Hummer dialog, click the red Bypass switch to turn off the plug-in. Continue playback, and then turn it back on.

9   When you're finished removing the hum, stop playback. Close the De-Hummer dialog.

> **NOTE** Once you close a plug-in control window, you can access the plug-in controls in the Inspector Effects tab.

You now have firsthand experience working with Resolve's powerful De-Hummer plug-in. In most cases, a hum will be less pronounced. The takeaway from this exercise is that this plug-in is highly effective and easy to apply to your timeline clips as needed. Let's move on to the Noise Reduction plug-in.

Reducing Noise

Noise comes in many shapes, sizes, and intensities. Whether it's music, background conversation, the roar of a sports car, or the purr of a kitten, anything may be considered noise when it contaminates the clarity of your dialogue tracks.

When applying noise reduction, you can sometimes reduce the noise easily, and sometimes you need to reduce it incrementally with multiple plug-ins and processes. In this exercise, you'll encounter a more tenacious noise than the simple hum you removed in the previous exercise. This time, you'll use a new plug-in to achieve noise *reduction*. Why not noise *removal*? Because in many cases, noise covers a lot of territory and frequencies, and attempting to remove it entirely may strip your dialogue of its tone and texture.

The clip you'll work with in this exercise is the same clip you used to test-drive the Dialogue Leveler in the previous lesson. This time, instead of focusing on the clip levels, you'll listen to the background noise. If you want to see the video as you work on this clip, feel free to show the viewer. However, the video is not necessary to reduce the background noise in the clip.

1   Open the **6a Noise Reduction** timeline.

This timeline includes four clips in four separate tracks. As you can see, the clips on tracks A2 through A4 have been disabled and are identical copies of the original clip in A1.

Let's start by listening to the clip in the A1 track to determine the type and intensity of the noise.

2   Mark the clip in the A1 track and start looped playback.
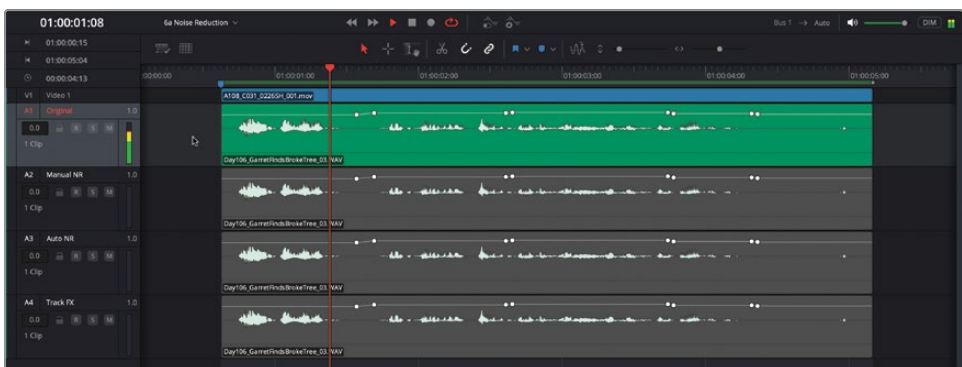
This noise is what you might expect to be picked up by the microphone when shooting outdoors with extras bustling about in the background. Regardless of how the noise "invaded" this recording, it's there. So you'll deal with it using the Fairlight FX Noise Reduction plug-in from the Effects Library.

For this exercise, you'll leave the clip unaltered in the A1 Original track. Then, you'll apply the Noise Reduction plug-in to the identical clips in A2 and A3 so you can compare them to the original later.

3 Stop playback. Select the clip in the A1 track and press D to disable the clip.

4 Select the clip in the A2 Manual NR track and press D to enable the clip.

5 In the Fairlight FX list, drag the Noise Reduction plug-in onto the clip in the A2 track.

The Noise Reduction dialog opens with various controls, including a graph showing the spectral analysis of the signal's frequency (Hz) and strength (dB) during playback. Detection, Smoothing, and Output controls are also present across the bottom of the dialog.

The Fairlight FX Noise Reduction plug-in is based on *spectral subtraction*. It can be set to detect noise in selected sections of dialogue automatically or to manually learn a selected section of noise and then extract that noise print from the signal.

The two mode buttons below the graph allow you to select Manual mode or Auto Speech mode. Manual mode learns a "noise profile" and extracts it from the overall signal. Auto Speech mode uses powerful algorithms and spectral analysis to detect and extract speech from the signal, thereby reducing the noise.

Let's try both methods, starting with the default Manual mode.

For this exercise, the best section of noise to isolate for the noise profile is at the end of the clip. Here, you'll notice that keyframes have already been added to the clip so you can easily increase the levels at the end of the clip.

6 At the end of the clip on the A2 track, drag the gain line upward to around 20 dB to increase the noise level in that section. Then, drag a range that includes the noise without the louder spike near the end.
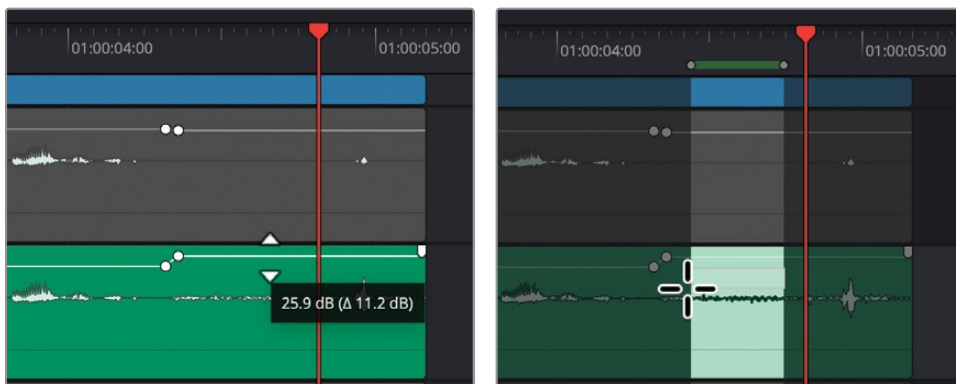
7 Click the Learn button to create a noise profile during playback. Start playback of the noise-only portion of the clip.
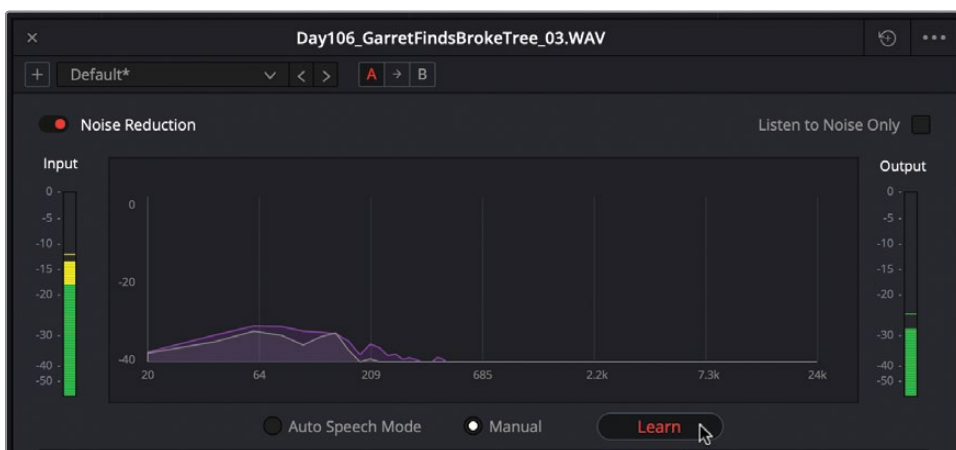
In Manual mode, the purple overlay in the spectral analysis shows the noise profile targeted for subtraction from the signal. The noise profile updates during playback until you click the Learn button again.

8 Click the Learn button again to save the current noise profile.

The learned noise profile is subtracted from the rest of the clip's signal during playback.

9 Stop looped playback.

10 Select and mark the entire clip in the A2 Manual NR track.

11 Drag the gain line at the end of the clip back down to around 13.5 dB.

12 Start looped playback again to hear the clip with the noise print subtracted. Click the Bypass button off and on to hear the clip without and with the Noise Reduction plug-in applied. When finished, stop playback and close the Noise Reduction dialog.
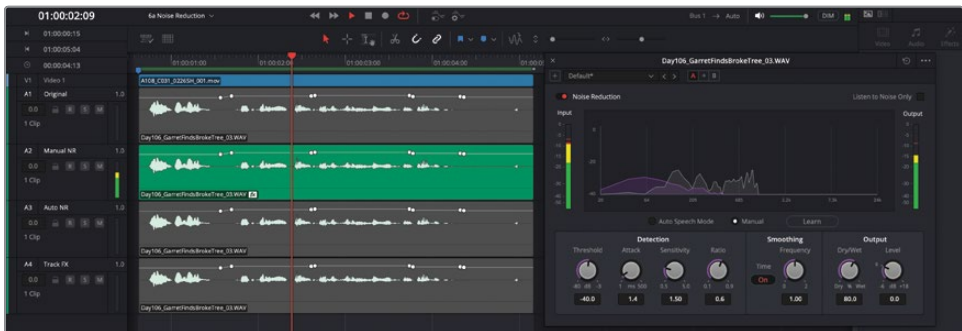
Just like that, the noise is gone. Let's try it again in Auto Speech mode on the clip in track A3.

> **NOTE** You can click the Reset button in the upper right corner of the plug-in dialog to return a plug-in to its default settings. You can also reset just the noise profile in the Noise Reduction preset menu. For this example, you'll use a separate clip for comparison.

13 Mute the A2 track and select the clip in the A3 Auto NR track. Press D.

14 In the Effects Library, drag the Noise Reduction plug-in onto the clip in the A3 track.

15 In the Noise Reduction dialog, click the Auto Speech mode control. Start looped playback.
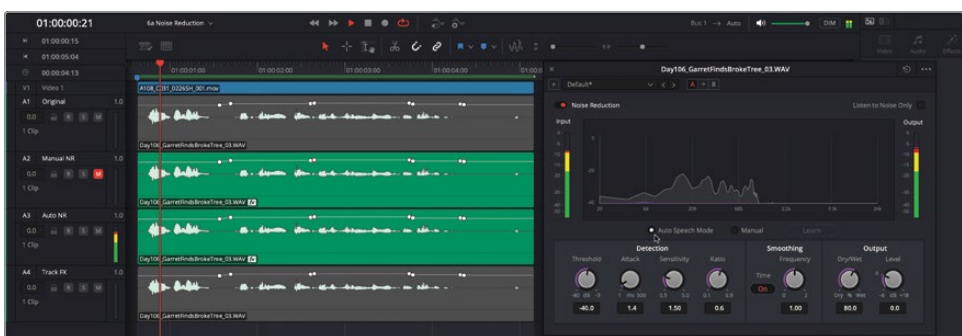
Once again, the noise disappears while the spoken words remain.

Set a play range around the fifth phrase in the clip. Start playback of the phrase.

16 Stop playback. Close the Noise Reduction dialog, clear the play range, and mute the A3 track.

You've witnessed the power of Resolve's Noise Reduction plug-in. This plug-in can be used alone or combined with a second Noise Reduction plug-in to reduce a more prominent background noise. In the next exercise, you'll look at a clip with multiple plug-ins applied.

> **MORE INFO** You can find detailed information on each Fairlight FX plug-in and its specific controls in the *DaVinci Resolve Reference Manual* available in the application's Help menu.

Combining Multiple Plug-Ins

In the previous examples, the De-Hummer and Noise Reduction plug-ins worked well for eliminating hum and mild background noise in different clips. However, sometimes you'll encounter much more prominent noise issues, such as the inherent sound of a large professional kitchen. When that happens, rather than tackling all the noise at once at the potential expense of your dialogue, you may need to use multiple plug-ins to reduce noise incrementally. In this exercise, you'll work with a different timeline, where the clip has both distracting hum and background noise.

1 Open the timeline **6b Combo FX to Cache**.

2 Hide the Effects panel. Show the meters.

Let's start by listening to the original clip in the A1 track.

3 Solo the A1 Original track, if necessary.

4 Mark the clip and start looped playback.
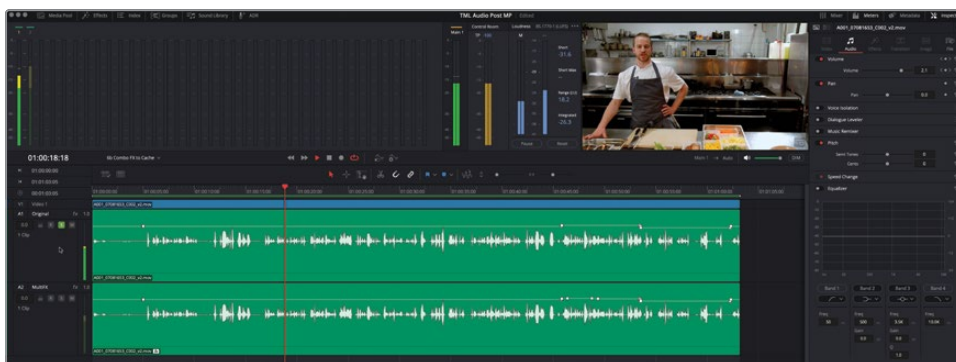
You can hear a constant hum and background noise in the clip.

> **TIP** When a dialogue clip is contaminated with both hum and noise, remove the hum first so the noise reduction plug-in can focus on the noise, which is likely in a different frequency range than the hum.

Let's listen to the same clip with plug-ins and processing applied. To make it easier to compare the two tracks, let's switch to Exclusive Solo mode.

5   Choose Fairlight > Exclusive Solo to enable it.

6   Solo the A2 track to hear only that track.

7   Start playback and listen to some of the clip in the A2 track.

Wait, where is the noise? If you look at the clip in the A2 MultiFX track more closely, you'll see an *fx* icon after the clip's name, indicating that FX plug-ins have already been applied.

8   Select the clip in the A2 MultiFX track.

9   Show the Inspector Effects panel.
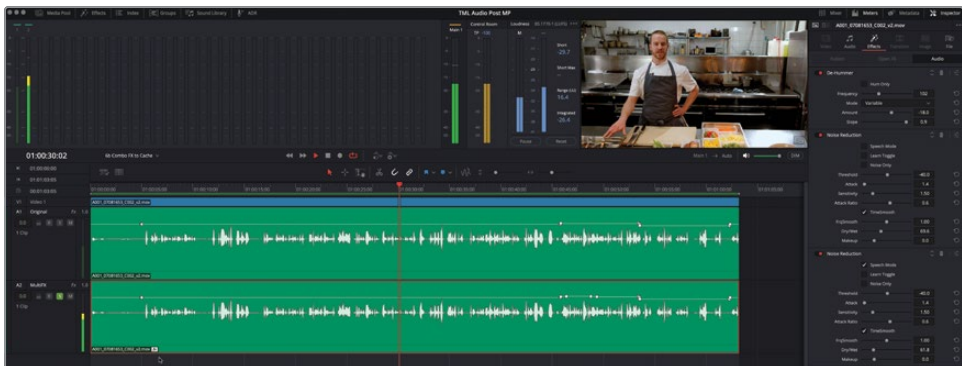
In the Audio Effects panel, you'll see a De-Hummer plus two Noise Reduction plug-ins applied to the clip. Effects processing works from the top down, so whichever plug-in is highest in the list is applied first. In this example, the hum is removed first, and then the first Noise Reduction plug-in is applied to the results of the clip without hum. Finally, the second Noise Reduction plug-in is applied to the results of the first Noise Reduction plug-in, and so on.

10 In the Inspector, click the Bypass buttons on both Noise Reduction plug-ins to turn them off. Continue playback.

Now you can hear the noise.

11 Click the Custom button for the first Noise Reduction plug-in to show the plug-in's control dialog.
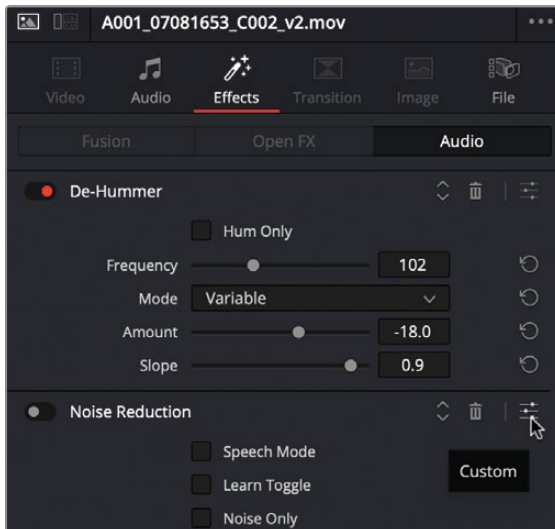
Based on the settings, you can see that this Noise Reduction plug-in is using a noise profile in Manual mode to reduce the noise.

12 Turn on the plug-in and listen to the difference it makes in the noise level.

13 Show the controls dialog for the second plug-in and turn it on.

The second plug-in uses Auto Speech mode to clean up the remaining noise left by the first plug-in. Looking at the plug-in parameters in the Inspector, you'll see a Noise Only checkbox that corresponds to the "Listen to noise only" checkbox in the upper right corner of the Noise Reduction window. This mode is like inverting a key when you are compositing an image but is applied to noise reduction. It lets you monitor the part of the signal that is being removed. Let's listen to the first Noise Reduction plug-in in Noise Only mode.

14 In the Inspector, turn off the second Noise Reduction plug-in.

15 Start playback. In the Inspector, select the Noise Only checkbox for the first Noise Reduction plug-in.

The corresponding "Listen to Noise Only" checkbox is automatically selected in the Noise Reduction window.

You now hear only the part of the signal being removed, including some of the dialogue frequencies. If you can clearly distinguish vocal patterns or words in Noise Only mode, those same frequencies and tonal elements are being stripped from the dialogue. When finessing noise reduction controls, it's always a good idea to listen to noise reduction in Noise Only mode to make sure you aren't excessively diminishing the vocals. Remember, it may be better to stack multiple noise-reduction filters instead of being too heavy-handed with just one.

16 On the Noise Reduction window, deselect the "Listen to Noise Only" checkbox. Then, turn on the second noise reduction plug-in.

17 Close both plug-in dialogs and stop playback.

The more you work with noise reduction, the easier it gets. The goal of this lesson is to understand which repair plug-ins are available in DaVinci Resolve and whether they work alone or in combination in Manual or Auto Speech modes.

All these methods for removing background noise are useful, and they get easier to use the more you work with them. Remember that you can apply unlimited plug-ins to a clip or combine up to six per track. While gate processing is available on the track via the mixer, sometimes you must combine noise reduction with a gate or other processing for the best results.

Dealing with Processor-Intensive Plug-Ins

In DaVinci Resolve, there is no limit to the number of plug-ins that you can add to a clip. However, as your tracks get more complex and plug-ins become more processor-intensive, you may discover that your computer lacks the processing power to play all your audio tracks and effects in real time. When that happens, there are two ways to alleviate the burden that the processor-intensive audio effects have on your workstation.

The first option is to cache your audio clips with plug-ins, and the second option is to bounce audio clips with plug-ins. The first method "bakes" the plug-in effects in a cache file and updates the waveform accordingly. This method does not create new media and can easily be turned on or off while you work, and the cache file updates automatically every time you change any plug-in settings. Bouncing an audio clip renders a new piece of media with the plug-in effects baked in as part of the waveform. Let's continue working with the same timeline and look at both methods.

1   Continue working with the timeline 6b Combo FX to Cache.

As you discovered in the previous exercise, the clip in the A2 track is currently running three different repair plug-ins, including one De-Hummer and two Noise Reduction plug-ins.

2   Right-click the A2 track header and choose Duplicate Track.

The newly created A3 MultiFX Copy track allows you to experiment with Cache and Bounce clip options without changing the A2 plug-ins and processing.
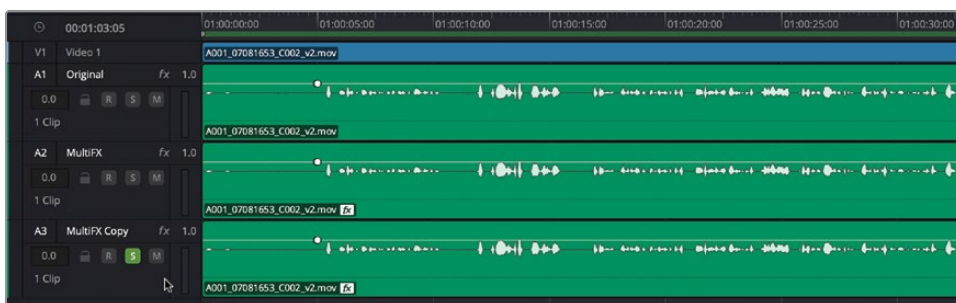
3   Solo the A3 track and mark the clip, if necessary. Show the Inspector.

4   Right-click the clip in the A3 track and choose Cache Audio Effect.
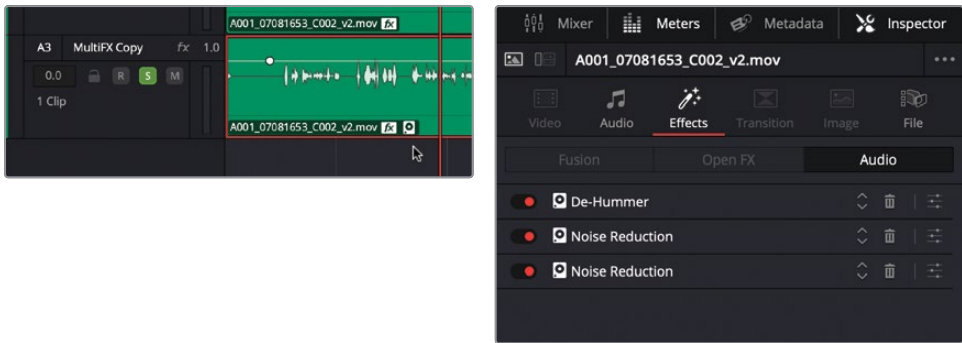
The cached clip's waveform updates, and a cache badge in the clip header lets you know that this audio clip has cached effects. You can also see the cache badge next to the plug-ins for the cached clip.

You can still use the bypass switch and open the plug-in settings from the Inspector to change any of the parameters in the plug-in's settings window.

Now, let's bounce the clip and move the bounced clip to a new track.

5   Right-click the clip in the A3 track and choose Bounce Audio Effect.
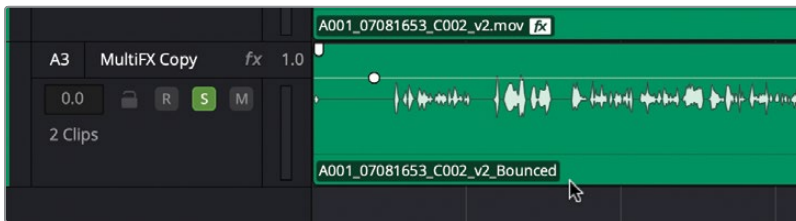
6   A new rendered clip appears in the timeline. The original clip is still there, just beneath the bounced clip.

7   Choose View > Show Audio Track Layers to see the rendered clip on the top layer and the original clip disabled underneath.
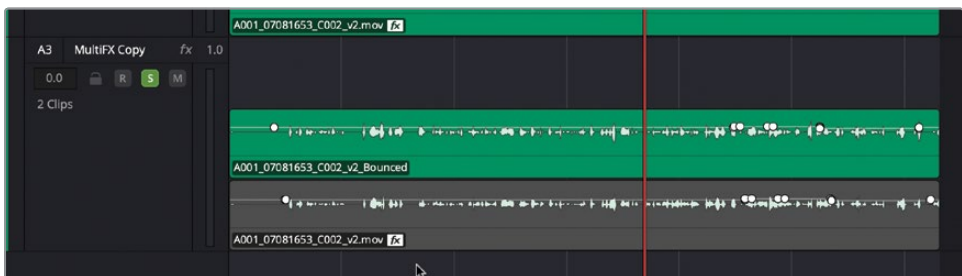
Notice that the keyframes on the clip gain line were retained on the bounced clip. Why? Because using this bounce method only renders the clip's plug-ins into the bounced clip. All other parameters can still be controlled independently.

> **NOTE** You will work more extensively with bouncing clips, tracks, and busses in later lessons.

8 Hide the audio track layers.

9 Select the bounced clip in the A3 track and press Option-Down Arrow (macOS) or Alt-Down Arrow (Windows) to move the selected clip down into a new track.

10 Enable the clip in the A3 track. Solo the A4 track, if necessary.

11 Play the A4 track to hear the bounced clip.

12 It should sound nearly identical to the clips in A2 and A3.

Why nearly identical and not identical? Because, unknown to you, there are also some EQ and Dynamics presets that were applied to the track in the mixer. Track-level processing is not included when caching or bouncing clip effects.

13 Show the mixer and extend it to see all four tracks.
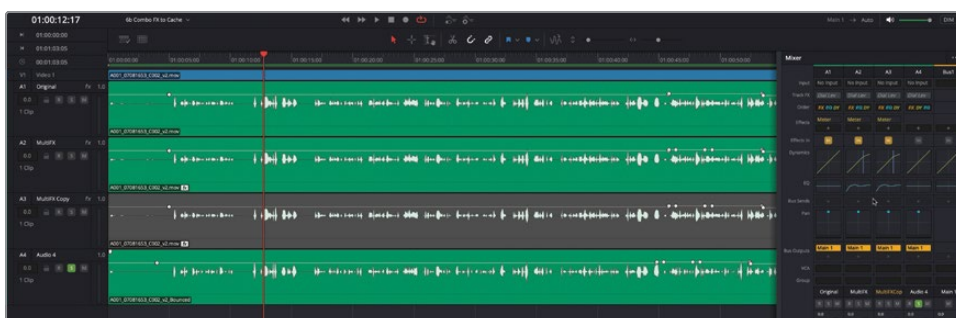
Now, you can see in the EQ and Dynamics controls that some processing has been applied to both the Dynamics and EQ for tracks A2 and A3. Don't worry; you'll learn all about sweetening the mix with Dynamics and EQ in Lesson 9.

14 Hide the mixer.

Now that you've seen how to cache and bounce clips with audio effects, you can apply these processor-saving techniques to your own projects.

Repairing Dialogue with Track FX (Studio Only)

DaVinci Resolve includes two dialogue-based Track FX for quickly removing or controlling background noise. You've already worked with the Dialogue Leveler Track FX to help balance dialogue in Lesson 5. Now it's time to explore the powerful new Voice Isolation and Dialogue Separator Track FX available for DaVinci Resolve Studio. Voice Isolation is a DaVinci Neural Engine AI-based effects process that recognizes and isolates the human voice from background sounds. Simply enable Voice Isolation for either a clip or track for immediate results. The Dialogue Separator uses the DaVinci Neural Engine AI to give you individual control over the level of dialogue, background sounds, "ambience," the reverberant field, or ambient room sound.

The Dialogue Separator and Voice Isolation are built-in Track FX, which means they are available on every track through the Inspector or mixer. Voice Isolation is also available for every clip through the Inspector.

For this exercise, you'll test-drive the Voice Isolation effect on several examples with obvious background noise issues. Then, try the Dialogue Separator on the same tracks. You'll also gain a better understanding of applying Voice Isolation to a clip versus a track.

1   Open the **6c Track FX** timeline.

2   Show the Inspector and mixer.

3   Make the viewer a floating window. Resize and move the top right of the timeline beneath the tracks.

4   Hide the meters and media pool.
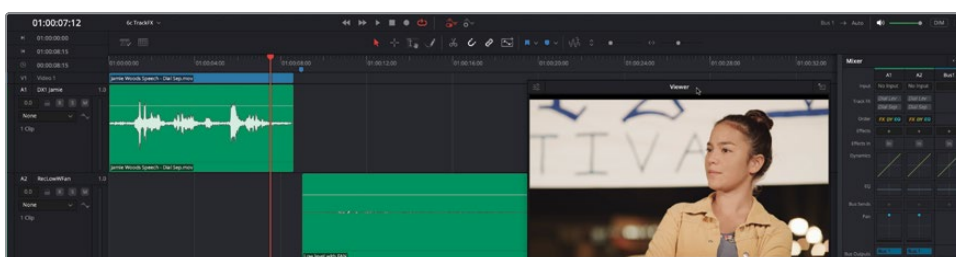
As you can see, this timeline includes two tracks, each with a different example clip. Let's start with locating the Track FX for A1 in the mixer and Inspector.

5   Mark the clip in the A1 track.

6   Select the A1 track header.

7 In the Mixer menu Visible Track FX list, select Voice Isolation and Dialogue Separator to show them both in the mixer, if necessary.

8 Find the Track FX near the top of the mixer and Inspector for the selected track.
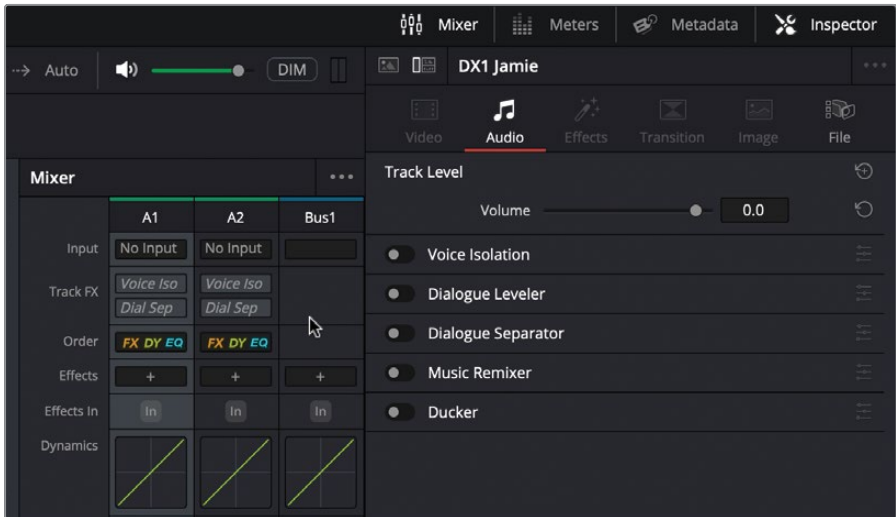
The Fairlight FX plug-ins appear at the top of the mixer channel strips in the Track FX area.

> **NOTE** If the Inspector shows clip controls instead of the track controls for the A1 DX1 Jamie track, click the Track button at the top left to switch to the Track Inspector.

9 Play the clip in the A1 track to hear the dialogue mixed with heavy background noise and ambience.

10 Enable Voice Isolation in the Track Inspector.
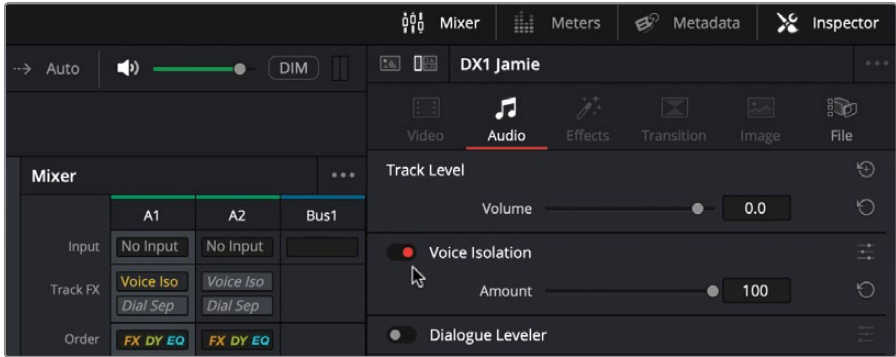
Enabling a Track FX in the Inspector also enables it in the mixer and vice versa. The Track FX name in the mixer turns yellow when it is on.

11 Play the clip in the A1 track again.

It's like magic! This time, you hear only the dialogue because it has been isolated from other non-speaking sounds (hence the name).

Voice Isolation worked beautifully with a single click. There's just one problem. This is an outdoor shot in a large space. Removing all of the non-speaking sound has also removed the ambient reality of this location. It's time to back off the amount to reveal some of the background sound.

12 In the mixer, click the Controls button to open the Voice Isolation controls window.
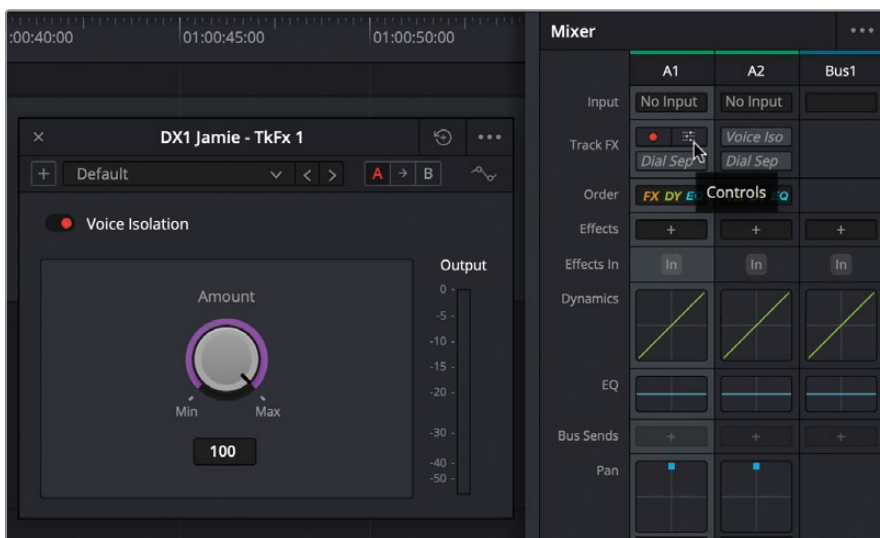
The Voice Isolation controls window includes an Amount dial to adjust the amount of Isolation applied to the sound. You can reduce the amount to reveal more background sound as needed for a more natural result.

13 Play the clip and slowly reduce the Amount control until you're happy with the background noise and voice levels.

14 Hide the viewer. Close the Voice Isolation dialog.

Now, let's try it on the clip in the A2 track. This clip was recorded at a very low level with a fan near the microphone. First, you'll need to increase the clip gain level to hear the clip. Then, apply Voice Isolation to clean up the background noise.

15 Mark and play the clip in the A2 track. Then, increase the level of the clip gain line as much as necessary to hear the dialogue clearly.
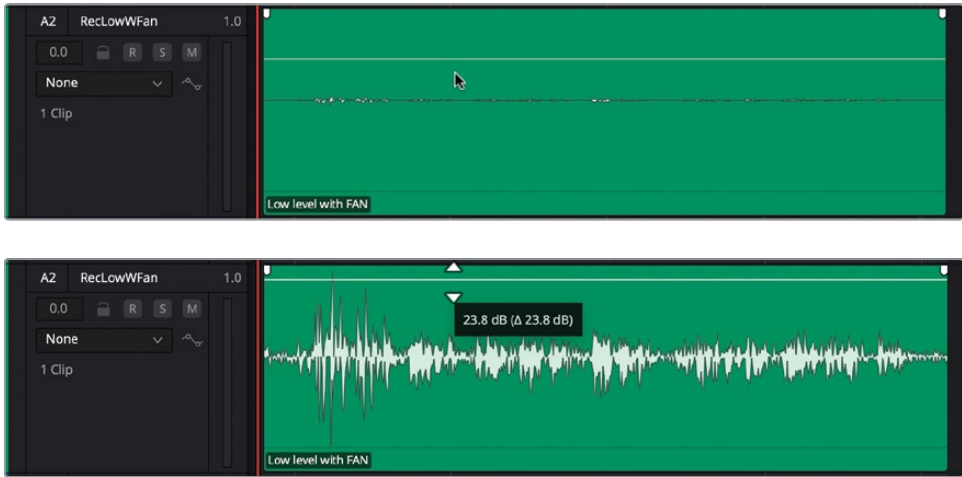
Yikes. That is one noisy clip.

16 In the mixer, enable Voice Isolation on the A2 track. Play the clip in the A2 track again.

Wow, right? Even the clunking of the microphone prior to speaking is eliminated. Imagine how useful Voice Isolation would be for cleaning up interviews, archives, and documentary footage recorded in noisy locations.

> **NOTE** Enabling a Track FX in the mixer will always apply it to the entire track. To apply a Track FX to a clip, you'll need to select the clip and enable it from the Inspector. The Inspector shows Track FX for both the track and the clip depending on which is selected.

Next, you'll try Voice Isolation on a familiar clip contaminated with a 60 Hz hum. This time, you'll apply Voice Isolation to the individual clip in the A3 track.

What A3 track? The one that is hidden from view in the Track Index.

17 Show the Track Index. Click the Visibility button (eye icon) for the A3 track to show it in the timeline.

18 Hide the Index.

19 Mark the clip in the A3 track. Select the clip, if necessary.

20 In the Inspector, enable Voice Isolation for the selected clip.
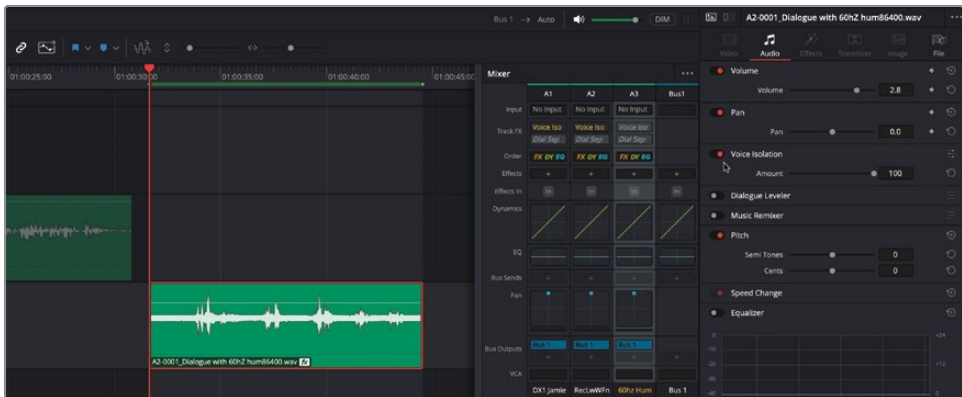
Notice that Voice Isolation is enabled in the Inspector and not in the mixer. Also, the fx badge on the first clip in the A3 track indicates that an effect has been applied to the clip.

21 Play the clip to hear the results.

The hum is completely gone. All that remains are the human voice sounds, including a few breaths, tongue clicks, and other natural sounds. Since Voice Isolation is an effect applied to a clip, it can also be cached or bounced to free up processing if you're working with a slower computer.

22 Right-click the clip in the A3 track and choose Cache Audio Effects from the contextual menu.
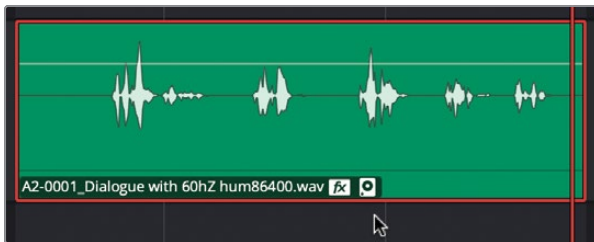
23 Play the cached clip.

You can still adjust the clip's volume level as needed while it is cached, and you can deselect the Cache Audio Effects option at any time.

24 Right-click the clip again and uncheck Cache Audio Effects.

Next, you'll move on to the Dialogue Separator Track FX.

Working with the Dialogue Separator

Now that you've successfully used Voice Isolation on three different clips, let's try the Dialogue Separator. The difference between the two Track FX is that Voice Isolation uses a single control to remove all non-dialogue from the clip or track. The Dialogue Separator, on the other hand, offers three different controls to independently control voice, background noise, and ambience. In this exercise, you'll apply the Dialogue Separator to the A1 track and test the controls during playback. Then, you'll switch to a different timeline and apply it to a different scene.

1   Mark the clip in the A1 track.

2   In the mixer, disable the Voice Isolation Track FX on the A1 track and enable the Dialogue Separator.

3   Open the Dialogue Separator controls window.
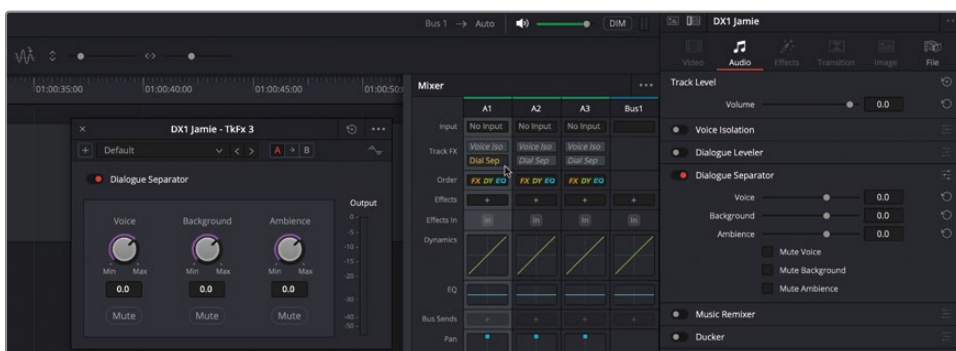
As you can see, the Dialogue Separator controls are self-explanatory, with three separate knobs for Voice, Background, and Ambience. There are also Mute buttons beneath each control.

4   Start looped playback.

5   In the Dialogue Separator control window, adjust the Background knob to reduce the amount of background noise.
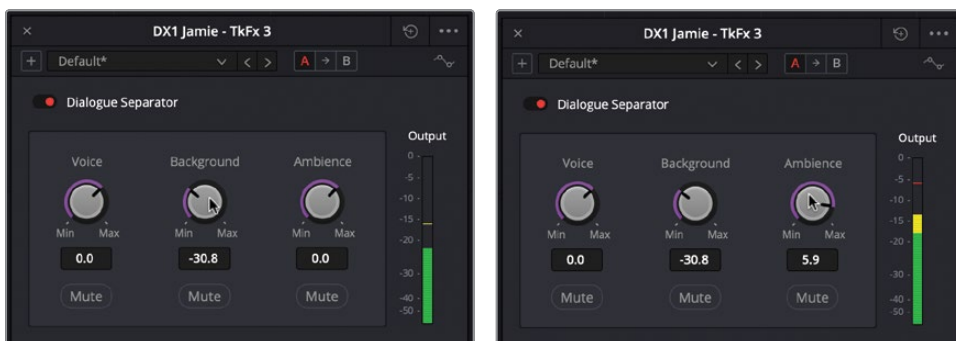
6 Increase the Ambience amount to increase the reverberance in the clip. Then, drag the dial in the other direction to decrease the ambience.

7 Experiment with the different controls on the Dialogue Separator. When finished, stop playback and close the Dialogue Separator window.

You've experimented with the Dialogue Separator on one clip. Now, let's try it on a clip that you've already worked with earlier in this lesson.

8 Open the **6a Noise Reduction** timeline. Show the meters if you'd like to see the viewer.

9 Solo the A4 Track FX track. Enable the clip.

This clip already has Noise Reduction applied. You can easily delete the effects in the Inspector.

10 In the Inspector, Audio Effects pane, click the Delete button (trashcan icon) to delete the Noise Reduction plug-in on the clip.
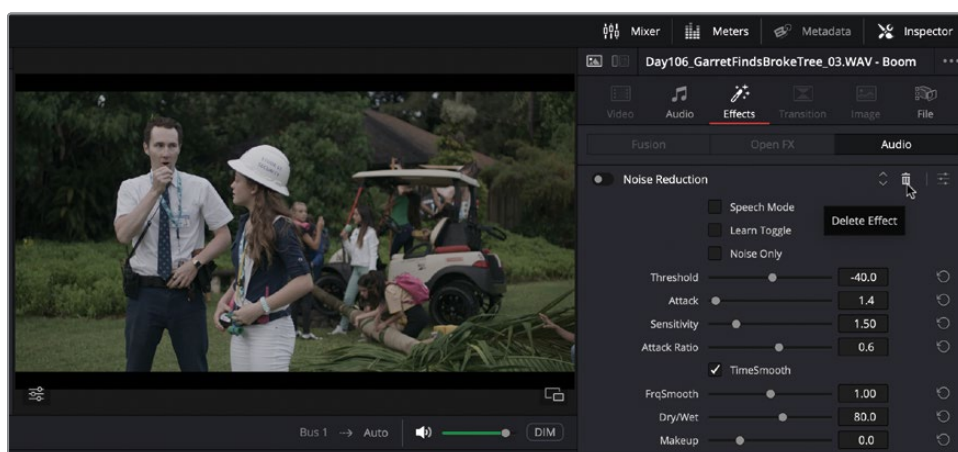
11 Enable the Dialogue Separator for the A4 track and open the controls window.

12 Start looped playback. Reduce the Background sound as needed. Feel free to try the Ambience control, although you probably won't hear any difference in this clip because it lacks a reverberant field.

13 Stop playback. Close the Track FX window.

Now that you know how to work with Track FX, you can use them on your own projects.

More Dialogue Repairs with Track FX

Understanding how track effects work on different types of clips comes with testing and experimentation across various clips and projects. Take a few minutes to try Voice Isolation on the A4 track. Before enabling Voice Isolation, make sure to turn off the Dialogue Separator. You can run multiple Track FX simultaneously, such as Voice Isolation and the Dialogue Leveler. However, since Voice Isolation and the Dialogue Separator serve the same purpose, you only need one.

After testing Voice Isolation on this timeline track, open the **6b Combo FX to Cache** timeline. Solo the A1 Original track and test both Voice Isolation and the Dialogue Separator separately.

Once you've completed these tests, you're ready to move on to the next section.

Removing Clicks at the Sample Level

So far, you've decreased your biggest noise issues. Now, let's explore a common problem that's much smaller in scale but equally significant. Previously, all your work has been performed at the frame level. But you're ready to dive much deeper into the waveform to perform microsurgery at the sample level. In this set of exercises, you'll locate and remove a digital click embedded in a waveform. To make things even more interesting, this common irritant is located right in the middle of an instrumental track, so no noise reduction is available to fix this issue.

Sample-level editing requires a new set of skills and patience. For starters, you must abandon most of the shortcuts you've been using for navigation. You'll learn the rest as you go along.

Let's start by opening a different timeline containing a single music clip.

1   Open the timeline **6d Fix Music Cue**.

2 Hide all open panels, leaving only the timeline.
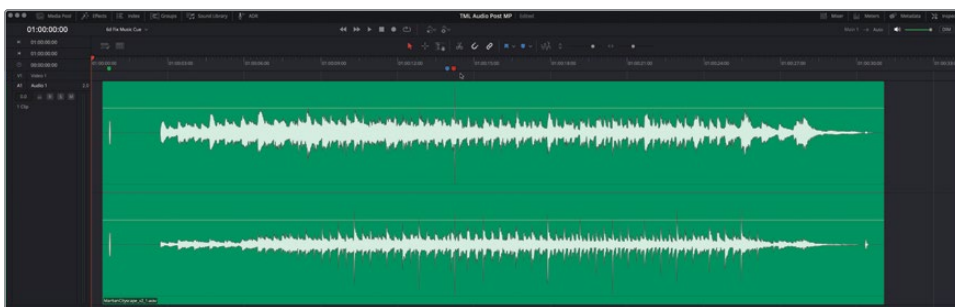
At a glance, the waveform appears full of diminutive spikes that may or may not be issues. The even spacing between the spikes usually indicates a percussion beat. However, the only way to be sure is to listen to the track.

3 Play the clip. During playback, listen to the music while you watch the playhead move along the waveform.

Did you notice the digital click (glitch) near the middle of the track?

4 Press Shift-Down Arrow to move the playhead to the blue timeline marker. Play the clip from the blue marker. When you hear the distracting click, stop playback.

Digital clicks and pops can be as aurally irritating as gnats at a picnic. However, before exterminating this digital annoyance, you should look at some of the navigation shortcuts you'll need.

5 Move the playhead to the red marker. Zoom in horizontally until the spike in the waveform (digital glitch) is no longer beneath the playhead.
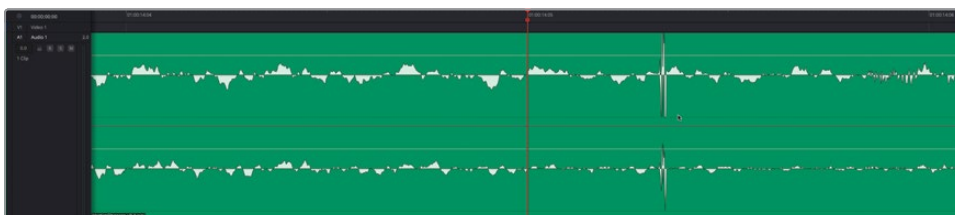
6 Click the ruler above the glitch or drag the playhead over the peak in the waveform. Then, zoom in until you see the individual samples (dots) that make up the waveform.
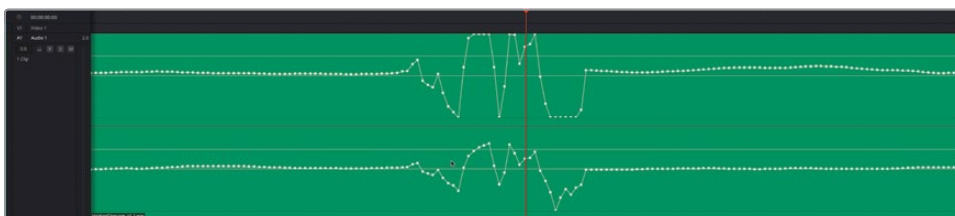
Welcome to the sample level of the waveform. Just as molecules are the building blocks of matter, samples are their equivalent in digital audio. You can clearly see the audible glitch. Next, you'll redraw the waveform to eliminate the errant sound altogether.

Editing Samples to Correct the Waveform

Your goal in this exercise is to redraw the waveform to eliminate the drastic peaks that make up the glitch. You don't want to silence the section by dragging the waveform all the way down because that will also be audible. Instead, you'll draw a smooth horizontal line to connect the samples at the left with the samples at the right and continue the existing waveform. Because this music clip is in stereo, you'll need to redraw the waveform on the left (upper) and right (lower) channels.

1   In the upper channel, click one of the samples before the drastic change in the waveform. The sample turns red to indicate that it is selected. You can now drag up, down, right, or left to redraw the waveform.

2   Drag the sample to the right to create a smooth horizontal waveform that connects with the existing samples at the tail of the clip.
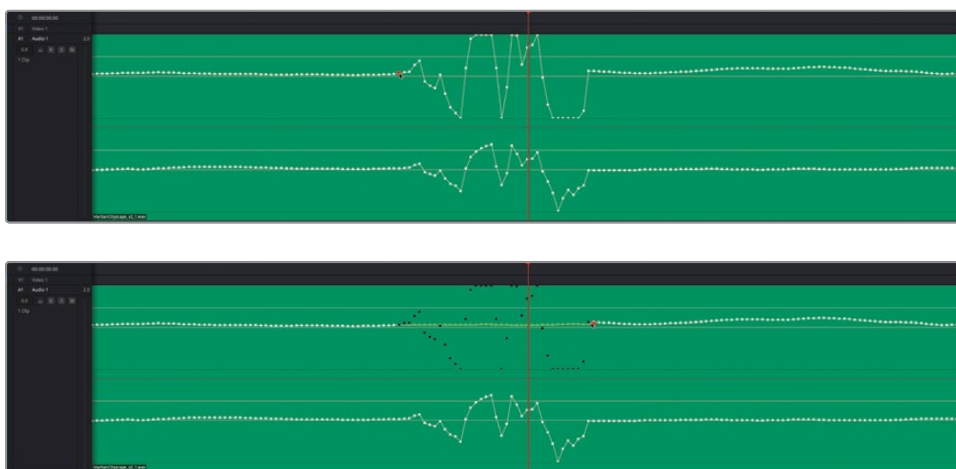
Don't worry if your sample drawing isn't perfect. You can drag back and forth as much as needed to smooth it out. The secret to editing at the sample level is to draw smooth lines (but not necessarily straight lines) that reconnect with the samples on either side of the change.

> **NOTE** To reset a clip's samples, right-click the clip and choose Reset Edited Samples.

3 Repeat steps 1 and 2 in the lower channel.
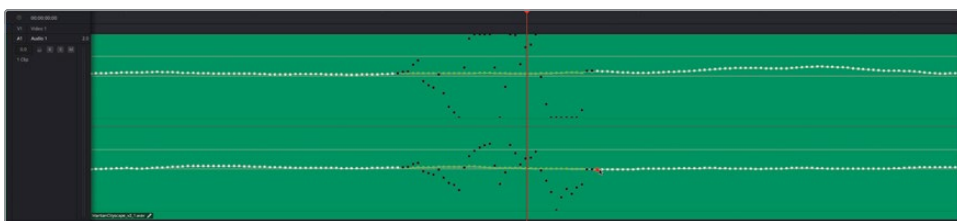
4 When finished, clear the play range.

5 Press Shift-Z.
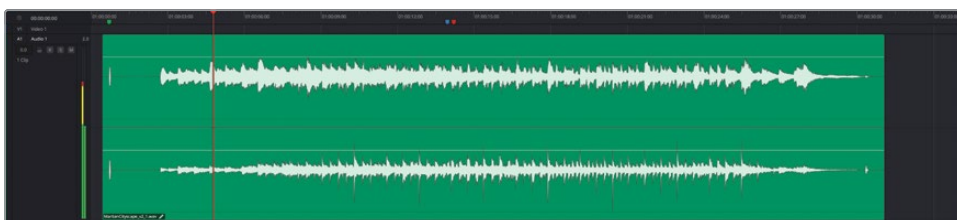
6 Play the clip from the blue marker to hear the repaired glitch. If you hear the edit, go back and try to smooth it out. You'll know it's right when you can't hear any indication that the waveform was ever edited.

You just performed a seamless "glitch-ectomy" in the middle of a busy instrumental music clip. You can apply this same sample-level technique on dialogue clips to remove noises or even shave the "s" off a plural word. When you get used to sample-level editing, you can do it without first splitting the clip. For now, splitting the clip is like using training wheels for sample-editing newbies and can be a time-saver for seasoned editors as well.

Retiming Audio with Elastic Wave Time Controls

The last audio repair tool you'll work with is Elastic Wave audio retiming. This fast and easy keyframe-based method dynamically retimes audio by condensing or stretching different parts of a waveform without changing pitch. It is commonly used for retiming sound effects, commercial voiceover cues, and matching ADR recordings to the lip movement onscreen.

In this exercise, you'll use Elastic Wave keyframes to retime an ADR recording to match the original dialogue in the timeline. First, let's set up the timeline for evaluating Dad's dialogue clips during playback.

Preparing the Timeline

1 Open the timeline **6e ADR Elastic Wave**.

This is a version of the ADR timeline that you recorded in Lesson 4. It includes several takes of Harper's lines in track layers and one best take of Dad's line "We're going to be okay."

> **TIP** If the clip you are retiming is one of many in audio track layers, disable all unused takes in the layers so you will not hear them while retiming the clip in the uppermost layer. Then, Hide Audio Track Layers. Alternatively, you can move the take to a new track, then mute and hide the track with the other takes. Either way, it's a good idea to keep the other takes handy in case you need them.

2 Close all open panels except the floating viewer.

3 Move the playhead to the second blue marker, if necessary.

4 Zoom to fit all the tracks and clips within the visible timeline.

5 Move and resize the viewer to the open space in the timeline to the left of the orange clips.
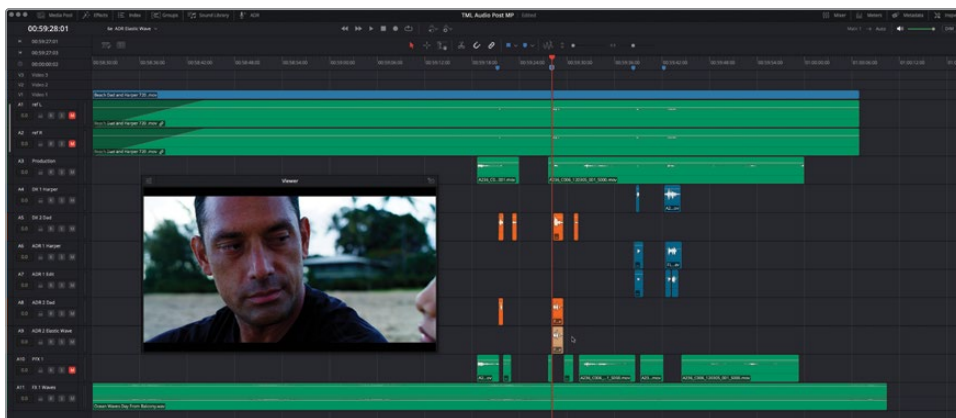
Track A8 contains the best ADR take for Dad's lines. Track A9 contains a duplicate version of the ADR recording that you'll retime for this exercise.

It would be helpful if the A8 and A9 tracks were directly beneath the A5 DX 2 Dad track. There are two options: hide the tracks between them or move them up closer to where you want them. For this exercise, let's move the tracks.

6 Show the mixer. Extend the mixer to show all the tracks.

7 Select the A8 and A9 tracks.

To move a track or tracks to a different position in the mixer, you drag from the track name area above the faders.

8 In the mixer, drag the selected tracks toward the left. Using the vertical line as a guide, release the tracks to the right of the A5 DX 2 Dad track.
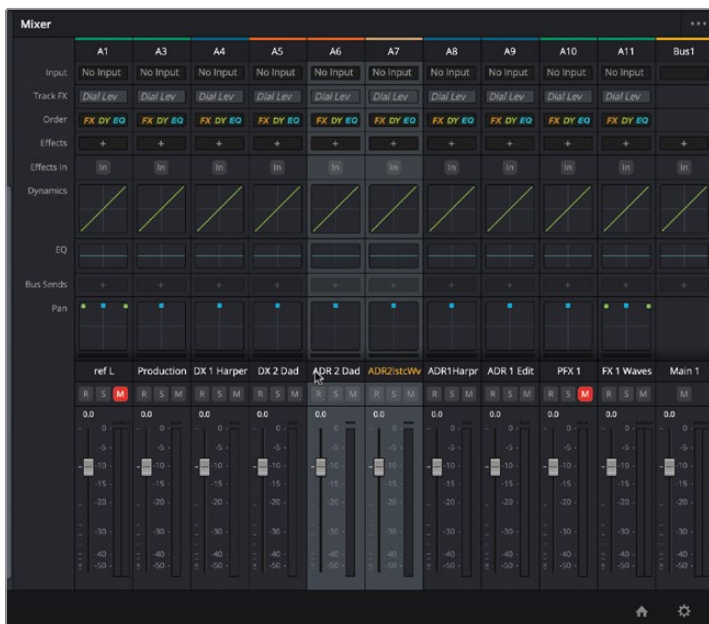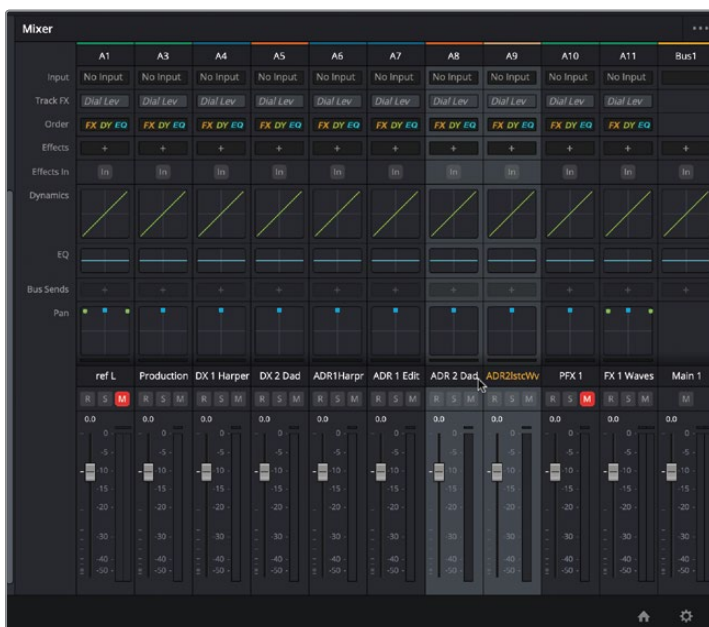
The tracks have been reordered in the timeline and mixers. Now, all three tracks containing Dad's dialogue are together in the A5, A6, and A7 tracks. Before you start working with the clips, let's make them easier to see and work with. Also, this is a good time to turn off Exclusive Solo.

> **NOTE** You can also move tracks in the Tracks Index or by dragging the left edge of the track header in the timeline.

9 Zoom as needed to clearly see the viewer and the clips to the right of the playhead in the A5–A7 tracks.
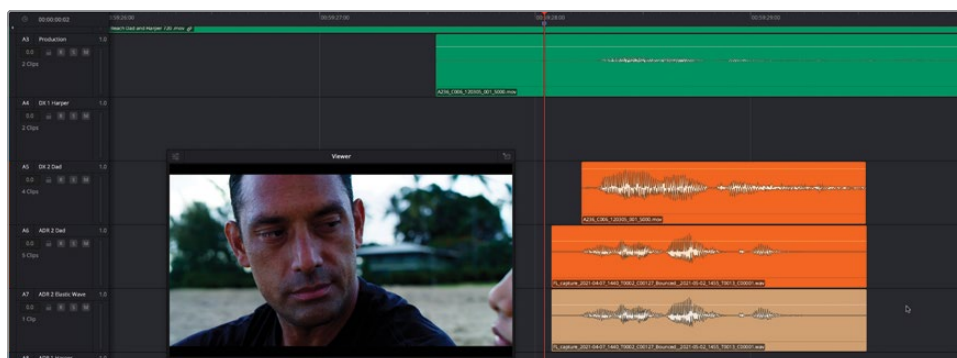
10 Choose Fairlight > Exclusive Solo to turn off that option.

Evaluating the Original Dialogue with the ADR Recording

Now that you have the timeline set up, you're ready to listen to the original and ADR versions of Dad's line "We're going to be okay" to determine whether they are in sync and how you may adjust the timing if needed.

1 Mark the clip in the A6 track.

2 Solo both the A5 and A6 tracks start looped playback. Listen to the clips together to determine how well they match. Stop playback.

You can hear that they aren't quite playing in perfect sync. Looking at the waveforms in each clip, you can see and hear that the "okay" is late in the ADR recording. Let's use the Elastic Wave controls to retime the clip in the A6 track to match the clip in the A5 track.

3 Unsolo the A6 track. Start playback again, listening only to the original dialogue in the A5 track.

4 Scrub through the clip forward and backward, holding JK and KL alternately to hear the dialogue in slow motion while watching the lip movements in the viewer.

5 Unsolo the A5 track and solo the A7 ADR 2 Elastic Wave track.

This track is a copy of the A6 track except the clip color was changed to beige to make it easier to identify and compare to the unaltered ADR recording.

6 Start looped playback and listen to the ADR clip of the same line while watching the viewer. Feel free to scrub with the JKL keys as you evaluate the ADR recording with the video.

What do you think? It's close. Really close. In fact, you could probably leave it and move on. Of course, you would always know it was slightly off, and you would notice that every time you watched the show. Worse still, others might notice, and your reputation as a dialogue editor or dialogue mixer may suffer.

This is the perfect time to turn on Elastic Wave and retime the clip waveform to match the original. First, let's move the A7 track up to the position between the A5 and A6 tracks. This time, instead of using the mixer or index, you'll just use the right-click contextual menu in the track header.

7 Drag the left edge of the A7 track header upward to the position between the A5 and A6 tracks.
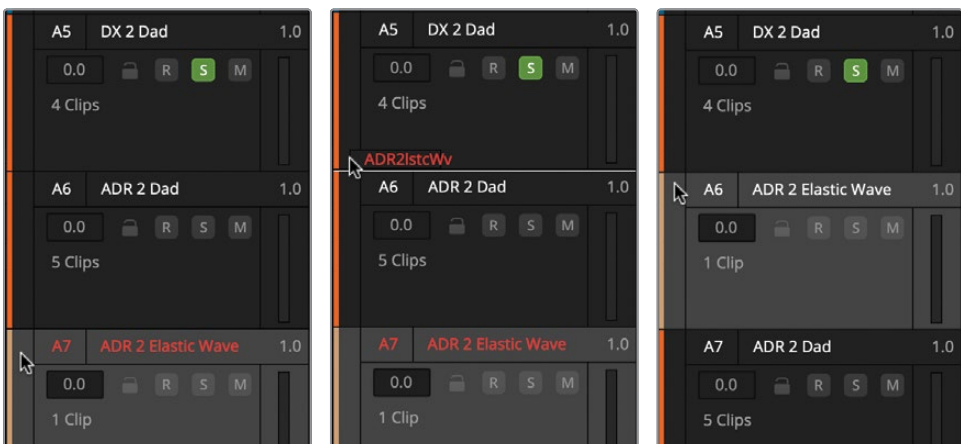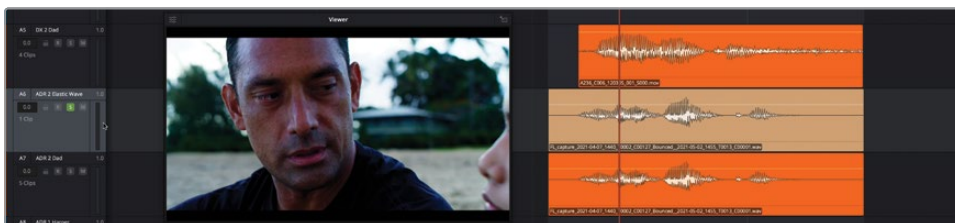
The beige A6 track is now between the orange A5 and A7 tracks.

8 Mute the A7 ADR 2 Dad track for comparison later.

Next, you'll enable Elastic Wave on the beige clip.

9 Right-click the beige clip in the A6 track and choose Elastic Wave > Voice to reveal the Elastic Wave retiming controls.
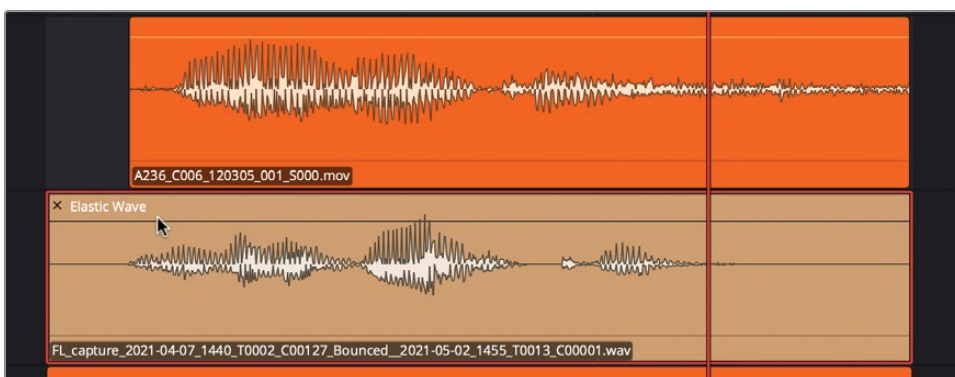
Once Elastic Wave is enabled, the clip shows the Elastic view, where you can retime the entire clip or add time keyframes to stretch or condense specific areas of the waveform using keyframe markers.

10 Unsolo the A5 track. Clear the range. Solo only A6, if necessary.

11 Move your pointer over the right edge of the clip to see the Trim tool. Move the pointer slightly toward the left over the clip until it changes to the Retiming tool.

12 With the Retiming tool showing, drag the right side of the clip toward the right to stretch the clip. Play the clip to hear the change. Then, drag toward the left to condense the entire clip. Play the clip again to hear it.
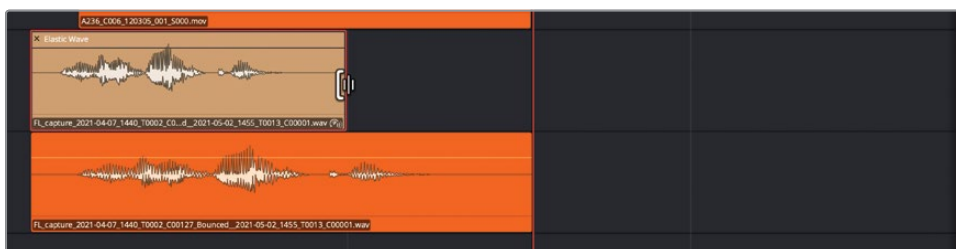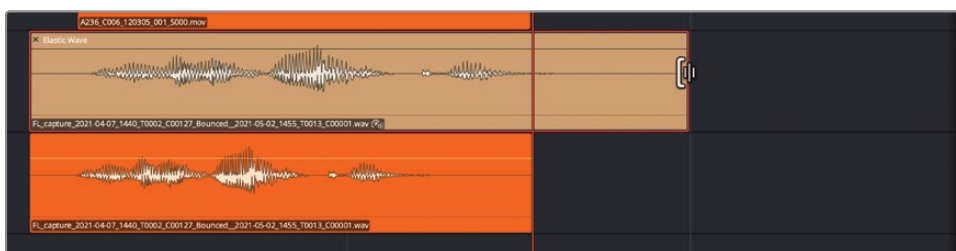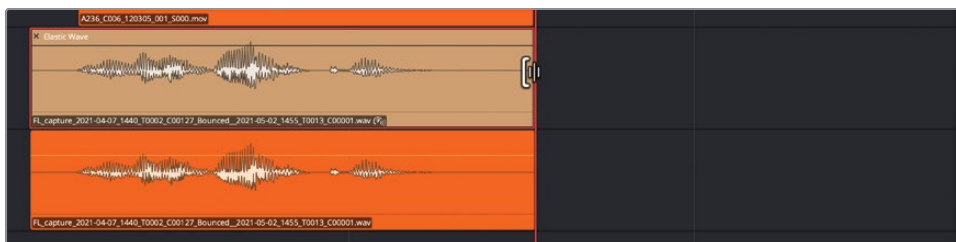
13 Stretch the clip back toward the right until the last waveform section, which includes the "kay" in "okay," aligns with the last part of the waveform in the A5 track. You can do this visually or by playing the end of the clips as needed until the timing of the word "okay" is the same on both clips.
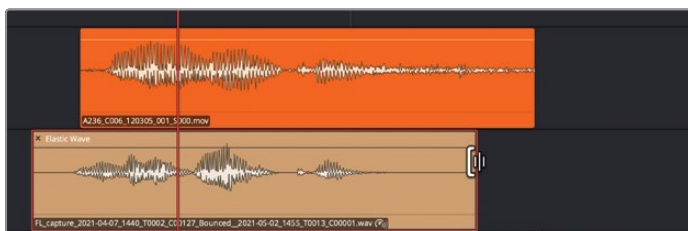
14 Mark the clip in A7 to set a range. Solo A5 and A6 and listen to them together.

The last section, "…be okay," is much closer to sync now, but the first part of the clip still needs some work. It's amazing how just retiming the end of the clip really helps match the second half of the clip. Now you'll need to retime the first part of the clip without moving the part that is already fixed. To do that, you'll need to set a few speed keyframes.

> **NOTE** Elastic Wave audio retiming is a fast and easy keyframe-based way of dynamically retiming audio. You can stretch or condense clips to slow down or speed up accordingly. There are also three more options: Voice, General Purpose, and Varispeed. When working with dialogue, it's best to use the Voice option, which is focused on human speech or singing.

Using Elastic Wave Speed Keyframes to Retime the Waveform

To finesse the timing of specific areas of the waveform within the clip, you simply add speed keyframes. Once you add a speed keyframe, you can drag it left or right to stretch the wave accordingly. Speed changes based on keyframes affect only the waveform from that keyframe to the neighboring keyframes applied to that clip. Using an audio clip's waveform as your guide, you can use multiple speed keyframes to match the waveform of one performance to the waveform of another to match the timing.

In this exercise, you'll use Elastic Wave speed keyframes to further improve the timing between the two clips. Let's start by setting a speed keyframe after the last part of the waveform since the timing there is already good. Then, you'll set two more keyframes in the empty space between the middle waveform section and the last section. You'll use those keyframes to fine-tune the alignment between the sections once you adjust the beginning of the waveform to match the beginning of the original clip.

DaVinci Resolve provides handy keyboard shortcuts for adding and removing speed keyframes: Command-click (macOS) or Ctrl-click (Windows) to add a time keyframe and Option-Command-click (macOS) or Alt-Ctrl-click (Windows) to delete a time keyframe. First, let's set three keyframes at the end and between the longer section of the waveform and the last section.

1 Solo only the A6 track.

2 Move the pointer to the empty space after the waveform and Command-click (macOS) or Ctrl-click (Windows) to add a time keyframe.
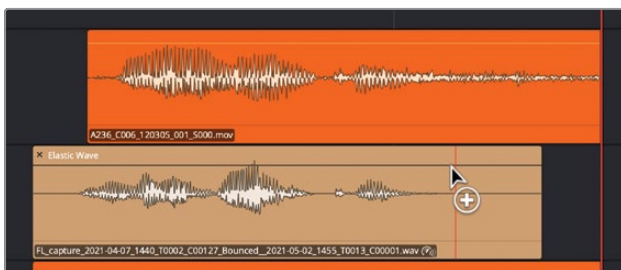
3 Set two more keyframes in the gap between the first waveform section and the end section.
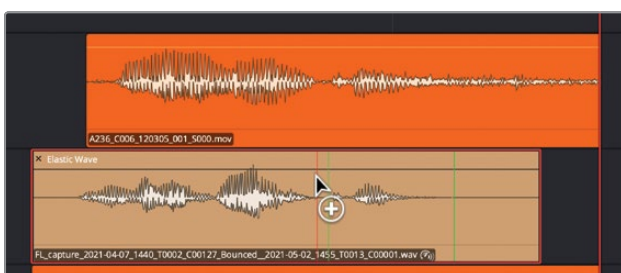
4 Drag the beginning of the beige clip toward the right until the beginning of the waveform aligns with the beginning of the original recording.
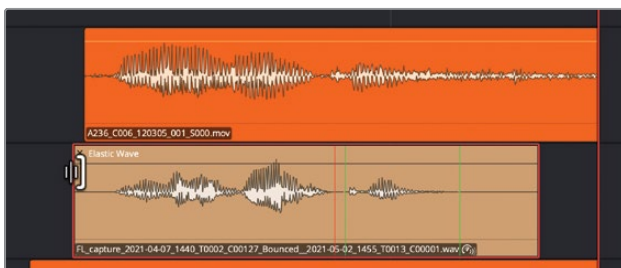
5   Adjust the time keyframes in the middle of the clip as needed to align the end of the first part of the waveform and the beginning of the last part of the waveform to match the original clip.
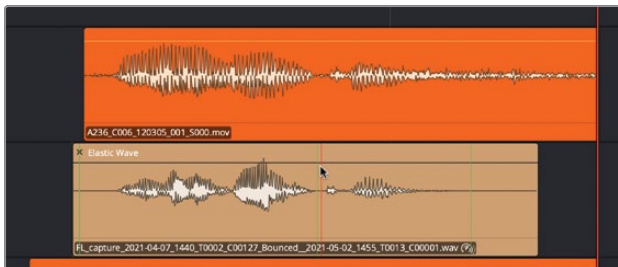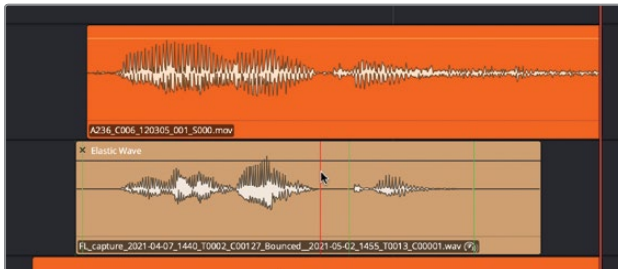
6   Play the clips in the A5 and A6 tracks to hear them together.

Wow! Way to stretch that wave! They are now in sync.

Now that you have finished with the Elastic view, let's hide the controls.

7   Right-click the beige clip in the A6 track and choose Elastic Wave > Elastic View to deselect that option.
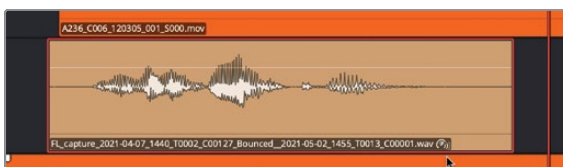
The clip looks like any other clip except for the time badge at the end of the header, which indicates that it has been retimed.

> **NOTE** All Elastic Wave retiming adjustments you make in the Fairlight page appear in the edit page as variable speed effects, accessible using the Retime controls. However, not all retiming effects created on the edit page can appear as Elastic Wave retime effects on the Fairlight page.

Applying Pitch Changes to a Clip in the Inspector

If you've followed along with all the lessons, you have already learned how to record, edit, and stretch to sync ADR recordings in the timeline. One last trick to keep in your dialogue editor's toolkit is the ability to change a clip's pitch. This doesn't come up every day, but it can happen. Especially if you are editing different takes together where the talent's voice and delivery may have been a little higher or lower in pitch. In this exercise, you'll lower the pitch of the ADR clip in A6 just a bit to split the difference between the original recording and the dialogue replacement clips.

1   If necessary, solo the A6 track and unsolo all other tracks.

Let's compare the clips one more time.

2   Start looped playback and listen to the clip in A5 soloed and then A6 soloed.

At this point, the only real difference is the character's delivery. His voice is slightly lower and more serious in the original recording, while the ADR recording sounds slightly higher-pitched and more upbeat. This was a directorial decision during the recording.

3   Solo only the A6 track. Mark and select the beige clip.

4   Show the Inspector.

The Pitch controls let you lower or raise a clip's pitch by up to 24 semitones. With 12 semitones in an octave, you can pitch a clip up or down by two full octaves. The Cents control manipulates the clip by hundredths of a semitone and is used for fine-tuning a clip's pitch.
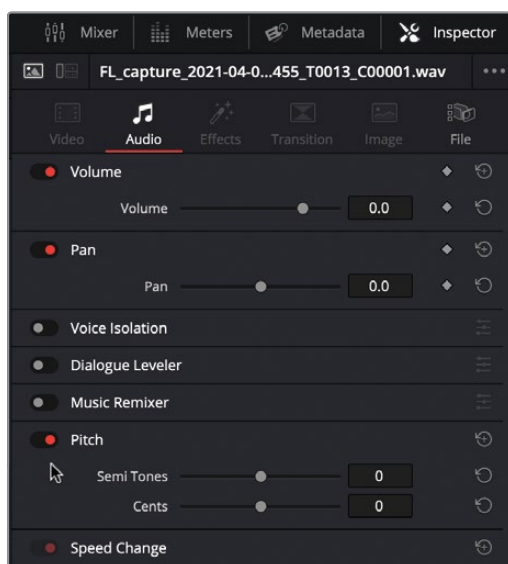
Dragging the pitch controls to the left lowers the pitch and is designated by a negative number. Conversely, dragging to the right raises the pitch. The best way to understand the power of pitch control is to hear it in action.

5   Start looped playback. During looped playback, drag the clip's Semi Tones slider to each of the following settings: -1, -5, -10, -20, 0, 1, 5, 10, and 20. When you are finished, stop looped playback.

As you just heard, subtle pitch changes can sound natural, while more radical changes can completely transform a voice from human to that of a demonic creature (-20) or a talking mouse (+20).

6   At the far right of the controls, click the clip Pitch Reset button.
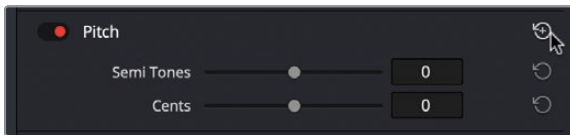
Next, you can drag the Cents slider to introduce smaller incremental pitch changes.

7   Start looped playback. During looped playback, drag the Cents slider slowly to the left and then to the right to hear the slight changes in pitch.

8   Set the Cents slider to between -75 and -50. Listen and then stop playback.
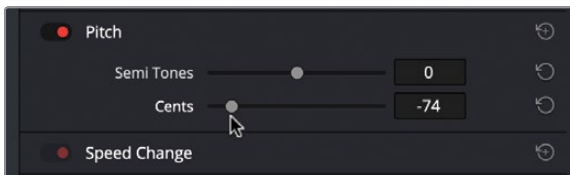
The subtle change in pitch lowers the dad's voice just enough to feel natural. You'll work more with pitch changes in the next lesson.

> **NOTE** The pitch controls in the Inspector are perfect for making large and small pitch changes to individual clips. However, if you need to change the pitch for an entire track, it's better to use the Fairlight FX pitch plug-in.

More Audio Repairs

We've covered quite a few new tools and techniques in this lesson, including removing annoying noises between words, gating low-level noise, using the De-Hummer and Noise Reduction repair plug-ins, using AI-based Track FX, and, finally, performing sample-level repairs and waveform retiming. Whew! As a dialogue editing and mixing trainee, you rock!

Now, you can put some of these skills to the test and choose your own audio repair adventure from the following list. (You might need to return to corresponding sections in this lesson to refresh your memory.)

In the 6 Quick Fixes Start timeline:

1   Right-click each track header, choose Remove Attributes, and remove all attributes.

2   Right-click each clip, choose Remove Attributes, and remove all attributes on the clips.

3   Once the clips and tracks have been reset, use what you have learned to improve or repair each clip.

In the 6a Reduced Noise timeline:

1   Clear all plug-ins and Track FX from the clips and tracks.

2   Use plug-ins and Track FX to improve the sound of the clip.

In the 6b Combo FX to Cache timeline:

1   Clear all plug-ins and Track FX from the clips and tracks.

2   Use whichever repair plug-ins or Track FX you need to improve the clip.

3   Feel free to experiment with different settings, plug-ins, and Track FX.

4   When finished, cache or bounce the clip with effects.

In the 6e ADR Elastic Wave timeline:

1   Right-click the beige clip and choose Reset Speed Curve.

2   Move and extend the edges of the clip until it matches the recording in the A8 ADR 2 Dad track.

3   Use Elastic Wave to stretch and retime the clip.

4   If you feel ambitious, show track layers and audition the different takes in Harper's ADR line "Will you teach me how to surf?"

5   Choose the best take, move it to the uppermost layer, disable the other clips, and hide the audio track layers.

6   Retime the best take of Harper's dialogue with the original recording.

In the next lesson, you'll step out of the dialogue editor's seat and into the creative role of the sound designer.

Lesson Review

1   True or False? You can apply up to six plug-ins to a clip and apply unlimited plug-ins to a track.

2   Which Fairlight FX plug-in is designed to remove powerline hum from an audio clip?

   a)   Noise Reduction

   b)   Hum Remover

   c)   De-Hummer

   d)   Un-Hummer

3   True or False? When using the Fairlight FX Noise Reduction plug-in, the Manual mode utilizes the Learn button to create a noise profile.

4   True or False? The Fairlight FX Sample Editor plug-in lets you see and edit the audio waveform at the sample level.

5   How do you enable the Elastic Wave retiming controls?

   a)   Use the Elastic FX plug-in.

   b)   Choose Elastic Wave from the right-click contextual menu.

   c)   Enable Elastic Wave in the clip Inspector.

   d)   Select the clip and click the Elastic Wave button in the toolbar.

6   Which two DaVinci Resolve Studio built-in Track FX use AI to remove background noise from clips that contain a human voice? (Choose two.)

   a)   Dialogue Enhancer

   b)   Dialogue Separator

   c)   Voice Extractor

   d)   Voice Isolation

   e)   Noise Reduction

Answers

1   False. You can apply unlimited plug-ins to a clip and up to six plug-ins to a track.

2   c

3   True

4   False. There is no Fairlight FX Sampler Editor plug-in. To edit waveforms at the sample level, simply zoom in to the waveform to see the samples on the Fairlight page.

5   b

6   b and d

Using Fairlight FX and Processing for Creative Sound Design

Creating the aural illusion of a scene involves both the imagination and the creative problem-solving skills of the sound designer. Outstanding motion picture sound design has enabled film and television audiences to travel through deep space, thwart alien invaders, evade dinosaurs, escape unnatural disasters, and survive the zombie apocalypse.

Time

This lesson takes approximately 45 minutes to complete.

Goals

Once an audience has "been there, done that," an onscreen *soundscape* (audible landscape) becomes part of the accepted "norm" for similar onscreen experiences. A sound designer's goal is to create a rich, realistic, and emotionally compelling soundtrack that exceeds the audience's expectations without drawing attention away from the story.

In this lesson, you will become a sound designer and will be responsible for crafting, enhancing, and manipulating sounds—such as dialogue processing, ambience, and sound effects—to make scenes more immersive, emotional, and realistic. Along the way, you'll also learn some powerful DaVinci Resolve tools, plug-ins, and shortcuts.

What Does a Sound Designer Do?

The sound designer is responsible for creating sound effects and subtle sound layers to enhance the emotional tone and mood of a scene while also managing the post-production sound process. In many cases, the sound designer also serves as the supervising sound editor. Think of the sound designer as an acoustic head chef responsible for the overall sound experience. Like a chef, the sound designer oversees every element on every track as the sounds are cumulatively blended, balanced, and mixed into the final soundtrack.

Creating Keyboard Shortcuts

Whether you prefer using a mouse and menus or keyboard shortcuts for your audio tasks is up to you. However, some shortcuts are commonly used by nearly everyone, such as cut, copy, paste, the JKL keys for navigation, and Shift-Z to toggle horizontal Zoom to Fit clips on the timeline. As you may know, every menu feature in DaVinci Resolve can be assigned to a keyboard shortcut. In this lesson, you'll use the Keyboard Customization window to assign two useful shortcuts. The first is for Exclusive Solo, which you've accessed previously through the Fairlight menu; assigning a shortcut will make it quicker to use. The second is for Smart Zoom, which isn't available in a menu at the time of this writing, making a custom shortcut necessary. This simple exercise takes only a few minutes but can save significant time and reduce unnecessary mouse clicks as you work through this lesson.

1   Open DaVinci Resolve, if necessary.

2 Choose DaVinci Resolve > Keyboard Customization.

The Keyboard Customization window opens, where you can create your own custom keyboard shortcuts, see which keyboard shortcuts are available, and choose a shortcut preset. At a glance, this window is self-explanatory, featuring an interactive keyboard at the top and a list of interactive shortcuts at the bottom, where you can find, select, search, and modify them.

3 Click the Presets dropdown menu in the upper right corner of the Keyboard Customization window to show the list of presets.

This list shows keyboard shortcuts for other post-production software as well as any custom layouts you may have saved on your system.

4 If necessary, set the preset menu to DaVinci Resolve.

> **NOTE** If you are already using custom keyboard shortcuts that you created on your own or as part of another DaVinci Resolve training course, feel free to continue working with that layout and just add the new keyboard shortcuts in this exercise.

5 In the Search field, located at the right side of the window, type **Solo**.
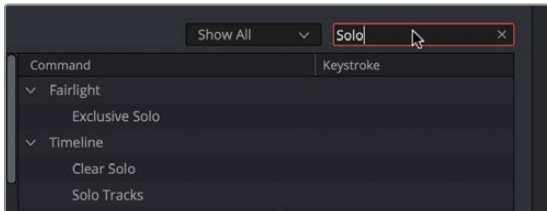
A list of all commands that include the word Solo appears in the search results along with their interface menu, such as Fairlight > Exclusive Solo. Notice in the Keystroke column that none of the three search results have been assigned keyboard shortcuts in the default DaVinci Resolve layout.

A common letter that is easy to remember when associated with Exclusive Solo is X, so you'll assign a shortcut that includes the letter X. As you know, X is already used to mark a clip. Let's try Option-X (macOS) or Alt-X (Windows) to toggle the solo button to the Exclusive Solo option. Hint: that shortcut is already being used for the Clear Range function, as you will see in a moment.

6 In the Command list, select Exclusive Solo. Then, in the Keystroke field, press Option-X (macOS) or Alt-X (Windows).
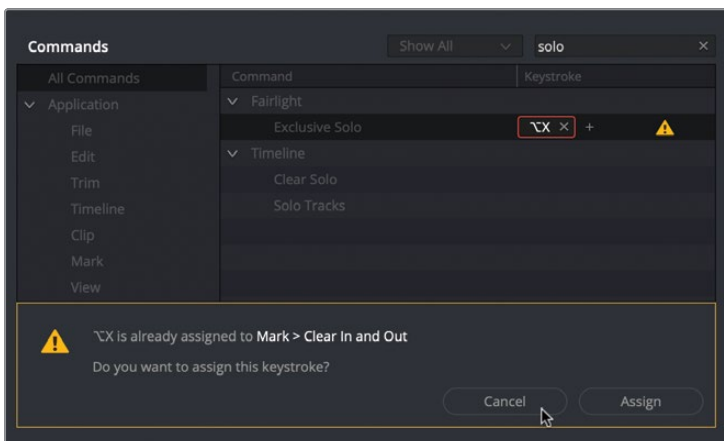
Yep, that shortcut is already taken. No problem. Let's try Shift-X instead to "shift" the solo button to Exclusive Solo mode.

7 Click Cancel in the warning dialog. Then, press Shift-X in the Keystroke field.

This time, there is no warning. Let's proceed to the next shortcut.

8 In the Search field, type **Smart Zoom**.

As you can see, Smart Zoom is in the Fairlight Timeline > Timeline View Options menu list. Every modifier shortcut involving Z is already in use, so a common alternative shortcut for Smart Zoom uses the letter E, as in "Examine more closely."

9 Select Smart Zoom in the Command list and press Shift-E in the Keystroke field. Click Save.
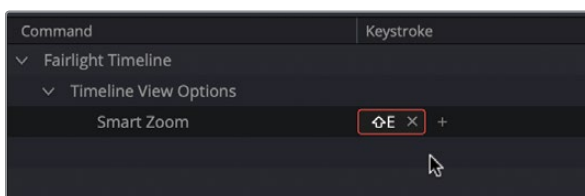
10 In the Keyboard Mapping Preset dialog, type your initials after DaVinci Resolve to save your custom preset. Click OK.

11 Close the Keyboard Customization window, if necessary.

> **NOTE** Now that you know how easy it is to set keyboard shortcuts, you can assign them to any menu action that you use regularly, such as View > Show/Hide Audio Track Layers or Playback > Record.

Altering Dialogue to Fit the Context of the Scene

A great place to start your sound design journey is with dialogue that you have already edited, repaired, or balanced. In the next set of exercises, you'll explore two common real-world scenarios where the sound designer (you) must apply effects to dialogue to fit the diegetic context of the scene. First, you'll experiment with the Echo Fairlight FX plug-in to enhance offscreen dialog in the "learn to surf" scene. Then, you'll open a different timeline to apply a combination of effects to alter the voice of the assistant principal when he is speaking through the PA system.

One thing to consider before adding effects directly to dialogue clips or tracks is that, when it comes to dialogue editing and mixing, it is essential to keep the primary dialogue tracks clean. It's OK to use effects to repair the sound for balancing, but your goal is to leave the dialogue otherwise unaltered and easy to hear.

How do you change the sound of the dialogue when needed if you can't add effects directly to the dialogue clips and tracks? The sound designer may duplicate a dialogue track, apply effects to the duplicate clips, move clips to a different track for processing, or send the sound to an auxiliary bus for processing. In this lesson, you'll use the first two methods. You'll work with busses in the next lesson.

Adding Depth to Offscreen Dialogue

In motion picture storytelling, both the director of photography and the sound designer consider height, width, and depth when composing a scene. Just as a cinematographer uses light, shadows, reflections, and focus to create depth between the foreground and background, a sound designer uses time-based effects, such as echo and reverb, to add audible depth. In this exercise, you'll use the Fairlight FX Echo plug-in to simulate depth in the soundtrack, positioning Raina's dialogue as she yells surfing directions from the beach. Along the way, you will use the new keyboard shortcuts you created.

1 In your TML Audio Post project, open the **7 Offscreen Echo Start** timeline.

2 Show only the timeline, mixer, and floating viewer.

3 Condense the mixer width to only show the first five or six tracks.

4 Zoom the timeline as needed to see all the tracks and clips.

5 Play the timeline starting at the pink marker. During playback, focus on the story context of where Raina is compared to Harper.
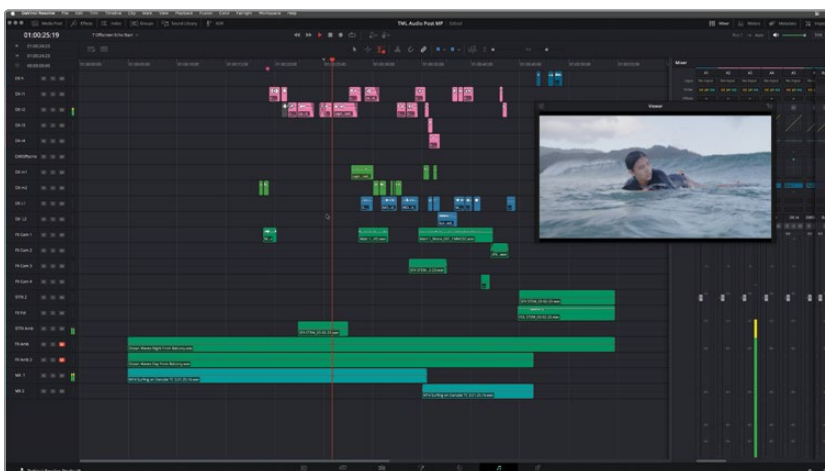
There is currently no difference between Raina's dialogue when we see her yelling to Harper from the beach and when we see Harper listening to Raina from the water. Now that you are thinking like a sound designer, the mission is clear.

It's time to use Smart Zoom to focus on the clips and tracks you'll be working with. Smart Zoom requires the Focus mode multi-tool and a selected range in the timeline. Let's try to focus on Raina's dialogue in tracks A2–6.

6 With the Focus Mode multi-tool, drag a range around all the pink clips in the timeline. Include the empty DX r5 Echo track in your selection.

7 Press Shift-E to apply Smart Zoom to the selected range.
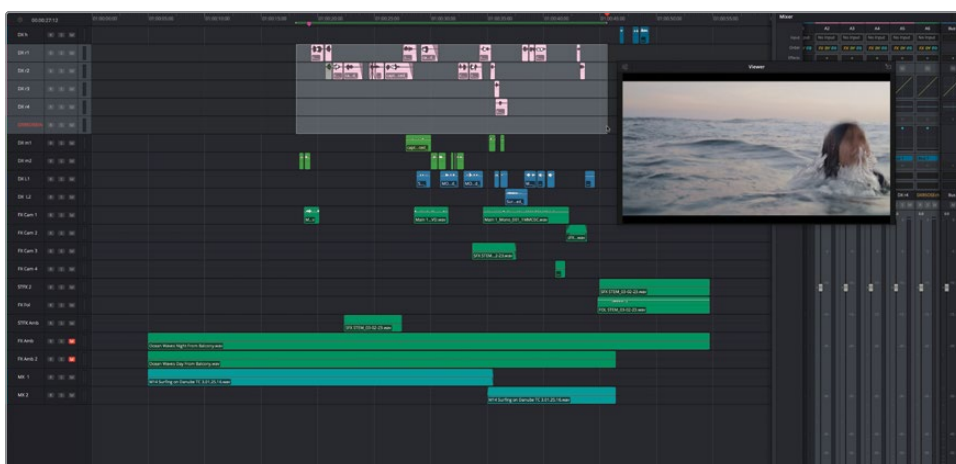
Hello pink clips! The timeline instantly zooms to fit the selected range. Handy, right? Now, let's put this to work.

Now that you have a clear view of all the pink clips, you can focus on the first set of clips on the A3 DrX r2 track. The first clip is a duplicate clip from the A2 track where Raina starts her offscreen dialogue. You'll select, copy, and paste a copy of her offscreen clips to the A6 DX r5 Echo track.

8   Drag a range that includes the first set of pink clips in the A3 track. Choose Edit > Copy or use the familiar keyboard shortcut to copy the clips.

9   Select the A6 track and then Paste.
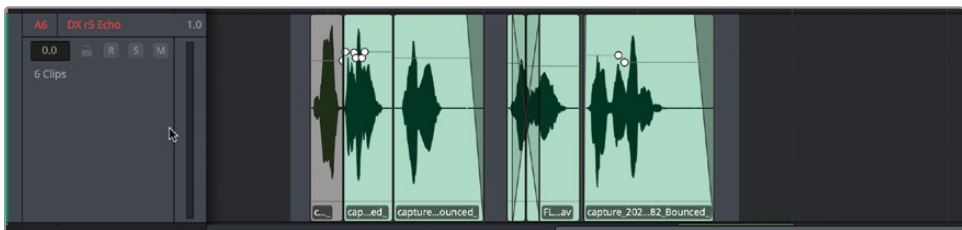
An identical copy of the clips appears in the A6 track. The only difference is the clip color because this track is not pink.

Next, you'll add an Echo effect to the A6 track. Instead of dragging the effect from the Effects library, let's use the Add Effect pop-up menu in the mixer.

10   At the top of the A6 channel strip, in the Add Effect pop-up menu, click the Add Effect button (the + symbol) and choose Delay > Fairlight FX > Echo.

The Echo panel opens. This classic Echo effect includes a graph showing the timing and intensity of the generated echoes on each channel, as well as an Output meter that displays the level of the resulting signal.

Working with Plug-In Presets and Custom Settings

Before you rush into modifying the settings, let's test for Echo presets to see if any of the presets work for this scene.

1   Solo the A5 Dx r5 Echo track. Mark a range around the clips if needed.

2   Select the first disabled clip and press D to enable the clip.

3   Start looped playback and listen to the default Echo plug-in settings.

    Nope. Next…

4   Continue looped playback and try each of the Echo presets. When finished, stop playback.
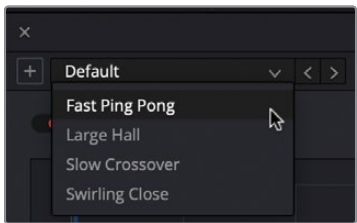
Did any of the presets work for this situation? Large Hall was the closest to working. In fact, you could probably use that preset with a few adjustments. However, in this case, you'll reset the plug-in to the default settings and then modify the settings yourself.

5   Click the Reset button in the top right corner of the Echo panel.

6   On the Echo panel, set the Delay control to 0 (zero milliseconds of delay).

> **TIP** When customizing a plug-in's settings, start with extreme positions—either the far left (no effect) or the far right (full effect). This allows you to clearly hear the difference between "all" and "nothing added." Then, gradually adjust in the opposite direction during playback until you find the perfect balance for the scene. For precise control, hold Shift for fine adjustments and double-click the control to reset.

7   Start looped playback and slowly increase the Delay control while listening to the results. Try different amounts of delay. When finished, set the delay to between 110 and 180 milliseconds. Find the level that sounds best to you.

8   Stop playback.

Saving a Customized Preset

After you have customized a preset, you can save it for use in another scene in the same project or in another project altogether. In this exercise, you'll save a preset for the Echo effect that you just modified for the "learn to surf" scene.

1   On the Echo panel, click the + (Add Preset) button.

2   In the Echo Preset dialog, type **TML Surf Scene**. Press Return or click OK.
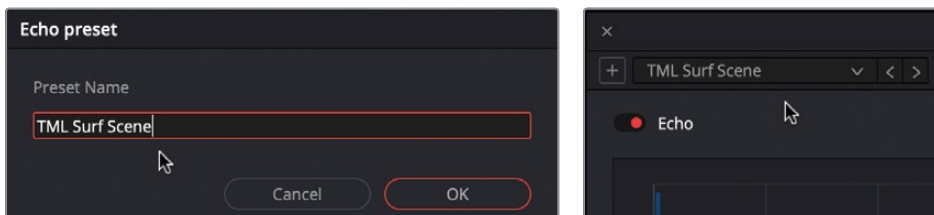
The Preset pop-up menu updates to show the current preset, TML Surf Scene.

> **TIP** When naming presets and sound effects, it's always a good idea to give them clear, self-explanatory names. For example, base the name on the show, scene, or generic situation where the plug-in preset will be most useful.

3 Start looped playback. Choose a different preset and then choose the TML Surf Scene preset that you just created. When you're finished, stop playback.

4 Clear the selected range.

5 Unsolo the A6 track and disable the first set of clips on the A3 track.

6 Listen to the scene in context with the Echo.

Nice work! The best part of saving presets is that you can use them in any Resolve project on your system.

> **NOTE** You can select this preset from the list at any time, and even update it and resave it as a different preset.

Finishing the Offscreen Dialogue Effect

To enhance the effect of Raina yelling to Harper from the shore, consider adjusting the location of her sound. While dialogue is typically panned to the center, exceptions can be made when a character is offscreen or speaking from a specific location, such as a small speaker in the corner of a room. In this case, slight panning can help sell the distance and direction of Raina's voice. Keep in mind that playback will vary significantly between stereo, 5.1 surround, and Dolby Atmos immersive audio. For now, a subtle approach is best— there's no need for extreme panning. Adjust the track slightly to the left, between 30L and 50L. Instead of opening the Pan window, you can fine-tune the A6 track panning directly in the channel strip controls. Start looped playback and gradually drag the blue pan handle to the left until it sounds convincingly like Raina is yelling from the beach. Once satisfied with the effect and placement of the offscreen dialogue, watch the scene in the full-screen Cinema Viewer, then stop playback.

Futzing Dialogue to Simulate a PA System

Your next dialogue-enhancing sound design exercise will be to futz a dialogue clip with Fairlight FX. A *futz* track is a processed version of dialogue or sound that mimics how it would sound through a specific device or environment, such as a telephone, radio, TV, PA system, or walkie-talkie. It is created using EQ filtering, distortion, reverb, and noise effects to simulate low-quality or obstructed audio. Common in films, TV, video games, and podcasts, futz tracks add realism by making voices sound like they're coming from another room, an old speaker, or a distant communication system.

There are four fundamental steps in creating an effective futz track, including:

— EQ (equalization) to cut the high and low frequencies, leaving a mid-range-heavy sound

— Distortion and Bit Reduction to add a grainy or lo-fi effect to simulate degraded audio quality

— Reverb and Echo to mimic room reflections, such as a voice over an intercom in a large hall

— Compression and noise addition to simulate static, interference, or background noise typical of older or low-fidelity audio systems

The number of steps and the intensity of the effects required depends entirely on the context of the scene and the level of immersive realism you want to achieve. For example, an announcement over a PA system at a major airport may be loud, clear, and easy to understand, while announcements at an outdoor train station or inside a moving train may be noisier, prone to dropouts, and harder to discern.

In this exercise, you'll apply the first three processing steps to a futz track, including EQ and the Distortion and Reverb plug-ins. This may sound like a lot of effort, but these are all native Fairlight effects with presets to get you started. First, you'll drag a copy of the clip to the next track. Then, you'll apply EQ to limit the high and low frequencies. Next, you'll add the Distortion plug-in and experiment with the presets. Finally, you'll add a splash of Reverb or Echo to indicate that the sound is coming from speakers offscreen in the distance.

1   Open the timeline **7 Futz PA Start**.

2   Hide all panels except the timeline, mixer, and floating viewer.

3   Play the clip in the timeline, watch the video, and consider where the sound is coming from while Vice Principal Garrett makes his announcement.

How do you imagine the outdoor PA sound from this location? He is speaking into a PA handset, but the speakers are not visible—they could be mounted on the school building or scattered around campus. At this close proximity, both his natural voice and the processed PA speaker sound would likely be audible. To maintain flexibility in the mix, always keep the original, clean dialogue on its own track and place a copy in the Futz track. This allows you to blend the processed sound with the original or adjust the balance as needed.

To copy the clip, you'll press the Option/Alt key while dragging the clip downward to the next track.

4   Option/Alt-drag a copy of the clip in the A1 track to the A2 track. You can hold Shift while dragging the copy to keep it aligned vertically.
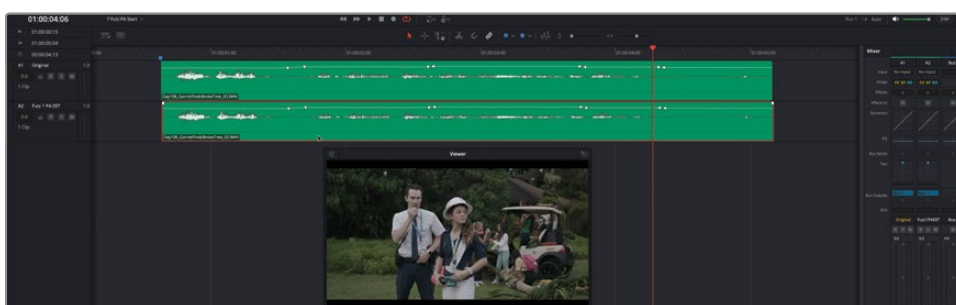
5   Mute the A1 track.

The A2 Futz 1 PA EXT track is set up and ready for processing.

Applying Equalization to Limit High and Low Frequencies

Equalization (EQ) controls manipulate specific frequencies to shape or enhance the overall sound, much like working with color, saturation, and hue in color correction. For example, the human voice is based on a fundamental frequency shared by millions, but additional frequencies add tonal qualities to "color" each voice, making it unique and recognizable. The primary function of equalization is to lower frequencies that detract from the voice and boost frequencies that enhance the overall sound clarity.

If you recall, the Fairlight page features a four-band parametric equalizer for each clip in the Inspector and a six-band parametric equalizer on each track, making it the perfect tool for either limiting frequencies to degrade sound in a track or enhancing and "sweetening" audio tracks to improve dialogue during the mix.

In the following exercise, you'll look at limiting the high and low frequencies to simulate the frequency limitations of an outdoor PA system. First, you'll use the six-band EQ on the A2 track to diminish Vice Principal Garrett's voice to sound as if it is coming from speakers.

Then, you'll apply EQ to Emiliana's track to "sweeten" her voice.

1 Mark the clip in the A2 track.

2 Select the A2 Futz 1 PA EXT tack track to brighten it in both the mixer and timeline.

   Although selecting tracks isn't a necessary step, it does make the tracks and clips easier to spot while you work.

3 In the mixer, on the A2 Channel strip, double-click the EQ area to open the Equalizer window. Move the Equalizer window to the timeline area to the left of the mixer.
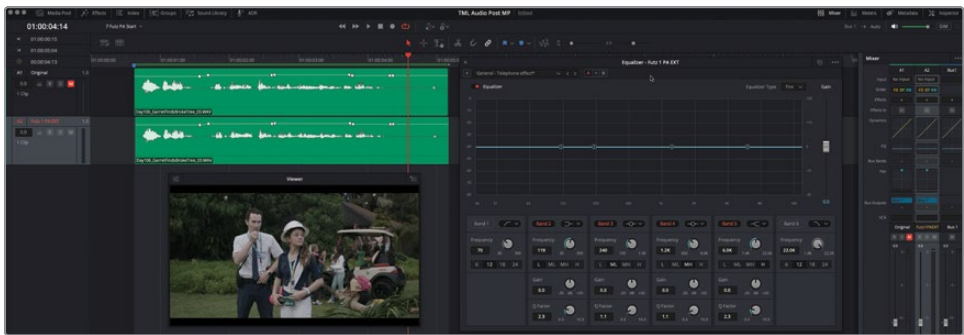
4 In the Equalizer window, choose "General – Telephone effect" from the Equalizer Presets dropdown menu. Start looped playback to hear the results.

The equalizer graph clearly shows that all the high and low frequencies have been filtered out, leaving only the mid-range frequencies, just like a telephone speaker.

Saving Alternate Settings for Quick Comparison

One of the most valuable techniques for sound design is to quickly listen to and compare the sound before and after applying an effect. Unlike visual comparison—where you can see more than one version of something at a time and compare them side by side—with audio, you need to listen to one version and then the other back and forth as many times as needed during playback. The Fairlight page in DaVinci Resolve offers several options for quickly comparing your plug-in effects, EQ, and dynamics while you work. One option that you're already familiar with is to simply click the Bypass switch off and on in either the effect's control window or the Inspector. The Fairlight page mixer also includes a bypass for plug-in effects, Track FX, Pan, EQ, and Dynamics by simply clicking the effect Bypass button or Command/Ctrl-clicking the controls area for Pan, EQ, and Dynamics, respectively, in the mixer channel strip.

The A/B Comparison toolset is located at the top of the audio effect control windows and includes three buttons that let you compare two sets of adjustments of the same effect. By default, all changes applied to an effect's controls are saved in the A bank of controls. Clicking the B button toggles the controls to a second bank of identical controls. The (arrow) button between A and B can be used to copy settings from A to B or B to A, depending on which button is selected at the time. The arrow changes direction based on which settings are showing to indicate the direction of the copied settings.
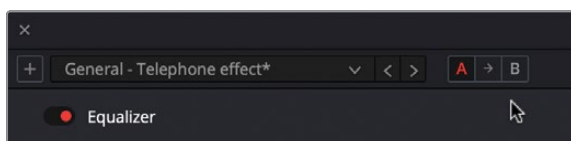
In this exercise, you'll use the A/B Comparison toolset first to compare the settings you made to the default settings. Next, you'll copy the settings from A to B, adjust the B settings, and compare. Keep in mind that your overall goal is to find the best sound for the outdoor PA system in this scene.

1   Locate the A/B Comparison toolset at the top of the Equalization window.

2   Start looped playback of Vice Principal Garret's voice.

3   Continue looped playback. In the Equalizer window, click the B button to toggle on the B set of controls.
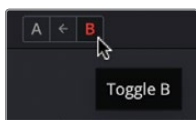
The B controls are identical to the A controls. Now, you can customize the settings.

4 Continue looped playback. In the Equalizer window, click the Band 2, Band 3, Band 4, and Band 5 buttons to turn them off.

This widens the graph to include more of the mid-range frequencies, including mid-low and mid-high frequencies. The sound is still limited, like a speaker, but not as extreme as a small telephone speaker.

5 During playback, click back and forth between the A and B buttons to hear the different versions of the effect.

6 Toggle the Bypass button on and off to hear the unaffected voice, then select the A and B options.

7 Stop playback. Show the B set of controls, if necessary. Let's continue working with the B controls for now.

8 Close the EQ window.

Now that you have selected a favorite setting, the first step in setting up the futz effects for this scene is complete. Plus, you have the A set of controls as an option if needed. Just remember that if you are in a mixing session with clients, they will likely want to hear another version of the effect or suggest changes. Clients also appreciate being able to listen to and compare things for themselves. Fortunately, you already have a plan B (A or B) ready to play and compare with a click if needed.

Applying Distortion to Degrade the Sound

The Distortion plug-in offers a variety of presets to quickly simulate degraded audio. In this exercise, you'll apply the Distortion plug-in to the A2 Futz 1 PA EXT track, and then test-drive the different presets to find one that works best for this scene.

Once again, let's use the Add Effect pop-up menu in the mixer. In this case, there is only one Fairlight FX plug-in in the Distortion category, aptly named Distortion.

1   At the top of the A2 channel strip, click the Add Effect button and choose Distortion > Distortion.

The Distortion panel opens. This effect includes an animated graph showing the results of adjusting the Distortion parameters, providing a visualization of the clipping, wave shaping, and harmonic distortion that modify the signal as you adjust the plug-in settings. Input and Output meters show how the levels are affected. Warning: The Distortion plug-in settings can increase the levels to uncomfortable levels as you test out the presets. To protect your ears, this is a good time to dim the monitoring levels, especially if you are wearing headphones.

2   In the monitoring controls in the top right corner of the Fairlight interface, click the DIM button.

Now, you can safely test the Distortion presets.

3   Start looped playback. Try each of the Distortion presets. Notice the settings as you change presets to see how they affect the overall sound.

4   When finished, select the LoFi Radio preset.

There are two Distortion mode buttons at the top of the Distortion settings in the center of the controls window. The button on the left is the Distortion button, which creates harmonic distortion. The button on the right is Destroy, which is an extreme polynomial wave shaper.

5   Continue playback. In the Distortion settings, click each of the two mode buttons to hear the difference between Distortion on the left and Destroy on the right. Once you've compared both settings, click the Distortion button to choose that mode.

Fairlight FX plug-in effects include a handy Dry/Wet control that determines the percentage of the original to the processed signal. Once you've selected the settings you prefer, you can use the Dry/Wet control to find the right balance between no effect (Dry) and a fully effected signal (Wet).

6   Start playback if needed. Set the Dry/Wet control to the Dry position. Then, slowly increase the Dry/Wet amount to around 80 percent.

7   Stop playback. Close the Distortion window. Turn off the DIM button in the monitoring controls.

> **MORE INFO** You can find more information about the Distortion plug-in or other Fairlight FX plug-ins in the Fairlight FX chapter of the *DaVinci Resolve Reference Manual.*

Choosing Processing Order in the Mixer

Something to consider when applying effects and processing to a track is the order in which you want the signal to be processed. The Order dropdown menu at the top of each channel strip allows you to choose processing order between Effects (FX), Equalization (EQ), and Dynamics (DY). The default order is FX, DY, and EQ. That means plug-ins affect the signal first, then dynamics, and finally EQ. However, when you first started futzing around with the dialogue in this exercise, you started with the EQ. Currently, the Distortion plug-in is the first thing to alter the original signal, followed by dynamics, and then the EQ. Let's start playback again and listen to the results of different processing order options on the signal so far.

1 At the top of the A2 channel strip, click the Order dropdown menu and choose EQ, FX, DY from the bottom of the menu.
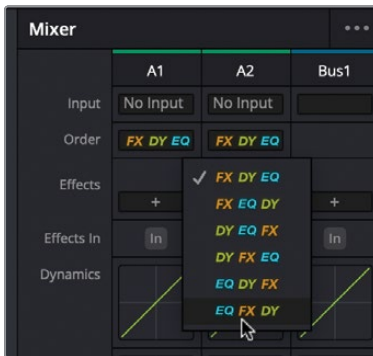
2 Start looped playback and listen to the results when starting with EQ and then FX.

3 Continue playback. In the Order dropdown menu, choose FX, EQ, DY. Listen again.

4 Change the order back to the previous option, EQ, FX, DY, to match the processing order you are using to create the futz track.

5 When you are finished, stop playback.

> **NOTE** Track FX are always processed first, followed by FX, EQ, and DY in whichever order the user defines per track. Keep in mind that changing the processing order may require you to make adjustments to the effects that have already been applied to the track.

Simulating Spaces with Reverb and Echo

Resolve's powerful Fairlight FX Reverb plug-in can instantly add a sense of scale and space to your tracks. This spatial simulation plug-in displays a graphical 3D cube interface, allowing you to control corresponding reflections and reverberations based on the size and shape of the "room." Additionally, various controls let you take a "dry" recording and make it sound as though it's in a live, reverberant space. In this exercise, you'll apply the Reverb plug-in to the A2 track and then test the different presets to find one that best fits the scene. Then, you'll add the Echo plug-in and use the Swirling Close preset in combination with the Reverb to combine the effects.

1 Select the A2 track, if necessary.

2 In the mixer, click the Add Effect button and choose Reverb > Fairlight FX > Reverb to add it to the track.

The Reverb dialog controls are fairly self-explanatory because they're based on the size of a simulated 3D room in which you can adjust the combination of the original signal (Direct), early reflections (ER), and late reverberations (Reverb).

In the upper left of the dialog, the teal-colored 3D rectangle represents the room size. The graph to the right roughly visualizes (from left to right) the reverb's effect on the audio signal. The controls at the bottom let you fine-tune the Reverb timing as well as the Early Reflection tone and Reverb tone. The controls in the lower right adjust the levels of the Direct signal (the white vertical line), Early reflections, and Reverb levels, as depicted on the graph in blue.

Let's start by listening to the first two presets since they provide a great way to see and hear the extreme differences between small and large spaces.

3 Start looped playback. In the Reverb dialog, choose the Bathroom preset. Toggle the Bypass button off and on to hear the track with and without the Bathroom preset.
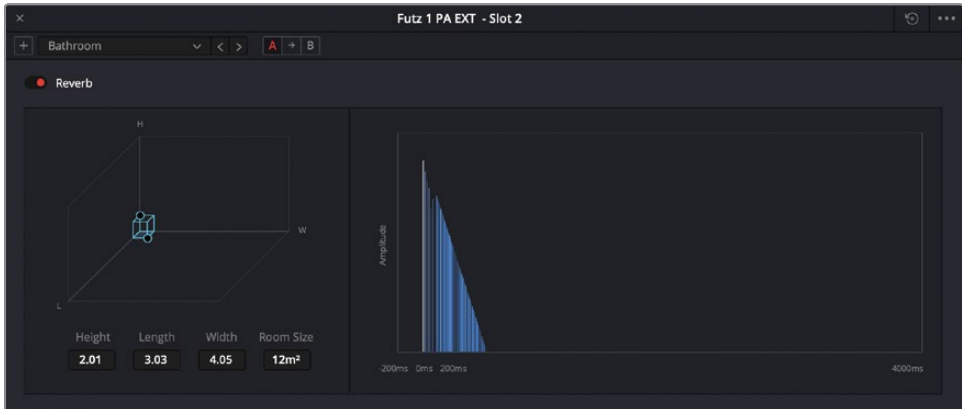
Notice that the quick, reflective sounds from the Bathroom preset give the aural impression of a small space with highly reflective surfaces.

4 Choose the Cathedral preset to hear the enormous-sounding space created by increasing the Reverb Time, Early Reflection tone, and Reverb tone.

Notice that the size of the room displayed to the left correlates to the length of the reverb tail to the right.

5 Try each of the different presets to hear the differences.

6 When you are finished testing different presets, choose the Vocal Width preset.

7 Continue playback and adjust the Output Dry/Wet setting to your preferred level. If you aren't sure of a setting, try somewhere between 25 and 50%.

8 Stop playback.

The track is really coming together. Before adding the last effect, let's take a minute to compare the original dialogue in A1 to the futzed dialogue in A2. This is a great time to use your new Shift-X shortcut to enable Exclusive Solo.

9 Press Shift-X or choose Fairlight > Exclusive Solo.

10 Unmute the A1 track. Click the Solo button on the A1 track.

11 Start looped playback and listen to the original clip. During playback, click the Solo button on the A2 track. Exclusive Solo unsolos the A1 track and solos only the A2 track. Continue listening and soloing one track and then the other as needed to fully appreciate the impact of your futzes. When you are finished, stop playback.

Impressive, right? There is one more thing you could add to the track to emphasize that the speakers are a distance away. A hint of echo combined with the reverb and other effects might work great.

12 Add the Echo plug-in to the A2 track and arrange the floating windows as needed so you can see both the Reverb and Echo controls.

13 Set the Echo panel preset to the TML Surf Scene preset you made earlier.
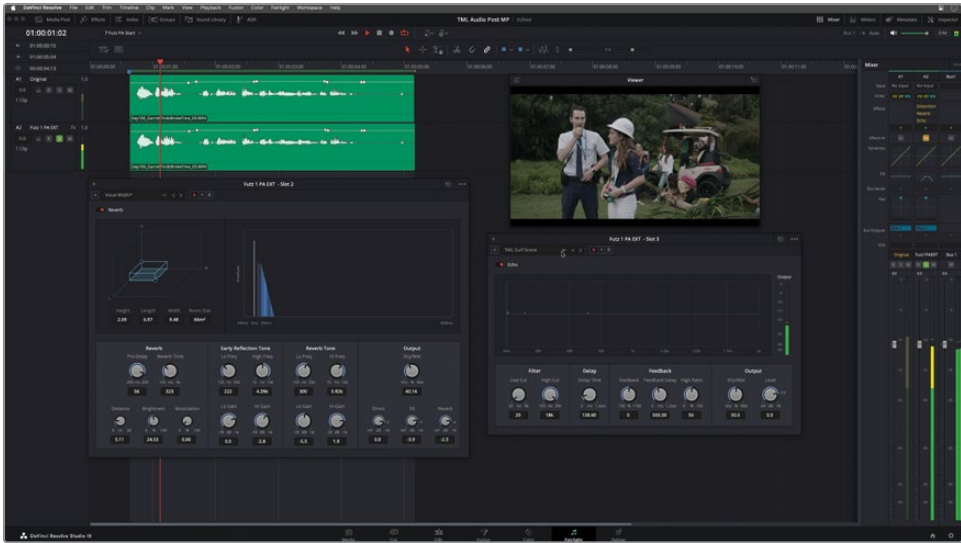
14 Start looped playback. Listen to the futzed dialogue with the added echo.

15 Toggle the Echo Bypass off and on to hear the before and after.

16 Try other presets to see if something works better or modify the existing preset setting. Then, click the Add Preset button to open a dialogue to save a new version of the Echo preset.

17 When you are finished, stop playback and close the Reverb and Echo panels.

Now that you have completed the futz track settings, you can save the entire effects chain as a preset.

Saving and Applying Track Presets in the Presets Library

The Fairlight page in DaVinci Resolve includes a Presets Library that you can use to save track settings and apply them to another track, timeline, or project. In this exercise, you'll save the settings from the A2 Futz 1 PA EXT track so you can apply them to another futz track to modify the settings for a different variation. Then, the next time you need a futz track in a project, you can start with one of your presets and modify it to fit the scene. If you save each variation as you go, you'll eventually have a nice preset collection to work with on future projects.

1 Choose Fairlight > Presets Library to open the Presets Library window.

You'll see a list of tracks in the current timeline on the right and the "Filter by" dropdown menu on the left.

2 In the upper left of the Presets Library, click the "Filter by" dropdown menu to see the presets options.
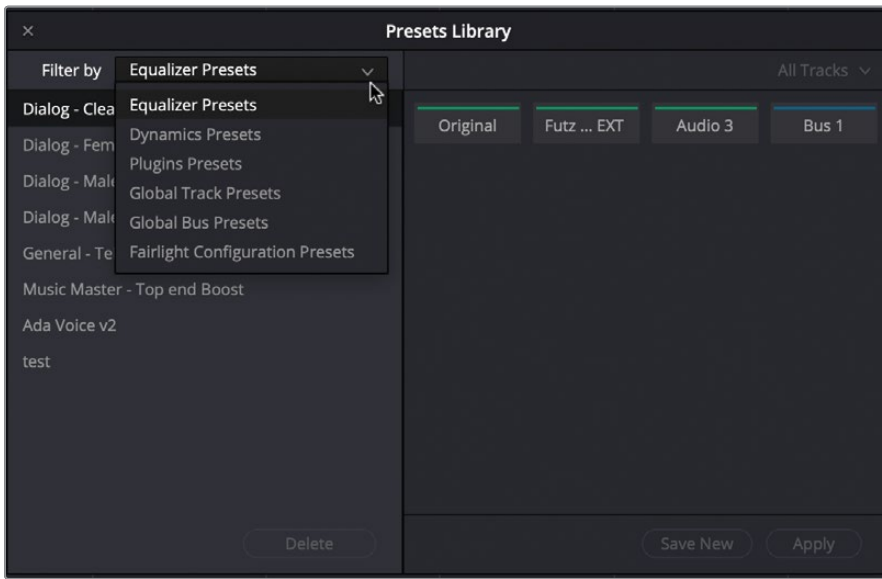
In the dropdown menu, you can save Equalizer, Dynamics, Plugins, and even Global Track, Global Bus, and Fairlight Configuration presets. In this exercise, you'll save a Global Track Preset that includes all track parameters, such as volume, panning, track color, processing, and plug-ins. You'll name the preset Futz 1 PA EXT, not because that is the track's name, but because it describes the cumulative effect: a futz track for an exterior (outdoor) PA system.

3 Choose Global Track Presets.

4 In the Presets Library tracks list, select the Futz…EXT track.

5 Click the Save New button to open the Global Track Preset dialog. Click Create New.
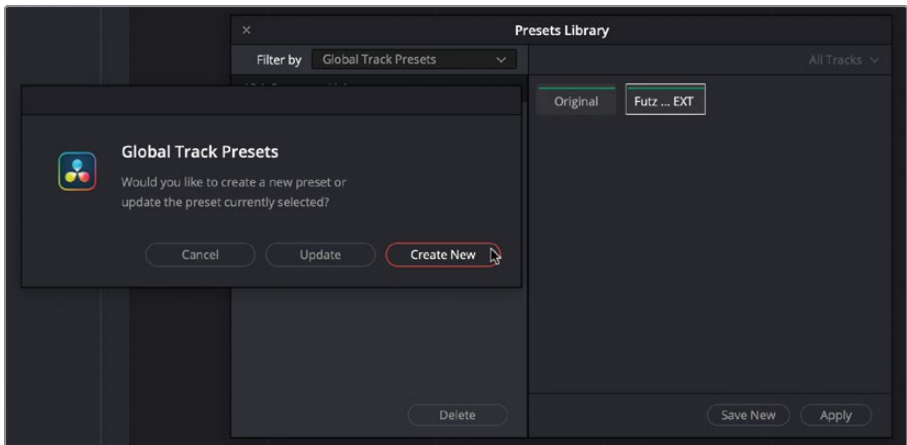
6 Name the preset **Futz 1 PA EXT** and click OK.
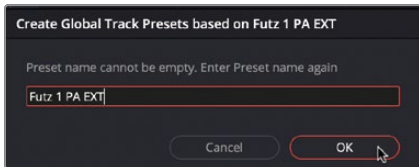
The Futz 1 PA EXT global preset appears in the list to the left of the Presets Library. Now, you can apply that preset to any other track in this or any other timeline. Let's create a new track and apply the preset to it for further futzing.

7 In the timeline, right-click the A2 track and choose Add Track > Mono.

8 In the Presets Library, select the Global Track Preset named Futz 1 PA EXT. Then select the Audio 3 track in the list. Click Apply.
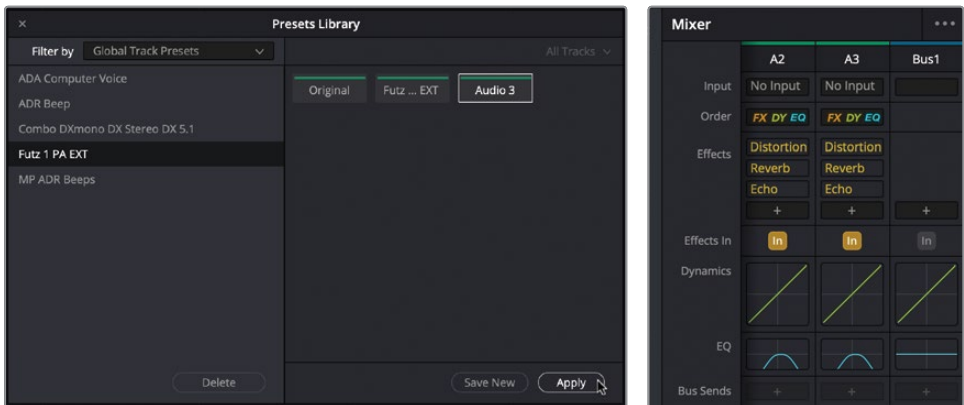
As you can see in the mixer, all the settings are applied to the new track

9 Close the Presets Library.

As you can see, the Presets Library offers a powerful way to save and apply your track settings throughout the post-production process.

> **NOTE** In addition to using presets, you can also duplicate a track to copy all its settings to the duplicate track. To copy, paste, or delete specific track attributes such as plug-ins or EQ, you can use the Copy Attributes, Paste Attributes, and Delete Attributes options available in the track header's right-click contextual menu.

Modify and Save another Futz Preset

Good news! The clients love the sound you created for the exterior PA system for the TML scene. Now that you've applied your Futz 1 settings to the empty A3 track, this is a perfect opportunity to create and save a variation. You'll start by dragging a copy of the clip in A2 to the empty A3 track. Name the A3 track **Futz 2**. Solo the A3 track. Open the control windows for EQ and the plug-ins and modify the effects to taste to design the cumulative futz effect. When finished, save your new global track preset in the Presets Library. Have fun!

Using Modulation to Transform Noise

For creative sound design, such as transforming sounds into robotic voices, spaceship engines, helicopter blades, or ocean waves, the Modulation plug-in is your go-to Fairlight effect. If you enjoyed working with the other plug-ins, you're in for a treat.

In the following exercise, you'll start with a timeline clip that already has effects processing applied to a noise clip, making it sound more like an ocean surf background sound that could be used in the TML surf scenes.

To save time, the noise clip that you recorded in Lesson 4 is already in the timeline. Rather than have you create this effect from scratch, you'll see the steps that were already taken to create this effect. Don't worry; you'll get a chance to create your own waves from the noise effect soon.

1 Open the **7 Sound Design Waves Start** timeline. Show only the timeline, mixer, and Inspector.
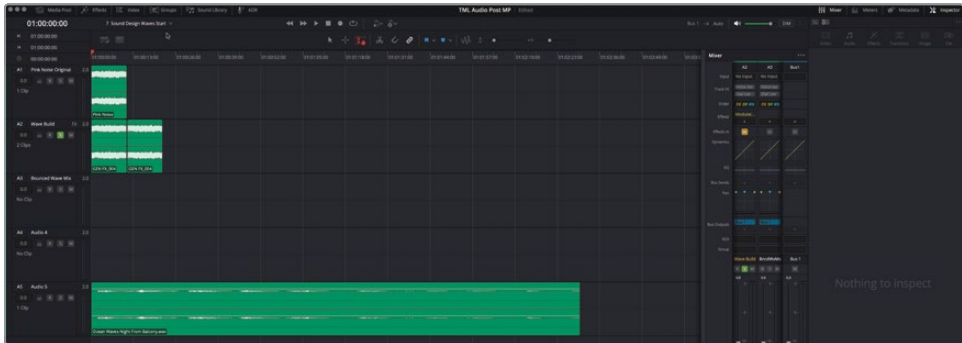
This timeline includes five tracks. Track A1 contains a pink noise clip, just like the one you recorded in Lesson 4. The A2 track is the pink noise clip with various processing already applied.

2 Solo the A2 Waves Build track, if necessary.

3 Click the DIM button to lower playback levels by 15 dB.

4 Select the A2 track to highlight it in the mixer. Select the first clip in the A2 track to show its parameters in the Inspector.

5 Play the clips in the A2 track.

Are you feeling the "ocean" vibe during playback? Clearly, these clips underwent significant sound design upgrades, including a pitch change (-7), high- and low-pass filters to limit the frequency range, and a Modulation plug-in. Obviously, the sound isn't a recording of waves with all the inherent nuances. However, it is a usable generic ocean filler atmospheric sound that could be added to a scene if needed. For example, if characters are inside their vehicle or a building near the beach, this sound could help sell the location.

6 Solo the A1 track to hear the original sound of the pink noise.

7 Solo the A2 track to hear only the affected sound.

Now that you are familiar with the sound, let's look at the Modulation plug-in controls to see what is actually happening under the hood.

Exploring the 4-in-1 Modulation Plug-In

Fairlight's Modulation plug-in includes many of the controls that you may have used in other plug-ins. Plus, as the name suggests, it also has expanded modulation controls. In fact, the Modulation plug-in lets you apply modulation to four elements at once, including the frequency, amplitude, tone, and rotation between the left, center, and right channels. The Modulation plug-in includes an LFO (Low-Frequency Oscillator), a tool that generates a slow, repeating waveform to automatically vary a sound's properties over time. Unlike regular audio signals, an LFO operates at very low frequencies (usually below 20 Hz), making it useful for adding movement, texture, and rhythmic variation to sounds.

If you're wondering what that means, let's look at the plug-in settings. For this example, you'll experiment with the modulation on the A1 track. To save time, you'll use the handy "Copy" and "Paste to Selected" options in the mixer's right-click contextual menu.

1   Solo and select the A1 track. Make sure it is the only selected track.

2   At the top of the mixer, right-click the A2 at the top of the channel strip and choose Copy from the shortcut menu. Right-click the A2 again and choose Paste to Selected.
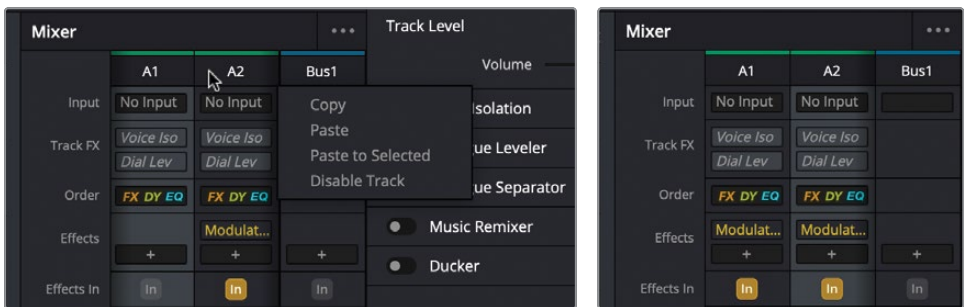
The Modulation plug-in and all other track settings from A2 are pasted on the selected A1 track. In this case, the only effect applied to the track was the plug-in. Pitch and EQ changes were applied to the clip.

3 In the A1 Channels strip, click the Controls button on the Modulation plug-in to open the Modulation window. Reset the plug-in.

The colorful graph shows the original sound in teal and the modulated pattern from the LFO in blue. The parameters below the graph affect the LFO, which in turn affects the sound of the signal.

4 Mark the clip in the A1 track and start looped playback to hear the default sound. In the Presets pop-up menu, choose Auto-Pan.

As you can see and hear, the Rotation parameters show that the oscillator is moving back and forth between the left and right channels. Let's narrow the frequency range on the clip.

5 Open the EQ window for the A1 track. Choose the "General – Telephone effect" preset. Press the Esc key to close the EQ window.

6 In the Modulation window, choose the Doppler preset to hear a Doppler effect applied to the signal.

If you've ever heard an emergency vehicle pass you with sirens wailing or watched an airplane fly overhead, you've experienced a real-world Doppler effect. It's the perceived upward shift in frequency as a sound source approaches you and the downward shift in frequency as the source moves away from you.

Just as in the real world, the Doppler preset applies the necessary change in pitch as the sound travels between channels. If this reminds you of the ocean waves sound, it should. This is the preset used to create the waves.

Looking at the green modulation bars in the Modulation parameters, you can see that the Doppler effect preset requires modulation in all four of the control areas: Frequency, Amplitude, Filter, and Rotation.

7 Apply each of the remaining presets to hear the default modulation effects on the noise signal. Some of the presets work much better on an actual audio signal, such as a voice or animal sound.

Tremolo is a common effect used in music recording and stage performances that applies an oscillator to the amplitude (volume level). As you can hear with this modified noise clip, the Tremolo sounds like a fast-moving distant locomotive engine. However, with a few adjustments to the rate, it could easily sound like rotor blades.

8 Choose the Doppler preset. Stop playback. Close the Modulation window.

You'll modify this to make your own wave sounds in a few minutes. Meanwhile, let's go back to the A2 track, where you'll use new techniques to duplicate the clip and bounce a version of a finished sound effect.

Bouncing the Mix to a Track

In Lesson 6, you bounced clip effects as a clip in a new layer. In this exercise, you'll bounce the mix containing all the audible clip and track processing to the A3 track in the same timeline. This is a common audio mixing technique used to create stems and consolidate multiple tracks into a single clip. In this case, you'll first mark the clips in A2 and duplicate them to make a longer sound effect. Then, you'll bounce the play range to a new track.

1 Solo the A2 track. Unsolo the A1 track if necessary.

2 In the Timeline toolbar, click the Focus Mode button.

3 With the multi-tool, select the first clip in the A2 track. Shift-click the second clip to select both.
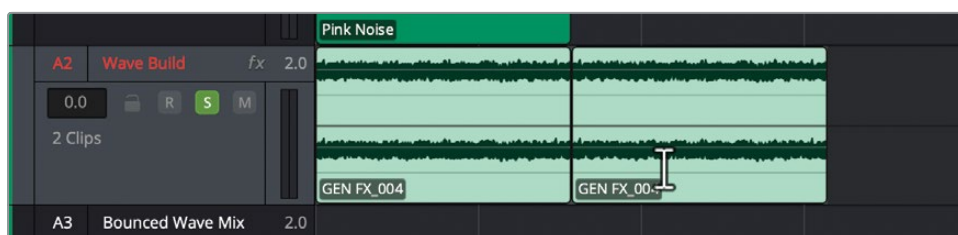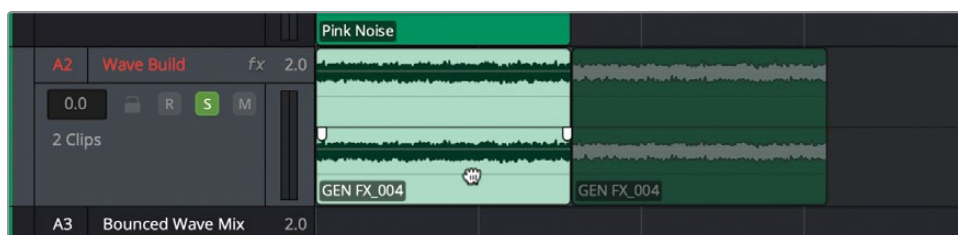
4 Choose Edit > Duplicate Selection or press Shift-Command-D (macOS) or Shift-Ctrl-D (Windows).

5 Duplicate the selection again until you have six clips back-to-back in the A2 track.

6 Shift-select the first clip in the A2 track to select all the consecutive clips.
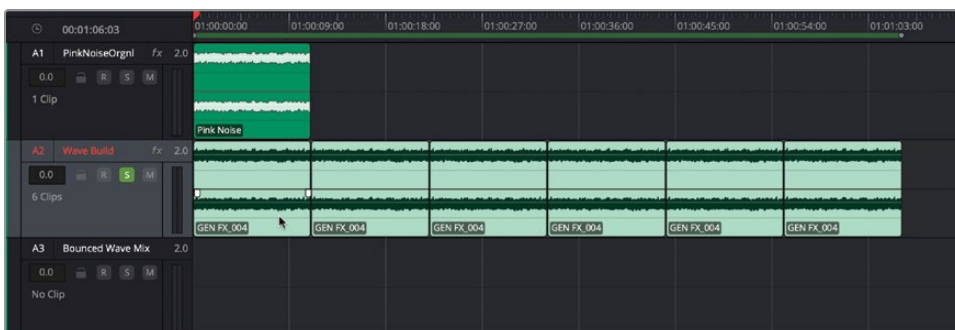
7 Play the A2 track to hear the extended effect and verify that all plug-ins and processing are still working.

8 Choose Timeline > Bounce Mix to Track to open the Bounce Mix to Track dialog.
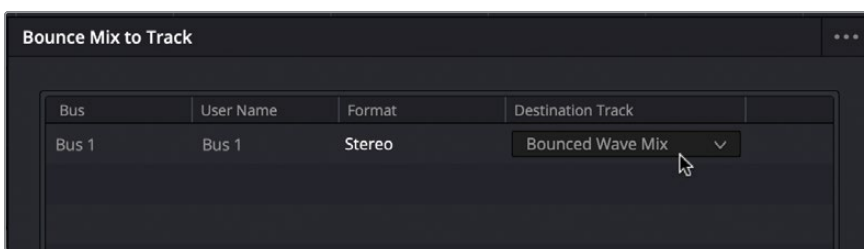
9 In the dialog, in the Destination Track dropdown menu, choose the A3 Bounced Wave Mix.

10 The Bounce Mix to Track dialog shows that the Bus 1 output bus, named Bus 1, will be bounced to a new destination track.

> **TIP** Before you bounce a mix to a track, it's a good idea to make sure that the appropriate tracks are soloed or muted. In this case, you are only bouncing the A2 track, so you want either the A1 track to be muted or the A2 track to be soloed.

11 Click OK.
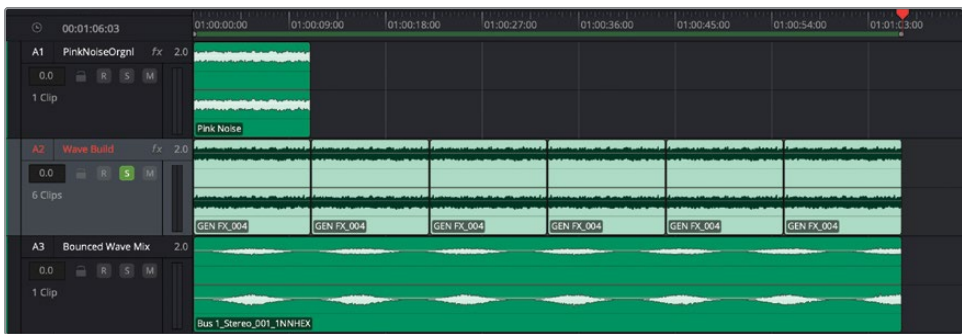
The new bounced clip appears in the A3 track and the selected bin in the media pool. Notice that the bounced clip in the timeline is exactly the length of the current play range.

12 Solo the A3 track to listen to the bounced sound effect.

13 Clear the play range.

Your simulated ocean wave sound effect is finished and ready to use in any of your other timelines.

Congratulations! You've created an original sound effect from a simple pink noise recording. Keep in mind that plug-ins are creative tools, and the more you use them, the easier they are to work with. That said, look at what you've accomplished so far in just one lesson. Impressive.

> **NOTE** Atmospheric sounds are background noises that help create a sense of place, mood, and realism in a scene. They include natural sounds such as rain, wind, or birds; urban noises like traffic or distant chatter; and indoor ambiences like air conditioning hums or office murmurs. These sounds fill the silence between dialogue and effects, making scenes feel more immersive and believable in films, TV shows, video games, and podcasts.

Design and Bounce a Wave

It's time to take what you have learned and make your own wave sound effect. To simplify your efforts, you can duplicate the 7 Sound Design Waves Start timeline. Change the name of the duplicate timeline to your initials plus **Waves**. You can add new tracks to work with, copy and paste clips already in this timeline, or delete everything but the clip in the A1 track. However you choose to tackle this challenge, it's a good idea to clear all attributes from the A1 clip and track. Once it's back to standard pink noise, you're ready to proceed.

To get started, choose File > Project Notes. Here, you'll find a recipe to turn pink noise into ocean waves in under 5 minutes!
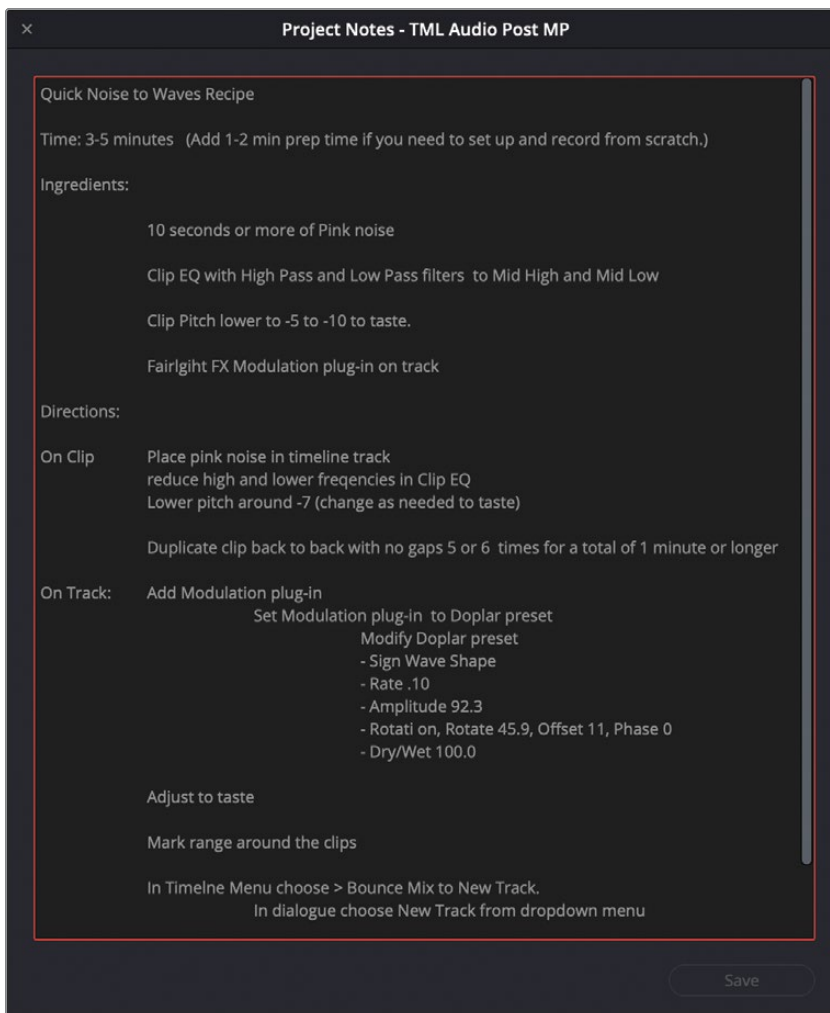
Using Pitch and Time to Alter Sound

Pitch and time are fundamental tools in sound design, allowing designers to manipulate audio creatively for storytelling and realism. As you discovered in the previous lesson, pitch shifting alters the frequency of a sound, making it higher or lower, which is often used to create character voices (for example, deepening a monster's roar or raising the pitch for a chipmunk-like effect). It can also simulate size perception: lower pitches suggest larger objects, while higher pitches imply smaller ones. Time manipulation, including reversing a clip, time-stretching, and compression, changes the speed or duration of a sound without affecting its pitch (or vice versa). This is crucial for synchronizing dialogue, creating slow-motion effects, or extending an atmospheric element without altering its tonal qualities. By creatively adjusting pitch and time, sound designers can transform ordinary recordings into fantastical, exaggerated, or hyper-realistic sounds that enhance a scene's emotional and narrative impact.

Zombies, dinosaurs, aliens, and dragons are always popular in films and television, but recording these creatures live is neither practical nor possible. In this series of exercises, you'll explore real-world sounds—such as dragging furniture, opening umbrellas, and human voices—and discover how pitch and time manipulation can transform everyday noises into dragon roars, wing flaps, and other fantastical effects.

First, you'll restore a new project archive created specifically for this lesson.

1   Open the Project Manager, right-click, and choose Restore Project Archive. Select R19 Fairlight Book Media > R19 Fairlight Part 3 > **Sound Design Original SFX Builds.dra**. Click Open.
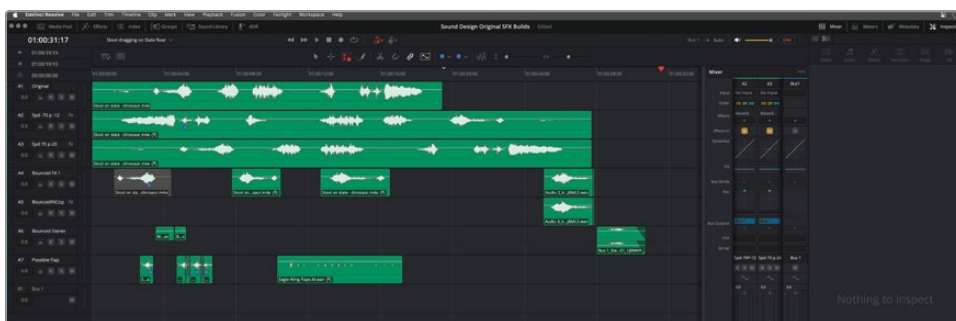
The project opens with the "Stool dragging on Slate Roar" timeline showing. This timeline is an experimental workspace for testing different common pitch and time techniques to transform the sound of a stool dragging on a slate floor into a dragon roar.

2   Hide all panels except the timeline, mixer, and Inspector.

3 If necessary, turn on Exclusive Solo. Then Solo the A1 Original track.

A glance at the waveforms in these tracks shows that the clips are loud, so it's a good idea to either turn down the listening levels or DIM the monitoring controls.

4 DIM the monitoring controls if needed.

5 Play the clip in the A1 track to hear the original sound.

Did you notice how the waveform at the end of the clip has a Jurassic predator, dragonesque roar? Incidentally, it was that same roaring barstool sound erupting from the kitchen that inspired further investigation into the draggin' dragon possibilities.

Reversing a Clip in the Timeline

One of the easiest and most common time-altering techniques is to reverse a clip. In the Fairlight page, you can reverse a clip in the timeline or the Inspector. In this exercise, you'll duplicate the A1 track and reverse the clip using the right-click contextual menu.

1 Right-click the A1 track header and choose Duplicate Track.

2 Change the name of the A2 track to **Reversed**.

Why use such a literal track name? When experimenting with sound design techniques, it's a good idea to label as you go. This helps you keep track of the changes and remember what you did when you revisit the timeline later.

3 Right-click the clip in the A2 Reversed track and choose Reverse Clip from the menu.

4 Solo and play the clip in the A2 track to hear the results.

As expected, the reversed clip sounds like the opposite of the original clip. It's interesting how the first "roar" sounds as good backward as it does forward. Perhaps combining the two versions would be a good idea. Let's add that to the list of things to try.

Applying Speed Changes
to a Clip in the Inspector

Previously, you reversed a clip with the Reverse Clip option in the right-click contextual menu. In this exercise, you'll use the Speed Change controls in the Inspector to manipulate its direction, speed, pitch, and duration. To duplicate the clip, you'll use the Option-drag method (Alt-drag for Windows) to simultaneously duplicate and move the duplicate clip to a new position.

1 Duplicate the A2 track. Keep the name Reversed Copy for now.

2 Select the clip in the A3 track to show it in the Inspector.

3 In the Inspector Audio panel, click the Speed Change header to expand those controls.
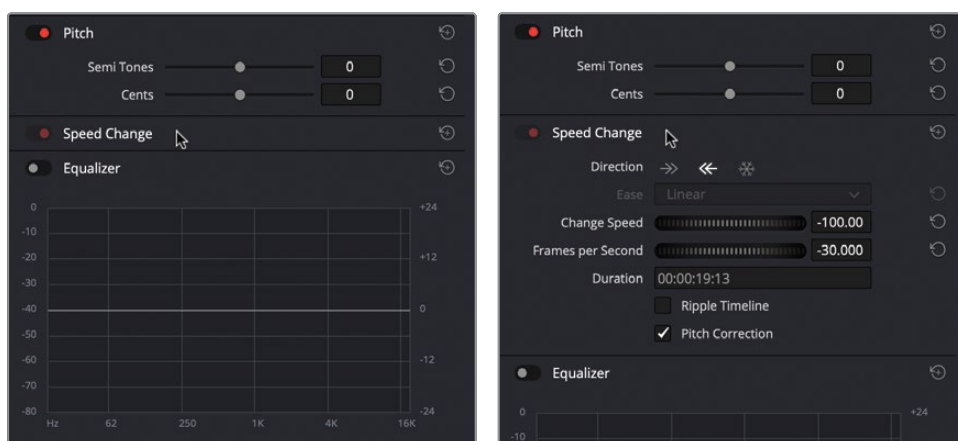
The Speed Change options include controls to change the Direction, Speed, Frames Per Second, and Duration of the selected clip. Two additional options are important for sound design: Ripple Timeline and Pitch Correction.

4 Select the Ripple Timeline option.

Doing so changes the duration of the clip in the timeline. If you leave the Ripple Timeline option deselected, the clip retains its current length, but the waveforms reflect the speed change, and any additional material is included in the visible portion of the clip.

The Direction controls include three icons that indicate the current direction: Forward, Reverse, or Freeze. Currently, the Freeze control is only used for video freeze-frame control.
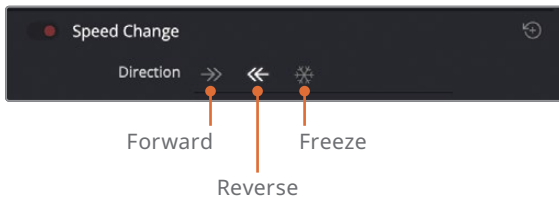
5 Locate the Reverse button (arrows pointing left), which indicates the clip has been reversed.
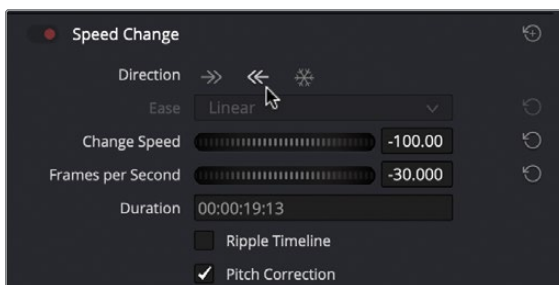
Notice the Speed Change (speedometer) badge in the clip header, which indicates that the clip has a speed change. The same badge appears when using the Elastic Wave tool to change a clip's speed.

6 In the Inspector, locate the Change Speed dial and field. This shows the speed is -100.00.

7 Click the Forward button (arrows pointing right) to return the clip to 100.00 speed.

Any changes you make to the speed will be indicated as either positive or negative numbers, depending on whether the clip is playing forward or in reverse.

8 Drag the Speed % dial toward the right to lower the speed and increase the duration. Listen to the clip.

9 Drag the Speed % dial toward the left to raise the speed and decrease the duration. Listen to the clip.

10 Click the Reset arrow to the right of the Speed % dial to reset the clip's speed to 100.00.

Reset will also change the direction to 100.00 forward.

11 Click the Reverse button to reverse the clip again.

That concludes your quick tour of the speed controls.

Applying Pitch Changes to Clips

In the previous lesson, you applied pitch changes to the dad's dialogue to lower his voice slightly. In this exercise, you'll make much more dramatic pitch changes to the reversed clip in the A3 track. Specifically, you'll lower the pitch by at least a full octave or more and listen to the result.

1 Mark the clip in the A3 track, if necessary. Then select the clip to show it in the Inspector.

2 In the Inspector, lower the pitch of the selected clip to -24 semitones, which is two full octaves.
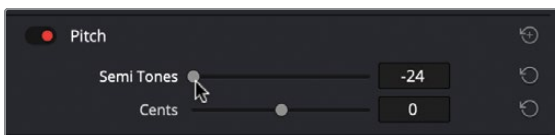
3 Play the clip.

Interesting.

4 Change the pitch to -12, which is only one octave lower than the original sound. Play the clip. Feel free to try different pitch settings. When you are finished, return the pitch to -12.

The clip sounds better at -12. Interestingly enough, another section of the waveform sounds more promising when played in reverse and pitched down to -12.

5 With the Focus mode multi-tool, drag a selection around the last large waveform at the end of the reversed clip in A3.
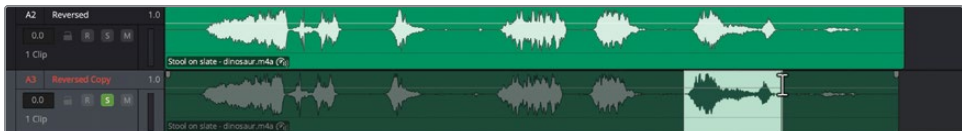
6 Play the selection.

The beginning of that selection sounds great. Let's copy it and paste it to a different track for experimentation.

7 Right-click the selection and choose Copy.

8 Add a Mono track at the bottom of the timeline.

9 Select the new A10 track and paste.
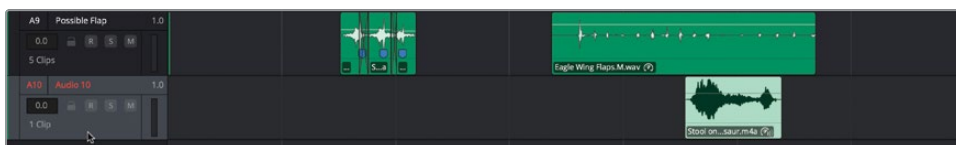
The pasted clip appears in the same position as it was in the A3 track. The clip changes are the same for both A3 and A10, so let's name the tracks accordingly.

10 Name the A10 track **Spd-100 p-12** to indicate the changes applied to the clip in that track.

11 Copy the A10 track name.

12 Select the A3 track name and paste.

Before moving on to the next timeline, take a moment to listen to the clips in the A4 and A5 tracks. Based on the track names, you can see that the clips have a -12 pitch with a speed of -70 and 70, respectively.

13 Listen to the clips in the A4 and A5 tracks.

You are now armed with the skills to change clip speed (time) and pitch as needed for creative sound design. Now, let's look at a different example of using pitch to transform a clip.

Using Pitch to Change Human Voices into Dragon Vocals

In this exercise, you'll work with a timeline containing the original recordings of three willing college film students attempting to record dragon sounds at the request of this author. Kathryn, Jack, and Vicente recorded these sounds in a podcast recording room along with their voiceover parts for the podcast intro. Let's open the timeline and listen to some of their dragon vocals. Then, you'll apply pitch changes to hear the dramatic results.

1   In the media pool, locate the Dragon Roar and Vocals bin.

2   Open the **Dragon Roar and Vocals** timeline. Hide the media pool.

3   Show the mixer and Inspector.
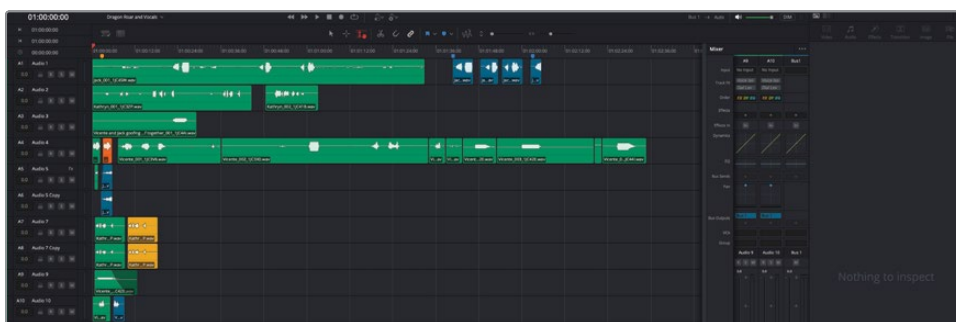
Let's start with the first track, which contains a long clip of Jack's first attempt to roar with a lot of coaching (and laughs) from his companions. The blue clips at the end of the track are the best roars copied from the original clip and pasted into the same track.

4   Solo the A1 track and play some of the first clip to hear the original recording session.

As is, there is no hint of a dragon or dinosaur in the track. The sound is completely human, no matter how loud the vocalization.

To transform the clip, all you need to do is lower the pitch to its full extent of -24. Instead of applying the pitch change to the full clip at the beginning of the track, you'll select and change all the blue clips at once.

5   In the A1 track, drag a selection that includes all four navy blue clips.
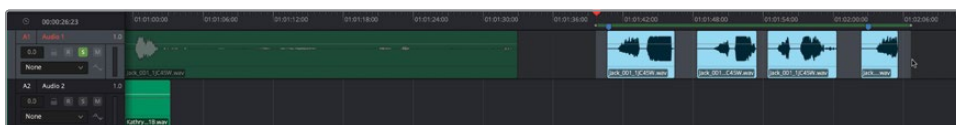
The Inspector indicates that multiple clips have been selected.

6 Set the Pitch to -24 Semi Tones. Play the selected range.
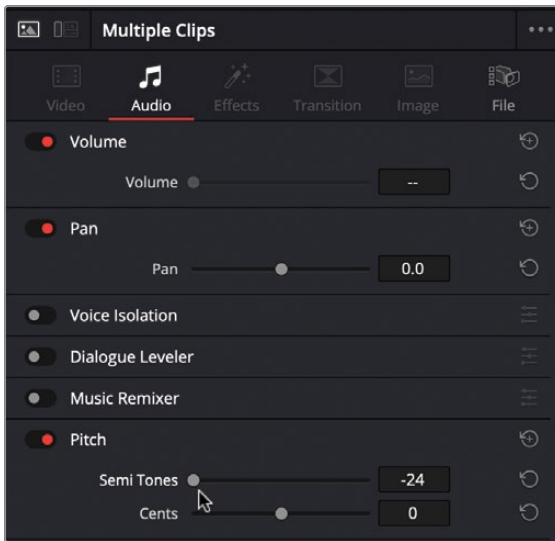
Dragon!

Just like that, the clips sound more like they are coming from a dragon or dinosaur than a human. Let's try another track. This time, you'll listen to Vicente's dragon vocals on the A4 track. The orange clip near the beginning of the A4 track is a duplicate of the first clip in the track with the pitch changes already applied.

7 Solo the A4 track. Play the first two clips to hear the original sound, followed by the pitched -24 Semi Tones version.
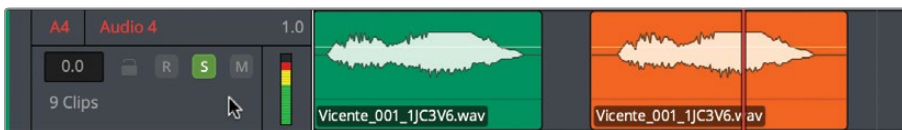
If you liked that, you will love the next clip.

8 Play the third clip in the A4 track.

9 Select the clip and lower the pitch by -24 Semi Tones.

10 Play the pitched clip.

Once again, these vocals sound more like they are emitted from a lion or large-winged fire-breathing reptile than a human.

Doubling a Track to Thicken the Sound

Another common sound design and mixing technique is to double a track to "thicken" or "fatten" the sound. Doubling a track involves duplicating the contents of one track into another track and adding effects to one or both tracks. The combination of the two tracks sounds thicker and richer than the original. This technique is commonly applied to instrument tracks and background vocals in music production, as well as to ethereal voices and sound effects in audio posts. In this exercise, you'll work with dragon vocals that have been duplicated to two tracks and apply pitch changes and other effects to thicken the sound. First, let's listen to a finished example in the A5 and A6 tracks. Then, you'll apply different pitch changes to Kathryn's dragon vocal clips in A7 and A8.

1   Press Shift-X or choose Fairlight > Exclusive Solo to turn off that mode.

2   Solo that A5 track. Play the first clip to hear Jack's original recorded sound.
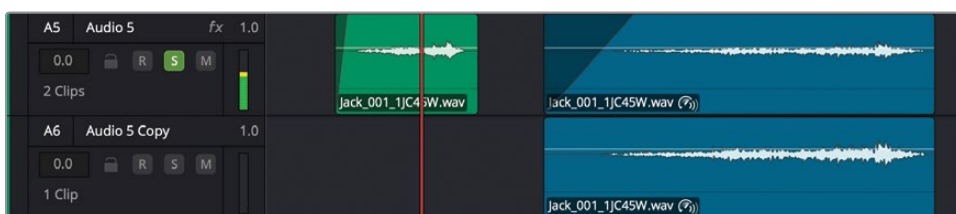
The navy blue clip in the A5 track has been stretched and pitched.

3   Select the navy clip in the A5 track to see the settings in the Inspector.
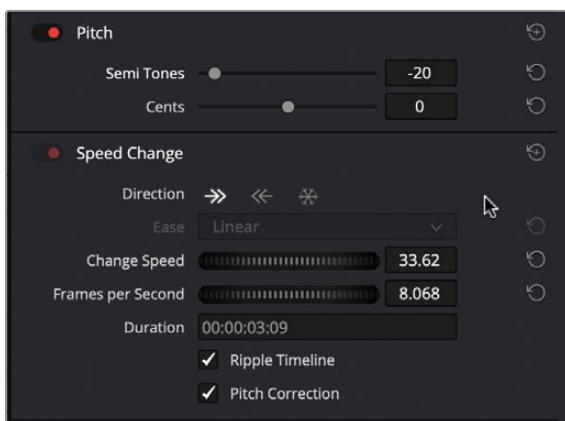
In the Inspector, you can see that the pitch is -20, and the speed has been slowed to 33.62.

4 Play the navy clip in the A4 track to hear it with the changes.

5 Solo the A6 track, select the navy clip, and look at the Inspector settings.

This version of the clip has the same speed but a different pitch of -24.

6 Turn off the DIM button in the monitoring controls so you can hear the thickened roar as intended.

7 Make sure that both A5 and A6 are soloed.

8 Play the navy clips in the A5 and A6 tracks.

Awesome! The slight variation in pitch between the two tracks gives the sound more character than if you simply double the identical sound. Let's try another!

9 Solo only the A7 track.

10 Play the green clip.

This is Kathryn's unaltered dragon vocal, where she opted to make unusual vocalization calls instead of roars. These are the types of sounds you hear in nature between animals of the same species. Let's listen to the yellow clips, which are the doubled and pitched versions of the original sound.

11 Solo the A8 track.

12 Play the yellow clips in the A7 and A8 tracks together to hear the doubled sound.

Hmmm. This time, the doubled clips aren't working together as a single sound because the pitch difference between them is too great. In this case, the yellow clip in A7 is pitched to -24 while the A8 clip is pitched to -6.

13 Change the pitch on both yellow clips so that one is -20 and the other -16.

14 Play the clips together to hear how they sound.

Much better. Feel free to experiment with the pitch settings and clip levels for the doubled clips.

Creating a Front-to-Back Extended Sound

The last technique that you'll explore in this timeline involves editing together a clip to the reversed version of itself to create an extended effect. As with the other techniques, you can create this type of effect in a few simple steps. For this exercise, you'll work with the last navy clip on the A1 track.

1 Solo only the A1 track.

2 Use the Focus mode multi-tool to select the last navy clip in the A1 track.

3 Zoom horizontally for a clear view of the selected clip.

4 Choose Edit > Duplicate Selection or press Shift-Command-D (macOS) or Shift-Ctrl-D (Windows) to duplicate the clip.
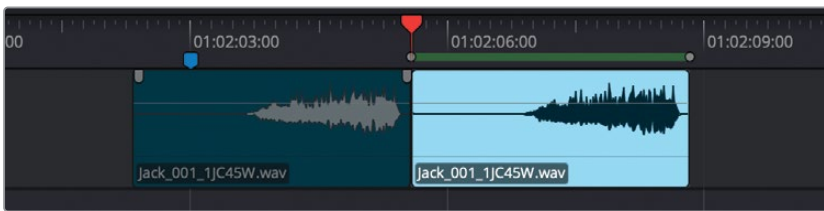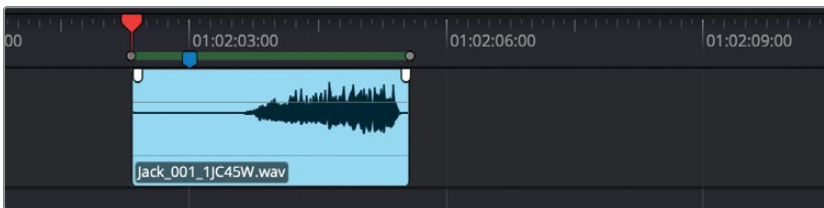
5 Select the duplicate clip and reverse it. Then, trim the inside edge of both clips to remove the last part of the first clip and the first part of the second clip to the loudest point in the waveform.
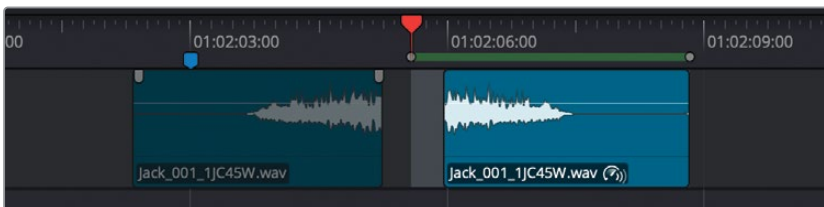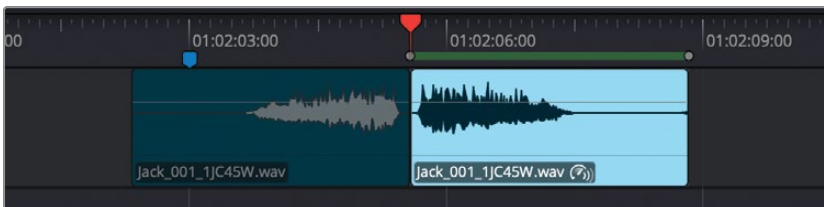
6 Drag the two clips together to remove the gap between them.

7 Right-click the edit point between the first and second clip and choose Add 12 frame Crossfade.
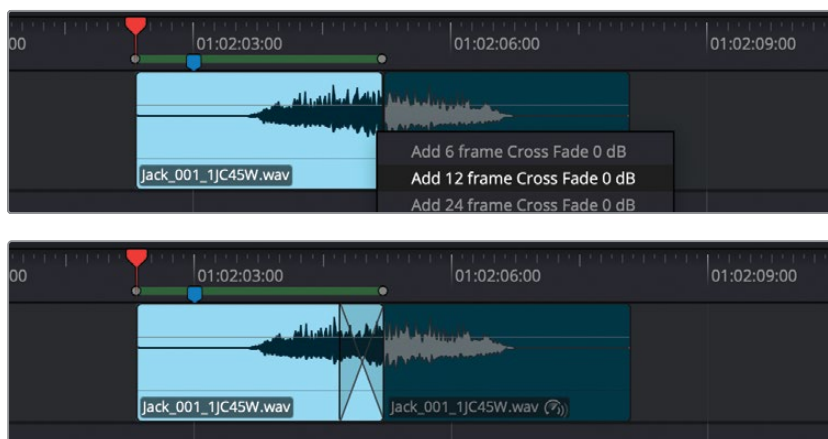
8 Adjust the crossfade to taste. Play the clip.

It sounds great, but it just needs a pitch change.

9 Select both clips and lower their pitch to -24 Semi Tones.

10 Play the final extended clip.

Nice! Now all you need to do is bounce the final effect to a new layer.

11 Drag a range around both clips in the extended clip effect.

12 Choose Timeline > Bounce Selected Tracks to New Layer.
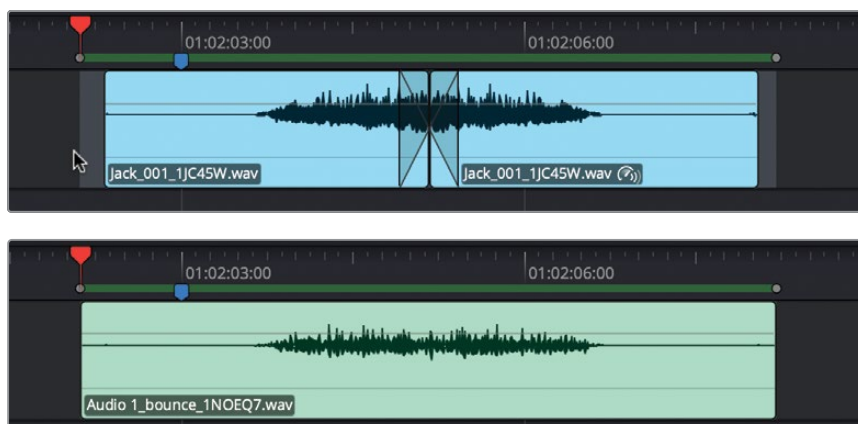
A new green clip appears in a new layer above the navy clips.

13 Drag the bounced clip down to the A2 track.

14 Solo the A2 track and listen to the finished clip.
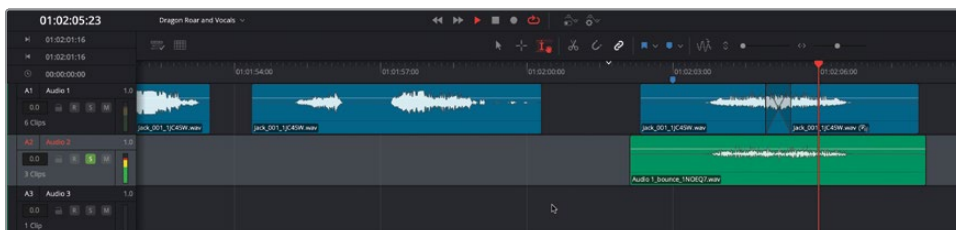
Now *that* is a great roar! And another original sound effect that you created right in the Fairlight page.

> **NOTE** The phrase *doubling a track* once referred to creating two versions of a track in tape-based music recording. However, when using digital audio workstations, you can make as many tracks as you need to thicken and enhance your sound.

Analyzing Multilayered Sound Effects

You now have the basic editing and sound design skills necessary to start building multilayered sound effects. These effects aren't more difficult to create; they just require more steps. Think of making multilayered sound effects like making a multilayered dessert, such as a birthday cake. To achieve this, several steps are required: mixing the batter, baking the cake, preparing the icing, assembling the cake, and decorating the finished dessert. When you build multilayered effects, you must gather sounds (ingredients), build each section and add effects, bounce elements to create a finished (baked) clip, and add final effects to create a polished result. Fortunately, you've already learned all the skills needed to create dynamic, layered effects. Now, it's time to put them into practice. In this exercise, you'll first analyze a completed multilayered dragon wing flap effect and then create your own version.

1 In the media pool, select the Dragon Wings bin to see the associated timelines.

2 Open the **Original Dragon Wings Finished** timeline.
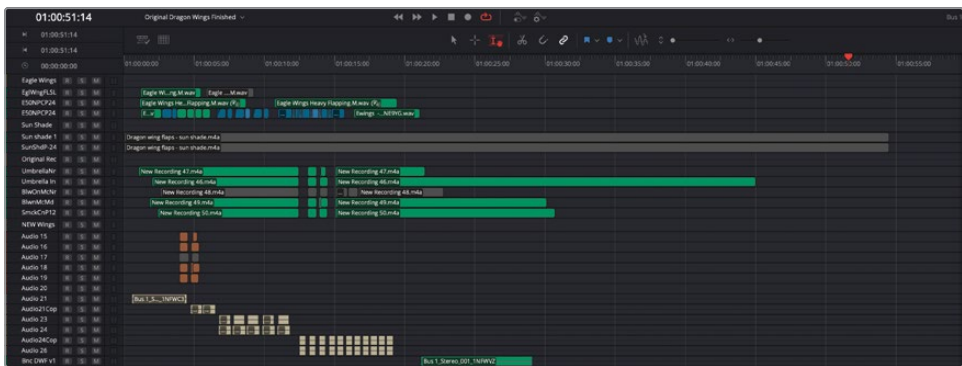
This timeline includes the elements to create the flapping sound of dragon wings for the Post Park Normal podcast intro. Rather than walk you through the process from start to finish, let's reverse the process and start at the end, working backward from the bounced clip in the A27 track.

> **NOTE** The timeline represents the author's experimentation to record and create an original dragon wing flapping sound from everyday household items.

3 Solo the A27 Bnc DWF v1 track. Play the clip.

4 Increase the height of the A27 track and zoom as needed for a better view of the bounced clip.
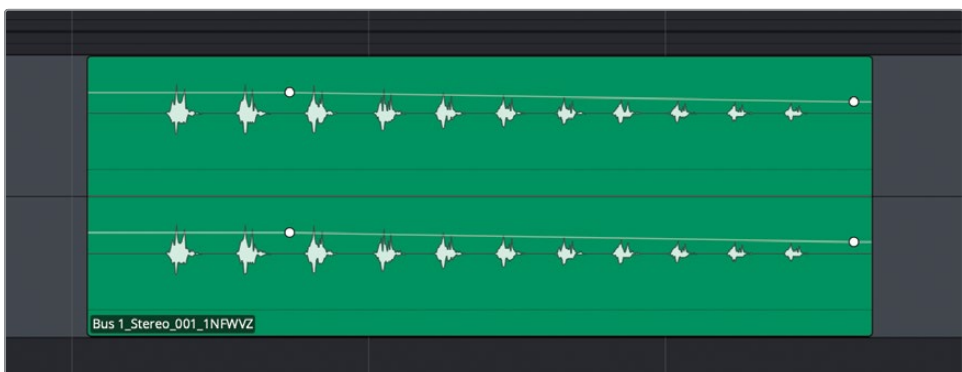
In the clip's waveform, you can see the individual flaps. You can also see that the flaps gradually get closer together and quieter over time, as if the dragon is picking up speed as it flies away. This clip is the clean effect, meaning the focus is on the flaps rather than additional sound design elements such as echo, reverb, and other effects.

5   Unsolo the A27 track.

Now, let's focus on the group of beige clips in A21 through A26. This will be a great opportunity to use the Smart Zoom shortcut you created at the beginning of the lesson.

6   With the multi-tool, drag a selection around the beige clips in A21–A26. Press Shift-E to Smart Zoom the timeline selection.
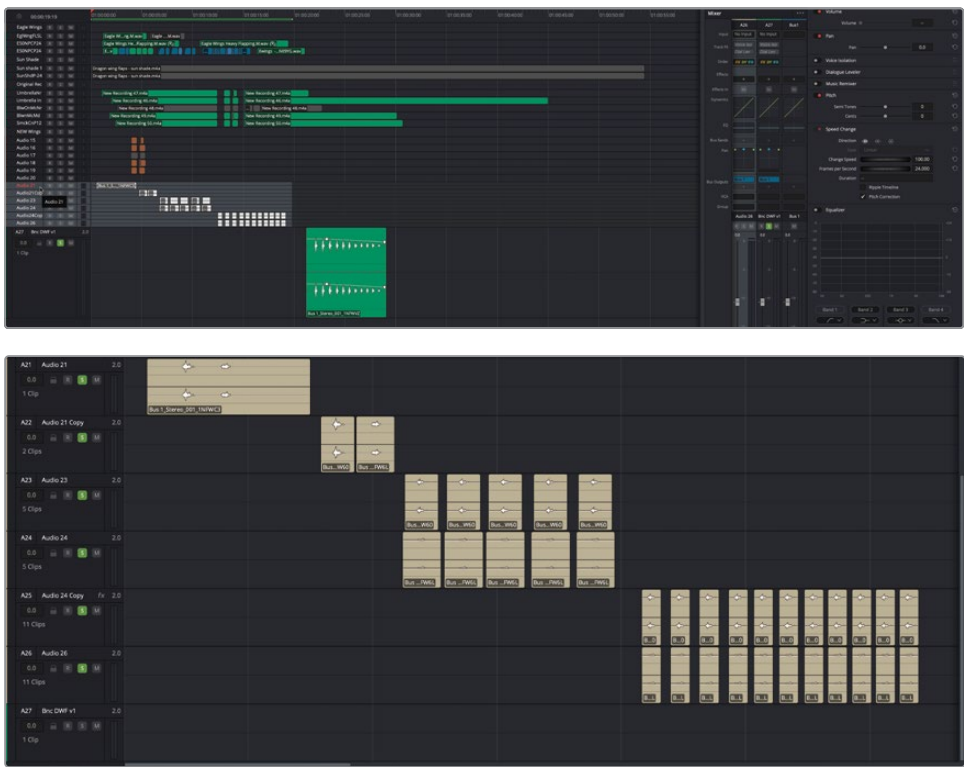
> **NOTE** From this point forward, you'll simply be asked to Smart Zoom the selected clips.

7   While the tracks are selected, Option/Alt-click the Solo button on one of the selected tracks to solo all the selected tracks.

8   Deselect the clips and solo the A25 and A26 tracks. Play the clips in the soloed tracks.

These are a combination of the best two flaps overlapping to create a more interesting flap sound. These were copied and pasted into a pattern, as shown, that was then bounced to the A27 track as the complete v1 sound effect.

9   Play the clips in the A23 and A24 tracks.

These tracks were used for experimenting with the placement of the overlapping clips and the timing between flaps. The winning stack of clips was copied and pasted into the A25 and A26 tracks, trimmed, and duplicated to make a pattern.

10 Play the clips in the A21 and A21 Copy tracks.

As you may have guessed, these were the best "takes" of the multilayered sounds that were bounced into a single stereo clip in A21 and then edited into two individual flap sounds in A22.

Next, you'll unsolo the beige tracks and solo the brown tracks. You could simply swipe the Solo buttons off and on as needed. However, this is also a great time to practice the "do to all" and "do to all selected" modified click maneuvers. You've used both modified click combinations in earlier lessons, and they will come in handy in the next lesson.

11 Option-Command-click (macOS) or Alt-Ctrl-click (Windows) one of the active Solo buttons to deselect all Solo buttons.

12 Select the brown tracks A15–A19. Option/Alt-click the Solo button on any of the selected tracks to turn them all on.

13 Smart Zoom the brown clips or zoom as needed until you can clearly see the clips in the brown tracks.

14 Play the brown clips.

These clips represent the two best multilayered sounds, which were copied and moved to lower tracks from the stacked original recordings. Next, you'll look and listen to the original recordings that make up the multilayered flap sound.

15 Solo only the green A9–A13 tracks.

16 Zoom as necessary to see the track headers and clips in the soloed tracks.
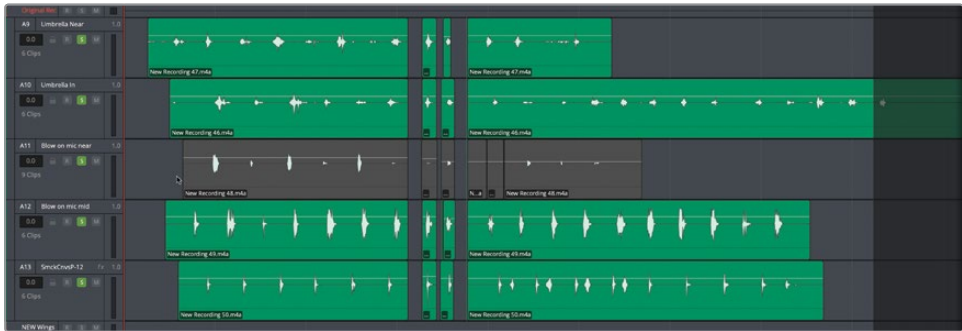
These tracks are named after the recording source in the order that they were recorded. Starting from top to bottom:

— A9 Umbrella Near is a recording of a large golf umbrella opening with the microphone placed outside the umbrella.

— A10 Umbrella In is a recording of the same large umbrella opening with the microphone placed inside the umbrella when it opens.

— A11 Blow on mic near is a recording of the author blowing directly on the microphone. This was overblown and didn't work, so the clip was disabled.

— A12 Blow on mic mid – This was the author blowing at the mic from a foot away. Most of these takes were also overblown, but there were a few keepers where the breath sound works to emulate the woosh of air caused by the movement of massive dragon wings.

— A13 Smack Canvas p-12 is exactly as the name suggests. It is the sound of smacking a taut canvas inversion table. The clip was also pitched lower by one octave (-12).

Cumulatively, aligned and played together, these clips create a pretty good dragon wing flap. With some added creative sound design, you could really transform these into something awesome.

Notice the stack of clips near the middle of the tracks that have been separated from the rest. These two clip stacks are composed of cumulative clips that aligned perfectly to create a "flap" sound.

> **NOTE** With the luxury of time and curiosity, you could manually pick and choose the best of each track and create your own series of flaps from the same recordings.

17 Select and play the two stacks of clips among the A9–A13 tracks to hear the first incarnation of the multilayered dragon flaps.
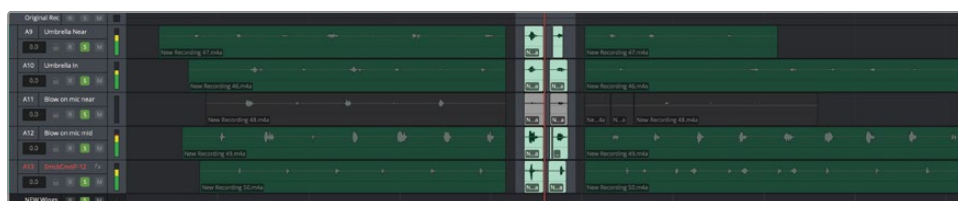
18 When you are finished, unsolo the tracks and clear the selection.

What about the upper tracks, A2–A7? These were purely experimental. Tracks A2–A4 feature tests using Eagle Wings sound effects from the Fairlight Sound Library. The verdict? Eagles might be majestic, but their wing sounds didn't quite work for dragons. As for tracks A6 and A7—well, let's just sum them up in one word: fail. The first attempt at creating dragon wing flaps involved recording the opening of a spring-loaded windshield sunshade. It seemed like a great idea at the time... but let's just say the results were less than legendary.

Another Original Dragon Wing Flap Sound Effect

Now it's your time to shine! Unleash your creativity, sound design skills, and dragon wing expertise to craft your very own dragon wing flapping sound effect. You have two options: work in this timeline with all the steps laid out for you or dive into the Original Dragon Wings v2 timeline, where the lower experimental tracks are empty. You'll need to figure out the bouncing and layering on your own.

Whichever path you choose, experiment freely. Take your time—there's no rush since this step is outside the guided lessons. The key is to learn as you go, discovering what works and what doesn't. Try every idea, make as many versions as you like, and if inspiration strikes to record your own sounds from scratch, go for it! Sound design is an art form—embrace the mess, explore new ideas, and, most of all, have fun!

Exploring Subtle Sound Design FX for a Music-Based Soundtrack

In this final sound design example, you'll revisit the Fusion VFX project from Lesson 3, "Editing Sound Effects and Music." This time, you'll open the finished timeline, where all the new sound design effects are already in place. But don't worry—you've already learned every technique used in this project!

First, you'll explore the completed version, allowing you to select clips and analyze how they were created from the original sounds. Then, you'll switch to an alternate timeline, where you can take your time selecting, editing, and applying sound design techniques to craft an amazing soundtrack. Your ultimate goal? Impress the clients and bring the video to life with sound!

1   In the Project Manager, open your Fusion VFX v1 project.

2   In the media pool, locate the Lesson 7 bin and open the **7 Fusion VFX MP v1** timeline.

3   Hide the media pool.

4   Move the playhead to the beginning of the timeline.

5   Move the floating viewer to the right of the timeline clips.

6 Play the timeline once and listen for the subtle sound design effects that were added to accentuate the 3D DaVinci Resolve logo onscreen.
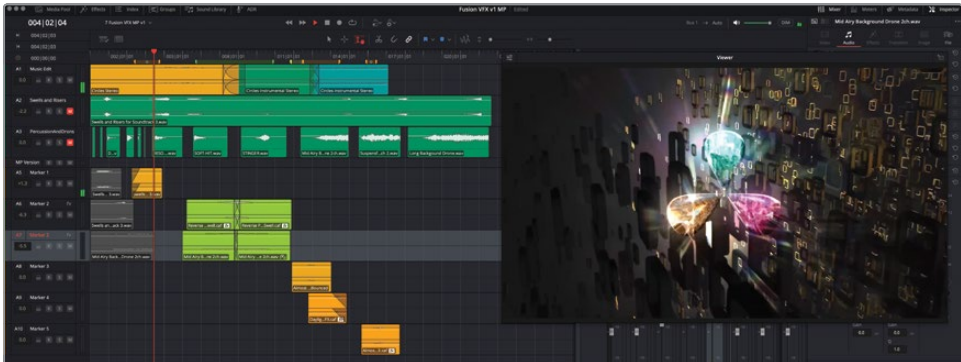
NOTE If you prefer to watch the video in full screen, press Command-F (macOS) or Ctrl-F (Windows) to view the timeline in the full-screen Cinema Viewer.

Everything you need to create your own sound effects for the marked sections of this timeline is located in the A2 and A3 tracks. These tracks are currently muted. The A2 track is composed of music swells and risers recorded using Apple Logic Pro X. The A3 Percussion and Drums track includes a variety of percussion and drone clips used in previous versions of this book. Consider these tracks as a grab-and-go buffet where you can pick and choose whichever sounds you want to try for the marked sections of this timeline and add effects and sound design as needed to accomplish your goals.

Keep in mind the primary guidelines from the client: "The audience should feel the logo's presence, especially when it enters and exits the frame. But do not take away from the song! Also, add some low-frequency energy to the green oval as it draws on and off so the audience feels its presence more than they hear it."

If you aren't sure what those directions imply, listen to the timeline again to hear a version that the clients liked, giving it two thumbs up.

The good news? You've reached the end of these action-packed sound design exercises! Now that you've explored the tools, techniques, and creative workflows, you're ready to apply what you've learned to your own projects.

The bad news? Now that you know these common sound design techniques, you won't be able to *unhear* them. Whether it's in music, radio ads, TV shows, films, or even live theater, your ears will be tuned in like never before. But hey, knowledge is power! The ability to craft sound and emotionally connect with an audience is what makes sound design so exciting—and it's exactly why we do what we do!

Lesson Review

1 Which Fairlight page mode in the toolbar enables Smart Zoom selections and shortcut actions? (Choose all that apply.)

   a) Pointer mode

   b) Range mode

   c) Smart Selection mode

   d) Focus mode

2 Where in DaVinci Resolve can you create custom keyboard shortcuts for functions such as Smart Zoom?

   a) Quick Keys menu option

   b) Right-click Customize Keyboard shortcut menu

   c) DaVinci Resolve > Keyboard Customization

   d) Timeline > Keyboard Shortcuts

   e) None of the above

3 True or False? The difference between Solo and Exclusive Solo is that you can listen to multiple soloed tracks, but only one track at a time when Exclusive Solo is enabled.

4 Which native Fairlight plug-in could be used to add depth to off-camera dialogue?

   a) Perspective

   b) Depthinator

   c) Dialogue Separator

   d) Echo

   e) Dialogue Depth Tracker

5 Where can you change the processing order between FX, EQ, and DY (Dynamics) per track?

  a) Timeline Options menu

  b) Mixer Options menu

  c) Mixer

  d) Project Settings > Fairlight panel

6 With the default DaVinci Resolve settings and shortcuts, how can you reverse a clip in the timeline? (Choose all that apply.)

  a) Right-click and choose Reverse Clip

  b) Inspector, Speed Change settings

  c) Reverse Clip plug-in

  d) Shift-R

  e) Option/Alt-right-click the clip in the timeline

Answers

1 d

2 a

3 True. You can listen to multiple soloed tracks, but only one track at a time when Exclusive Solo is enabled.

4 d

5 b

6 a, b

Simplifying the Mix with Groups, Busses, and Nested Timelines

The goal of mixing is to balance track levels so they all sound good as a whole. Managing and mixing tracks and their cumulative levels is easy with a handful of tracks, but becomes more challenging as the track count climbs to several hundred or even a thousand or more tracks. Busses are a means of controlling signal flow from the tracks to the output and offer various solutions for sharing effects processing, assigning similar tracks to fewer faders, and even creating multiple outputs in different formats to meet complex delivery requirements.

Time

This lesson takes approximately 60 minutes to complete.

Goals

DaVinci Resolve features the powerful Flex Bus bussing architecture, which is completely user-defined and offers unlimited signal flow possibilities. Older "legacy" projects use the more traditional Fixed bussing format consisting of mains, submixes, and auxiliary busses.

In this lesson, you'll take a hands-on tour of the Fairlight interface to explore a handful of useful Fairlight features, panels, and menu options designed to assist you with managing your tracks and signal flow as you prepare your project for mixing.

Are Other Sound Mixers Working on the Same Project?

In large-scale Hollywood films and shows, several other mixing teams often work in parallel before the final mixing phase. Those mixers may include a dialogue mixer, mixers for ensemble pieces, and sound effects mixers. Like the re-recording mixer, their job is to balance and sweeten (enhance) the sound and levels of their respective tracks, narrowing them down to a few well-balanced tracks, submixes, or bounced submixes for the re-recording mixer to blend with the other sound elements.

Combining Mono Tracks as Multichannel Link Groups

The first stop on your "Simplifying the Mix" tour is the Link Group dialog, where you can link multiple mono tracks as a single multichannel-formatted channel strip in the mixer. Likewise, you can also convert a multichannel clip in a multichannel track into a link group of separate mono tracks if that suits your mixing needs. For this exercise, you'll revisit your Podcast Intro Combo project, for which the sound designer doubled the Birds track to increase the presence of bird ambience. Then, you'll group the two mono tracks as a single stereo track in the mixer. If you're wondering, "How does this simplify my mix? It's just bird ambience. Why bother?" or "Would I ever need to do this?" stay tuned; your questions will be answered shortly.

1 Open your Podcast Intro Combo project. Then open the Lesson 8, **8 Link Group and Track Groups** timeline.

2 Show the timeline, mixer, and monitoring panel.
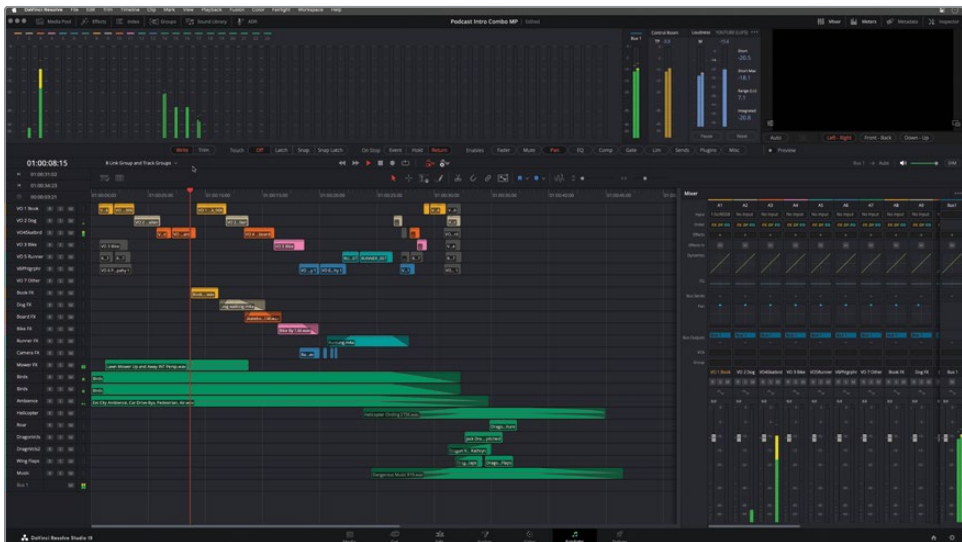
3 Play the timeline once to hear all the tracks playing together.

Now, let's focus on the background tracks, including the Birds and Ambience tracks.

4 Zoom as needed for a clear view of the A15–A17 tracks. Solo the A15–A17 tracks.

5 Play the soloed tracks. Listen to the birds. Where do they seem to be coming from?

> **NOTE** The A16 Birds track is a duplicate of the A15 Birds track. Both have a little low-shelf filtering in the clip EQ to minimize the low-frequency background noise.

6   Select the A15 and A16 tracks and look at them in the mixer to see how they are panned.
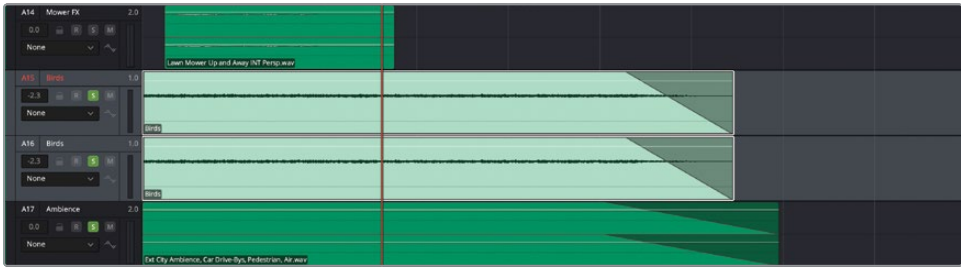
They are both panned to the center, just like the dialogue clips. This also anchors the sound of the birds to the center channel in multichannel speaker formats, such as 5.1, and creates the "phantom center" or illusion of the center in stereo. In other words, the sound of the birds is centered in front of the listener. Perhaps you've seen a row of birds neatly aligned on a telephone wire or rooftop but not aligned in a neat row or tight group in a fixed position in front of you at a park. This may work for one bird but not for multiple birds. How do you instantly spread out the bird sounds to fill the panoramic space? Link the tracks as a stereo link group.

7   Choose Fairlight > Link Group to open the Link Group dialog.
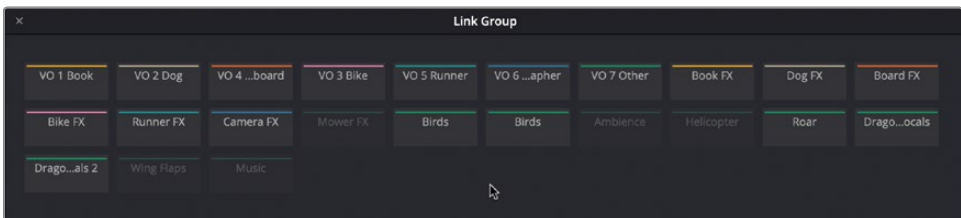
The Link Group dialog displays buttons for all timeline tracks with the mono track buttons active and all other tracks disabled since they can't be linked.

8 In the Link Group dialog, select both Birds tracks and click Link.

The Birds buttons are combined to indicate that the two mono-channel tracks are now linked as a two-channel stereo track.

9 Close the Link Group dialog.

10 Look at the linked Birds tracks in the timeline.
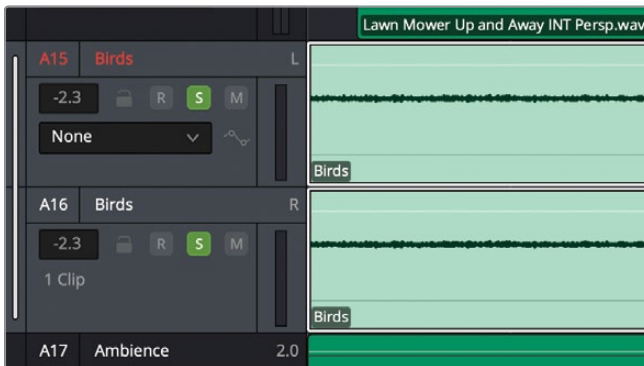
The white bar to the left of the A15 and A16 tracks indicates they are linked, while L and R in the top right corner of the tracks show their channel assignment in the linked group.

11 Select one of the Birds tracks in the timeline to select both linked tracks.

Once linked, the tracks act as a single two-channel track.

12 Look for the Birds tracks in the mixer and monitoring panel.
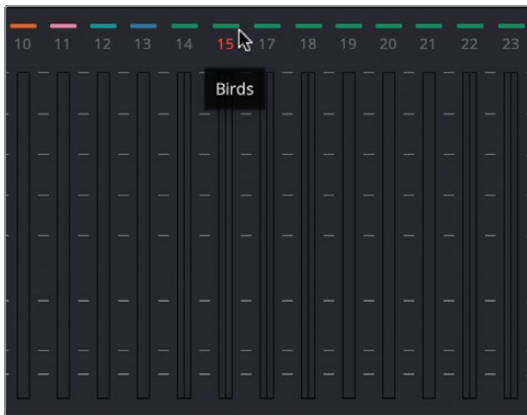
The Birds channel strip is stereo, and only the A15 channel number is showing, with the A16 channel missing from both the mixer and meters in the monitoring panel. Why? When mono tracks are linked, they play back as a multichannel track with a single-channel strip, fader, and meter based on the first channel in the linked group.

13 Unsolo the A17 Ambience track.

14 Start playback from the beginning to hear only the soloed birds. Where are the birds now? When you are finished, stop playback.

This time, the birds seem to be spread more evenly between the left and right channels in the stereo panoramic field. But the results aren't making that big a difference in the soundscape. The only thing holding these birds to mediocre sonic status is that both channels are playing an identical clip.

This is a good time for a quick detour from your Fairlight tour to the sound design "gift shop" to pick up a quick sound design souvenir that can be yours in just five easy steps.

Slipping Audio in the Timeline

To create variation between the two bird clips, you could replace one of the channels with a different clip and edit it in, although this may take some time. Alternatively, you can use a simple keyboard shortcut to slip the audio within the clip earlier or later. This will offset the bird calls, making them sound like multiple birds calling and responding to each other across the park.

1 With the Arrow tool, select the clip in the A15 Birds track.

2 Move the playhead to around the middle of the clip and press M to set a marker on the selected clip.

Why set a marker? So you can see how far you have slipped the clip audio. The marker isn't necessary, but it is handy when working with low-level clips that lack prominent waveforms to use as a guide.

3 Choose Trim > Slip Audio to see the Slip Audio shortcuts.
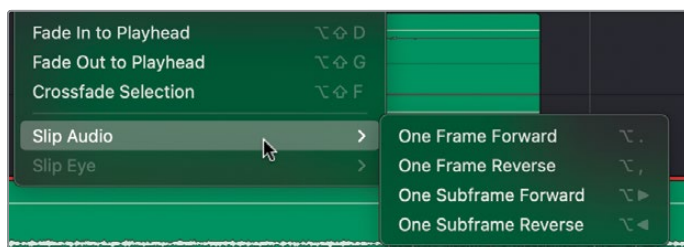
4 Hold Option/Alt while pressing the comma key numerous times to slip the sound in reverse. Keep an eye on the marker and the playhead. The marker will move toward the left as you slip the contents of the clip. Stop once the marker is at least 5 to 10 seconds before the playhead.
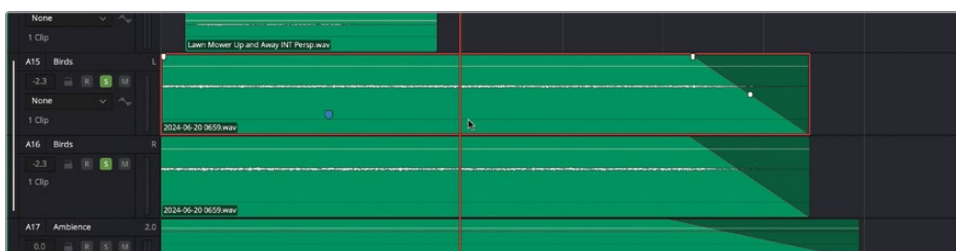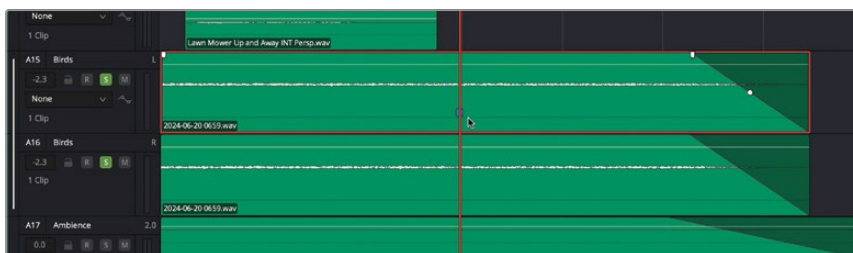
5 Play the soloed Birds tracks again and listen to the birds.

Where are the birds now? Everywhere! With just a few clicks, the birds now seem to be scattered all around the park, adding scale and realistic ambience to the soundtrack.

> **TIP** The Slip Audio options in the Trim menu are a great way to nudge audio into sync after clips are edited in the timeline.

Unlinking a Multichannel Group

You can unlink the group at any time in the Link Group dialog. Tracks from unlinked groups retain the same panning, only as independent mono tracks. Although this step is unnecessary for the project, it's good to see the results firsthand since you are learning about link groups in DaVinci Resolve. In this exercise, you'll revisit the Link Group dialog and unlink the Birds tracks to hear them as independent mono tracks that retain their stereo panning. Once finished, you'll relink the group to simplify mixing with a single fader control for both Birds tracks.

1 Open the Link Group dialog.

2 Choose Fairlight > Link Group.

3 In the Link Group dialog, select the linked Birds tracks.

4 Click Unlink and close the Link Group dialog.
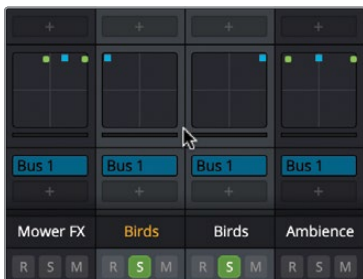
The Birds tracks in the mixer are panned to the far left and right, even though they are no longer linked.

5 Play the tracks to hear the birds. When finished, stop playback.

There is no audible difference between the mono tracks panned left and right and the stereo-linked group.

6 Choose Fairlight > Link Group and link the Birds tracks again. Then, close the dialog.

7 Unsolo the Birds tracks.

If there is no difference, why didn't we just pan the mono tracks in the first place? The goal of this lesson is to explore methods of simplifying the mix. Having a single fader and meter to control the cumulative level of the birds is easier than having multiple faders. This would be true whether it is stereo or another standard format, such as 5.1 or 7.1.

Working with Track Groups

Track groups allow you to switch focus from individual tracks to grouped tracks, which can range from small, multilayered sound effects to large, multitrack submix groups, such as sound effects (FX). These groups are entirely user-defined and can be created either directly in the timeline or in the Groups panel on the Fairlight page of DaVinci Resolve.

In this exercise, you'll continue working in the 8 Link Group and Track Groups timeline as you explore a track group for the dragon sound effects. Then, you'll create larger groups for dialogue, sound effects, background sound effects, and music tracks within the timeline. For this exercise, you'll use the default Pointer mode selection tool.

1 If necessary, press A for the Pointer mode Arrow tool.

2 Hide the mixer and monitoring panel so only the timeline is showing.

3   Unsolo the Birds tracks.

4   In the interface toolbar at the top left of the Fairlight page, click the Groups button to show the Groups panel.
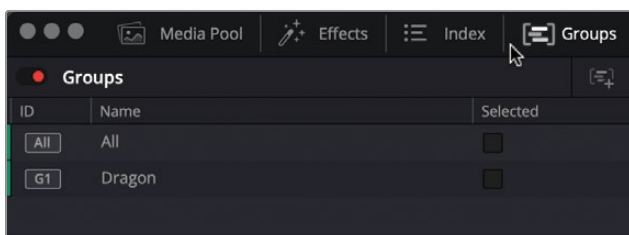
The Groups panel was added to the Fairlight interface in DaVinci Resolve 19, offering easy access to create, select, modify, and control track groups. The default group, All, is the only group that includes all timeline tracks. The Dragon group (G1) is a user-defined group created specifically for this timeline to quickly control all the tracks containing dragon sound effects, which constitute a single dragon encounter in the timeline.

5   Zoom as needed to clearly see track names and numbers for the green tracks at the bottom of the timeline and all the clips within those tracks.

Now, let's use the Dragon group to solo, copy, and paste another instance of the dragon sounds.

6   In the Groups panel, click the G1 ID button to activate the Dragon group.
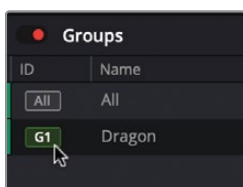
Selecting the ID button for a group makes it active, and the button turns green to indicate its active state. Clicking the checkbox for a group selects all tracks within the group, making them easy to see in the timeline and mixer and allowing for easy access to "selected track" based shortcuts and modifications without needing to select all clips or tracks within the group manually.

7 In the timeline, solo the A22 Wing Flaps track near the bottom of the timeline.
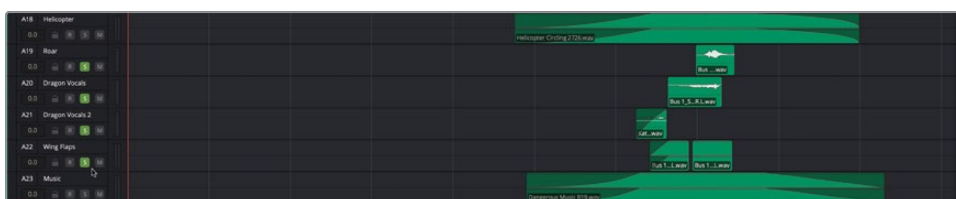
All the tracks included in the Dragon group are soloed at the same time.

8 Play the timeline from the beginning of the clip in the Dragon Vocals 2 track, 01:00:31:02.

These sounds all represent one vocally diverse dragon. Let's say you want to copy and paste the same dragon effects at the end so the final roar coincides with the music fading out. As long as the Dragon group is active, you'll be able to copy and paste the dragon without needing to drag a selection around all the clips.

> **NOTE** When you select a clip in an active group, be aware that all clips in that group that are beneath the playhead are also selected. Additional clips may need to be selected independently.

9 Move the playhead to the end of the clip in the A19 Roar track.

You'll use the end of that clip to align a copy of the clips at the end of the timeline.

10 In the Wing Flaps track, drag a selection that includes both clips.

Notice that any clips in the group tracks that align with the selected clips will also be selected at the same time.

11 Choose Edit > Copy or use keyboard shortcuts to copy the selected clips.

12 Press the Down Arrow key to jump the playhead to the next edit point, along with the transparent copied clips. The next edit point should be the end of the helicopter clip in the A18 track. Once the playhead and transparent clips are aligned with the end of the helicopter clip, choose Edit > Paste or use keyboard shortcuts to paste the clips.
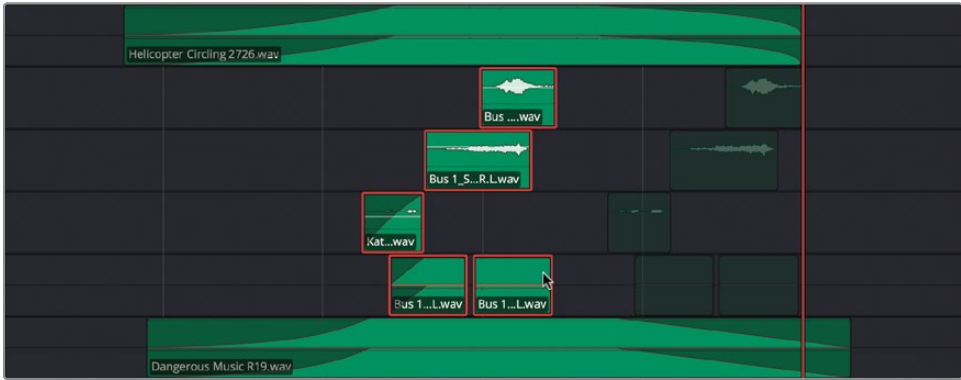
13 Unsolo any of the dragon group tracks to unsolo them all.

14 Play the timeline from the beginning of the helicopter clip in the A18 track. Listen to the double sets of dragon clips.

Well? It sounds like the same dragon clips were pasted near each other. Let's disable some of the dragon clips selectively to mute them. To regain independent control of the clips, you'll need to deactivate the Dragon group.

15 In the Groups panel, click the G1 ID button to deactivate the Dragon group.

> **NOTE** If you are working with an extended keyboard, you can press Command (macOS) or Ctrl (Windows) plus a number keypad group number to activate or deactivate the group. Command (macOS) or Ctrl (Windows) plus number keypad 0 activates or deactivates the All group. Command (macOS) or Ctrl (Windows) plus number keypad * toggles off or on the Groups switch.

16 In the timeline, select the first clip in the A19 Roar track and press D to disable the clip.

17 In the second stack of dragon sound effects, select all but the uppermost clip in the A19 Roar track.
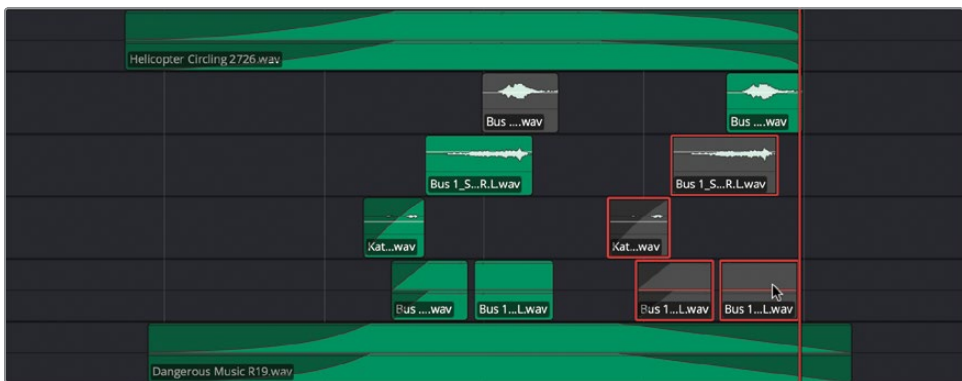
18 Press Option/Alt-L to play the section again from the previous starting point.

That sounds much better! There's just one more thing to do to fix the end of the Roar clip. You may have already thought of it on your own.

19 Extend the end of the Roar clip in the A19 track and add a slight fade out to the end of the clip.

20 Press Option/Alt-L to play the section again and listen to the ending roar in context.

Excellent! You have successfully used a track group for editing. Best of all, the clients love the ending and are jubilant, with high fives and fist bumps all around. Next, you'll use track groups to create larger submix groups.

Creating Track Groups for Mixing

Track groups are useful for mixing, allowing you to control all member tracks simultaneously. This includes fader movements, panning, send levels, automation, and adjustments to the mute, solo, and record arm buttons. However, plug-ins and processing controls are not affected by a track group. In this exercise, you'll create four track groups: dialogue, sound effects, background sound effects, and music.

1   Condense the track heights so you can easily see and select any tracks in the timeline.

2   Select the first seven tracks, including VO 1 through VO 7.

3   Right-click the selected track headers and choose Create Group.

The Create Group dialog opens. At the top of the dialog, you can name the group and select which controls will apply to it. The lower half of the Create Group dialog includes a list of channels (tracks) added to the group on the right and all additional channels on the left. Arrows between the two lists allow you to add or remove selected channels.

4   Name the group **VO**. Click Save.
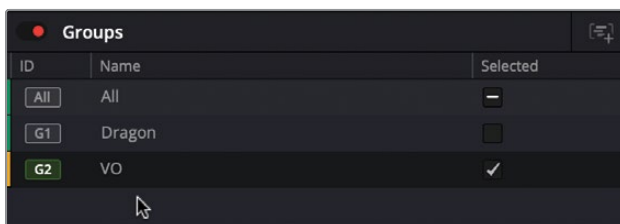
A new G2 VO group appears in the Groups panel. Now, let's make the FX track group. This time, you'll create the initial group with some of the FX tracks, and then add more tracks to the group in the Create Group dialog.

5   In the timeline, select the next seven tracks, starting with Book FX and ending with Mower FX.

6   Right-click the selected track headers and choose Create Group.

7   In the Create Group dialog, name the group **FX**.

8   Click Save.

9   The new FX group is added to the Groups list. To edit the group, hover to the right of the checkbox for the group to see the action icons, including a Tools button to access the Modify Groups dialog and a Trash can button to delete a group.
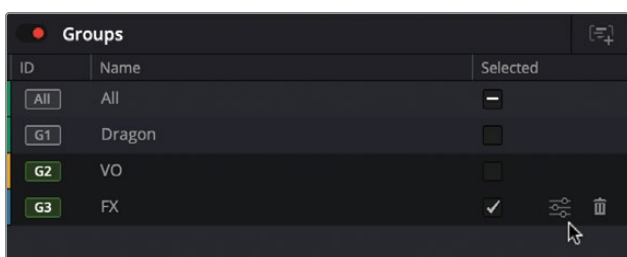
10   Hover to the right of the G3 FX group checkbox to see the action buttons. Click the Tools button to open the Modify Group dialog.

The Modify Group dialog is identical to the Group dialog.

11 In the Modify Group dialog, scroll down the Add Channels column on the left. Drag a selection from Helicopter down to Wing Flaps to include all those tracks. Click the Add button (>) to add the selected tracks to the FX group. Click Save.
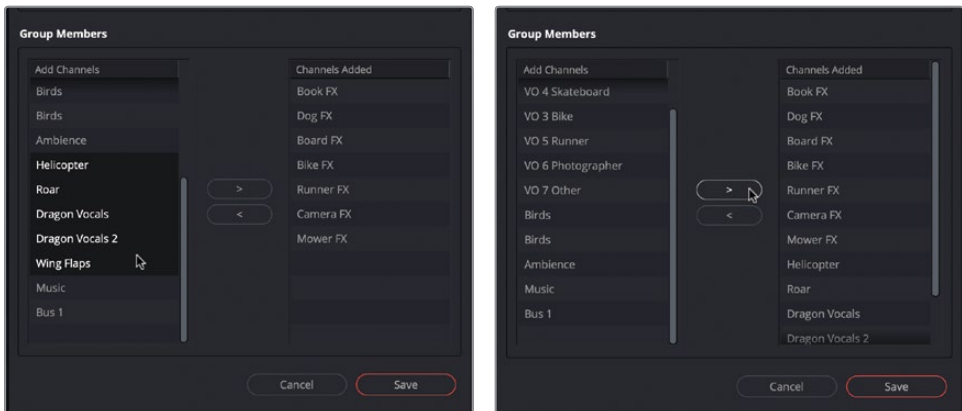
To check which tracks are included in a group, you only need to click the Selected checkbox for the group. Let's try it.

12 In the Groups panel, click the G2 and G3 buttons to deactivate those groups.

13 Click the Selected checkbox for the VO group to select all the member tracks.

14 Click the VO group checkbox again to deselect the tracks.

15 Click the FX checkbox to select the member tracks. Deselect the tracks.

As you can see, creating a track group only takes a few seconds. You'll use these groups to create submix busses shortly. What else can you do with the track groups? Many things, such as controlling all their faders at once, selecting all the member tracks to assign to busses, automating pan controls for all member tracks simultaneously, and so on. You'll have the opportunity to use some of these mixing techniques in the next lesson.

Create More Submix Track Groups

Now that you have two submix track groups, it's time to create two more. Select the appropriate tracks and create submix track groups for bgFX and music. There is only one music track. Does it still need a group? Why not? That way, if additional music tracks are added later, there is already a group for them. Set up the track groups as follows:

— bgFX group includes Birds and Ambience tracks.

— Music group includes the Music track.

When you are finished, deactivate and deselect any active groups.

Simplifying Mixing Using Busses

You already know how to balance individual clip levels, but if you have numerous similar tracks that are already balanced—such as dialogue, sound effects, or music—you can combine them and assign each of their output signals to a bus to create a *submix*. As the name suggests, a submix lets you independently mix a subset of the tracks.

Submix busses are signal paths, or *vehicles*, that route the signal from multiple tracks to a new channel strip in which the sum of the signals can be controlled as a single track.

In this exercise, you'll create submix busses for the dialogue, FX, background FX, and music tracks. It's not a coincidence that these submix busses include the same tracks as the track group names. These are the standard submix groups used for mixing and controlling high track counts.

To create new busses, you'll use the Bus Format dialog available in the Fairlight menu.

1   In the Fairlight page, choose Fairlight > Bus Format to open the Bus Format dialog.

Bus Format					
Name	Format		Channels	Color	
Bus 1	Stereo	⌄	2	●	⌄
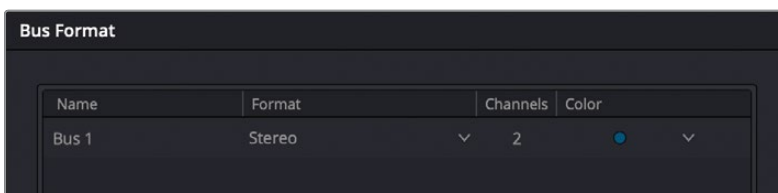
The Bus Format dialog shows that the timeline has only one stereo bus, aptly named Bus 1. This is the default output bus used to monitor and output the sound from all the tracks in the timeline.

NOTE The first bus in a timeline will automatically be assigned as the output for all current tracks and new tracks added to the project.

Let's add four new busses to use for the submix groups. With the Fairlight Flex bus format, any bus can be used as an output, submix, or auxiliary bus, depending on its intended use to control signal flow.

2 Click the Add Bus button four times to add four new busses to the list.
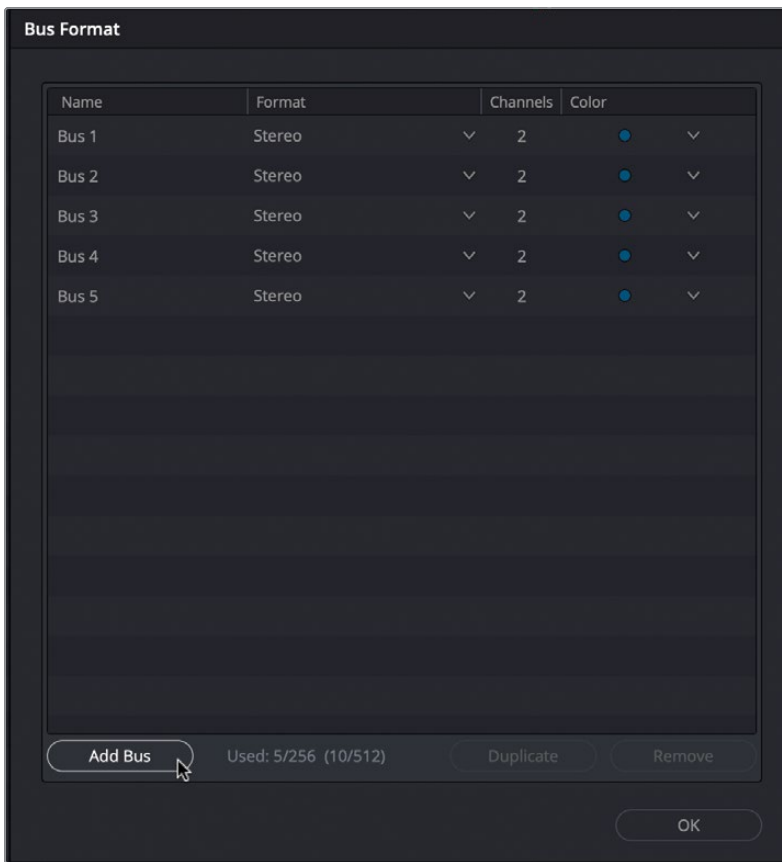
The four new busses appear in the Bus Format dialog below Bus 1 and are sequentially named Bus 2, Bus 3, Bus 4, and Bus 5. These will be the new submix busses.

Let's name the sub-busses and change their formats and colors based on the tracks they will contain.

3 In the Name column, double-click the Bus 1 name and enter **Stereo**. This will identify it as the stereo output, also referred to as the *main bus*.

> **TIP** When naming consecutive tracks or busses, you can press Tab after you finish typing a name to select the Name field for the next track or bus.

4 Change the name of Bus 2 to **DX**, Bus 3 to **FX**, Bus 4 to **bgFX**, and Bus 5 to **MX**.

All the submix busses should be stereo except the DX dialogue submix, which will be mono.

5 In the Format column, change the format of the DX bus to Mono.

Finally, let's change the colors of each sub-bus.

6 In the Color column, change the DX bus color to yellow, FX to purple, bgFX to beige, and MX to green.
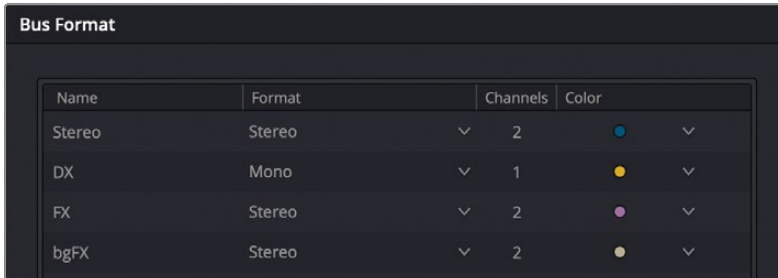
7 Click OK to close the Bus Format window.

> **NOTE** The channel format of each bus can be changed at any time in the Bus Format window.

The new sub-bus names and colors also appear in the mixer, meters, and bottom of the timeline as bus tracks.
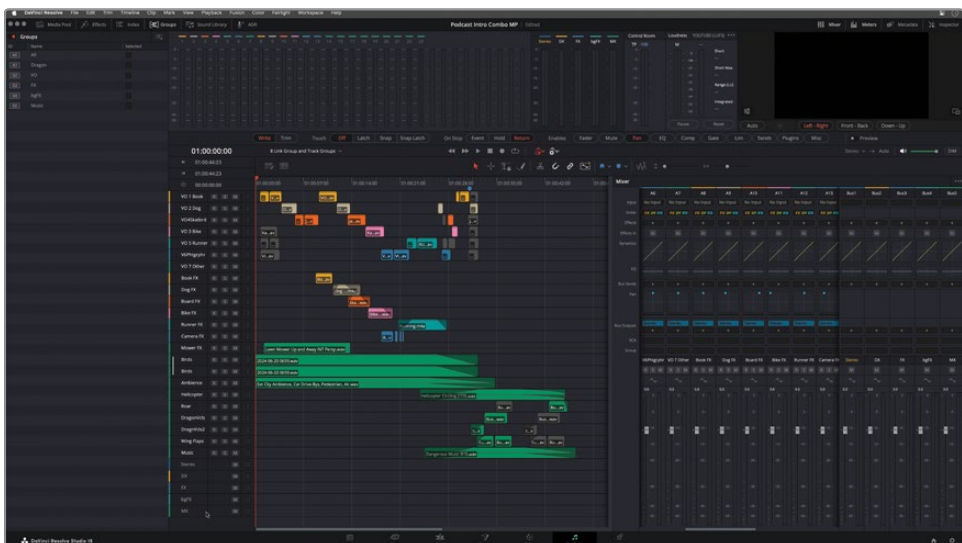
> **NOTE** Bus tracks only appear in the timeline when automation is enabled.

You are all set up with submix busses. The next step is to assign the tracks to go into those submixes.

> **TIP** To reduce the height of the mixer channel strips, you can use the Mixer Options menu (…) to deselect mixer controls that you don't need to display, such as Track FX, Pan, EQ, and Dynamics, if you are merely assigning tracks to busses. Additionally, if you ever notice that controls are missing from the mixer, they have been hidden via the Mixer Options menu.

> **NOTE** If you didn't complete the previous exercises, open the timeline **8a Groups Finished add Submix Busses**.

Assigning Tracks to Submix Busses

Now, you need to assign tracks to their respective busses. You can do this in two areas: the mixer and the Bus Assign window. For this exercise, you'll use the mixer.

The middle section of the mixer displays Bus Sends, Bus Outputs, and the signal flow of each track so you can see where everything is assigned. Use the bus controls in the mixer to assign tracks to the new submix busses you created. For now, all tracks will remain assigned to the Bus 1 output.

In DaVinci Resolve, routing audio to multiple busses is *lossless*, meaning you can assign tracks to multiple busses without quality loss. This provides more flexibility for mixing, monitoring, and final deliverables.

To complete this exercise, select similar tracks and assign them to their designated submix output bus. You can do this from the timeline, Tracks Index, mixer, or Groups panel. Let's use the timeline to select the first track, and then use the mixer and Track Groups panel to select the tracks as needed while assigning busses.

> **TIP** You can expand or compact the mixer at any time by dragging its left edge. The busses are always visible to the right of the mixer. The busses section of the mixer can also be expanded by dragging the lower left edge. Also, with DaVinci Resolve, busses can be reordered and moved to any position in the timeline by simply dragging them up or down in the Tracks Index or by their name in the mixer.

1 Press Shift-Z to fit all the timeline clips horizontally in the visible timeline.

2 In the timeline, select the first track VO 1 Book to highlight its channel strip in the mixer.

3 In the Bus Outputs area of the A1 VO Book track, click the Add (+) button and choose DX from the pop-up menu.

The Bus Outputs for the A1 track now include both Stereo (Bus 1) and DX (Bus 2) output busses.

One track assigned, 22 tracks to go. Don't worry; you won't have to continue assigning individual tracks to busses. Instead, you'll use the handy Option/Alt modified click method to "do to all selected" when assigning tracks.

4 In the mixer, drag across the fader area of the A2 through A7 tracks to select all five remaining dialogue tracks.

These tracks need to be assigned to the Bus 2 DX bus output.

5 In the Bus Outputs area of the mixer, hold Option/Alt and click the Add button on one of the selected tracks. Continue holding the Option/Alt key as you select DX from the pop-up menu.

That was easy! The only thing that would simplify this process even more would be if you could instantly select all the submix tracks that you want to assign to submixes. Wait a second. You already set that up in the previous exercise when you created submix track groups. Let's put them to use!

6 In the Groups panel, click the Selected checkbox for the FX group.
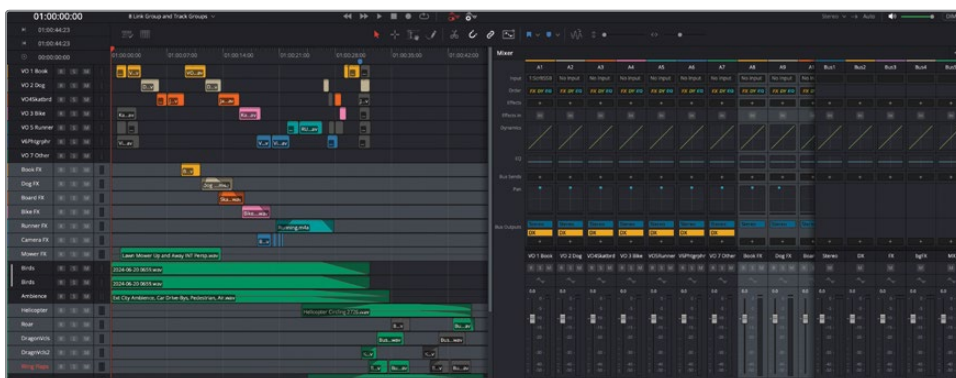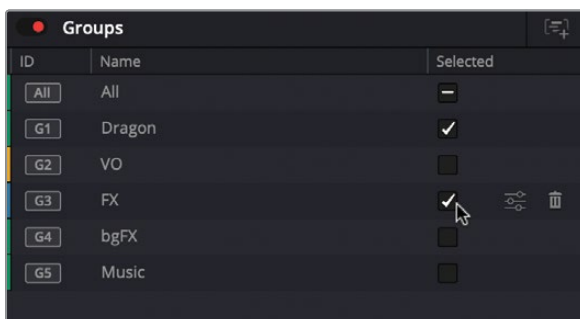
Just like that, in a single click, all the FX submix group tracks are selected in the timeline and mixer.

7 Click the Add Bus button on one of the selected tracks in the mixer and hold Option/Alt while you choose the FX bus from the pop-up menu.

Voilà! The FX tracks have all been assigned.

You've got the hang of this now.

8 Select and assign the Birds and Ambience tracks to the bgFX bus.

9 Select and assign the Music track to the MX bus.

10 When you are finished, deselect any selected track groups and hide the Groups panel.
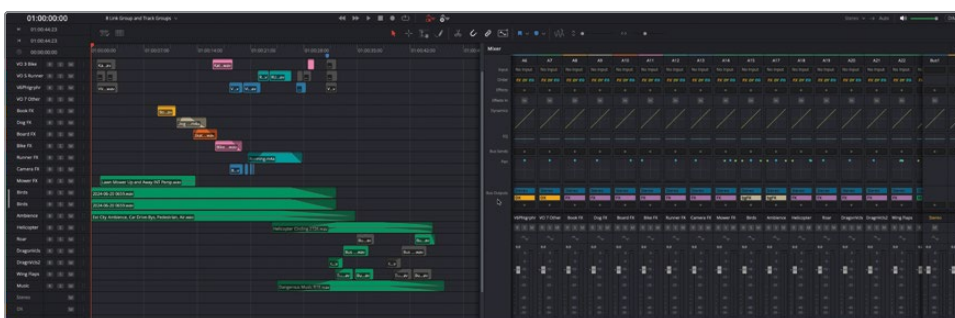
You have successfully assigned all 23 tracks to four submix busses to greatly simplify the mixing process. How is the process simplified? It's much easier to balance the levels of four faders between the four submix groups instead of 23 individual faders. Then again, if you think 23 faders is a lot, wait until you see the timeline from the TML Reel 1 mix with more than 350 tracks! Even with that many tracks, a handful of submix busses makes it much more manageable to balance levels between the primary stem groups dialogue (DX), sound effects (FX), and music (MX).

How do you know if the submix busses are working? No problem; you can selectively listen to any bus in the Control Room Monitoring dropdown menu in the monitoring controls.

Monitoring Multiple Busses

In the monitoring panel, the Control Room settings let you determine which bus is currently audible in the Control Room during your mix. The default monitoring is set to the first bus in the project (Bus 1). In this case, it is the stereo output bus that you aptly named Stereo. To monitor a different bus, you simply choose from the menu to the left of the Mute button in the monitoring controls.

In this exercise, you will change the Control Room monitoring to each of the different submix busses to hear their signal and verify that you assigned the correct tracks. How will you know? If dialogue is coming from the FX submix bus, or sound effects from the MX music submix bus, you'll know there is an issue with your bus assignments. If a bus is silent, look at the timeline to see if there are any clips from that submix group beneath the playhead before troubleshooting the bus.

Keep in mind that your Control Room monitoring can be changed at any time.
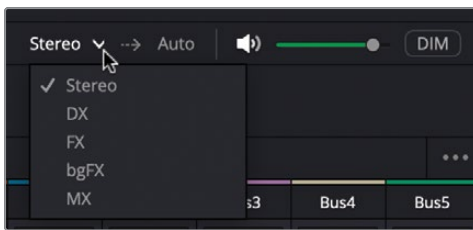
1 Below the viewer, in the Control Room monitoring dropdown menu, choose DX.
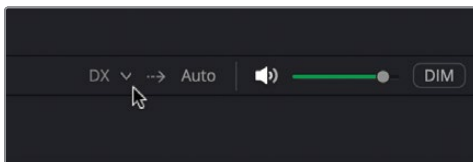
2 Play the beginning of the timeline to monitor the DX submix bus.

If you only hear dialogue, the DX submix bus is perfect. If there is an issue, fix it.

3 Continue playback and change the Control Room monitoring dropdown menu to FX.

This time, you should only hear sound effects.

4 Continue playback and check each of the remaining submix busses, bgFX and Music. When finished, stop playback.

5 When you are finished, set the Control Room monitoring dropdown menu to Stereo so you can monitor the Stereo bus.

Whether you want to monitor your full mix or select tracks in a submix group, the monitoring controls offer easy access to listen to whatever track combination you need while you work.

NOTE The Monitor column in the Tracks Index provides a checkbox for each timeline track. If selected, that track appears in the Control Room monitoring dropdown menu so it can be selected for monitoring during playback. This is useful when working with reference tracks, scratch voiceover recordings, test mixes, and other track elements that you may want to quickly reference and monitor during playback.

Deleting Unnecessary Bus Assignments

Based on your recent tests monitoring the different busses, all are working according to plan. There is just one issue. If you were to render only one bus as a finished mix, which would it be? Naturally, you'd think the Stereo output bus would be perfect. After all, it has every track assigned to it; what could be better? The submix busses were created to carefully adjust and balance the levels of the different stem categories, dialogue, fx, and music. However, in the current bus assignments, the main bus never plays the output of any of the submix busses. So it doesn't matter how skillfully you automate their levels in the mix if the audience only ever hears the unmixed track levels currently assigned to the Stereo bus. Do you understand the issue now? Luckily, it only takes a few modified clicks to quickly update the bus assignments so the tracks only go to their corresponding submix bus, and the submixes are the only signal going to the Stereo output bus. Let's do this!

1   Show the Groups panel.

2   In the Groups panel, click the Selected checkbox for the All group.

    All tracks are selected in the timeline and mixer.

3   Hold Option/Alt as you click the right side of any of the Stereo bus tiles in the mixer and choose Remove Bus Output from the pop-up menu.
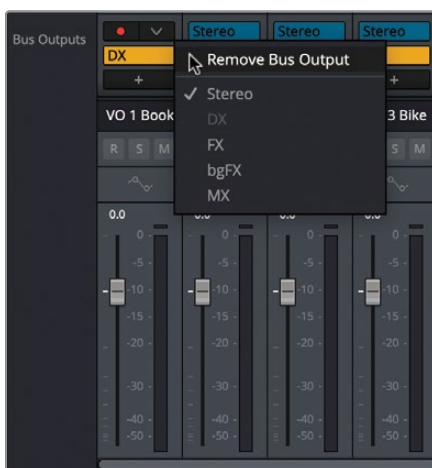
So long, Stereo output bus. With that one modified click, the tracks are no longer assigned to the Stereo output bus.

4   Start playback from the beginning to hear the stereo output bus, which currently has nothing assigned to it, so it should be silent.

Next, you'll assign each of the submix busses to the Stereo bus. This can be done with one modified click!

5   Extend the bus section of the mixer until you can see all five busses.

6   In the mixer, select all four submix busses. Option/Alt-click the Add Bus button and choose Stereo from the pop-up menu.

Done! Who knew assigning busses could be this easy? Imagine the not-so-distant past when channels had to be manually patched with cables and hardware, and the only mouse in the studio was an uninvited rodent. Before you move along to the next stop in the "Simplifying the Mix" tour, let's take a minute to test the bus monitoring again.

7   Hide the Groups panel.

8   Start playback from the beginning of the timeline. During playback, check each of the different busses in the Control Room monitoring pop-up menu. You should hear all the tracks as intended. If not, check the signal flow and try again!

9   When you are finished, stop playback. Set the pop-up menu to the Stereo bus.

You have successfully assigned tracks to a submix bus, and you can see the signal flow easily in the mixer.

TIP When you're finished, it's a good idea to always reset the Control Room monitoring to the main output—in this case, the Stereo bus. Also, when troubleshooting the signal flow of a "silent" track, examine the track's Bus Output and make sure that it has an output bus. If it has an output bus other than the main output bus used for playback and monitoring, make sure that the assigned output bus is connected to the main output bus.

Viewing Bus Mapping in the Bus Assign Window

Now that you've assigned all the busses and confirmed that they work in playback, let's look at the Bus Assign Window, which clearly displays the timeline's tracks and bus assignments in both Thumbnail and List views.

The Bus Assign window has two sections. At the top of the window, you'll find a list of all available busses. The rest of the window shows the available tracks. In the Available Tracks area, initials under each track name indicate the current assignment for each track.

When working with a project in the Flex Bus format, all busses can be assigned as a Send and/or Output. The lowercase initial "s" followed by the bus number and name indicates that the track or bus is assigned to a Bus Send, while a lowercase initial "o" followed by the bus number and name means it is assigned to an Output Bus. You'll work with bus sends in the next exercise when you create an auxiliary bus.

1   Choose Fairlight > Bus Assign to open the Bus Assign window.
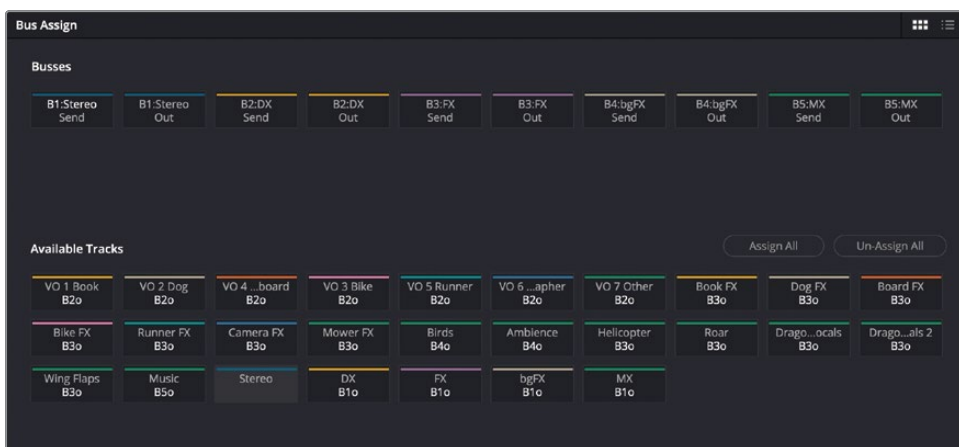
At a glance, the Bus Assign window tells the entire story of how the tracks and busses are assigned. Bus assignments are shown below each track name in the lower section. Let's review the bus assignments in List view.

2   In the upper right corner of the Bus Assign window, click the List View button.
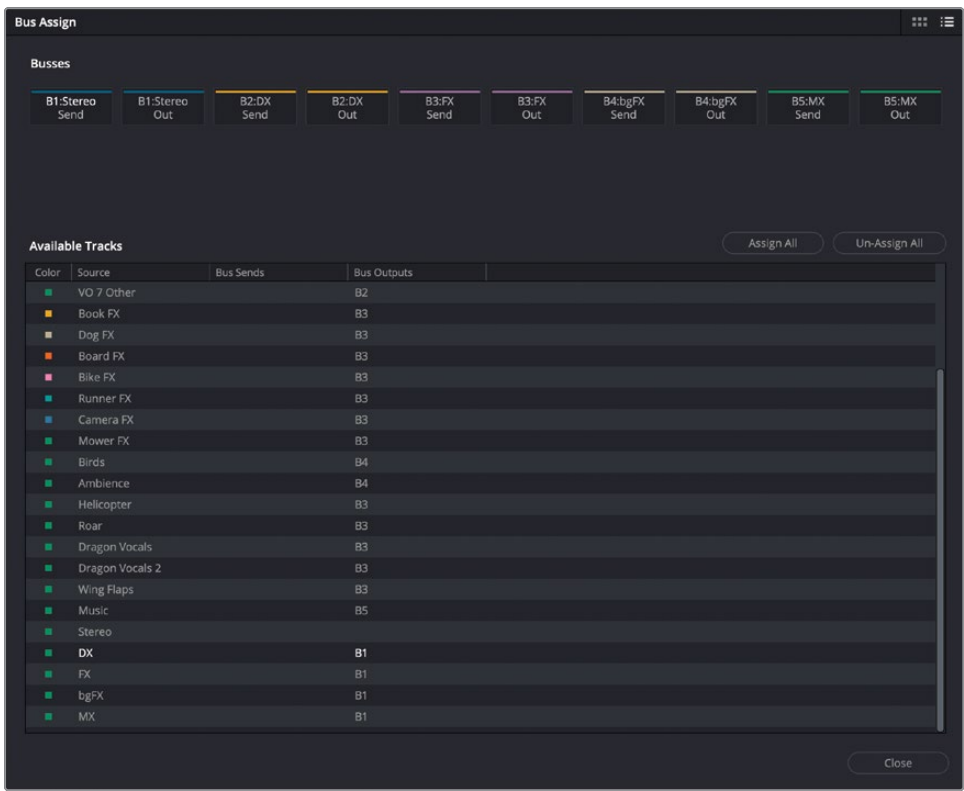
In List view, you can clearly see the Source, Bus Sends, and Bus Outputs.

3   Scroll down to the bottom of the List view to see the busses.

Here, you can clearly see that each submix bus is assigned to the B1 (Bus 1) Stereo bus. However, the Stereo bus is not assigned to any other bus because it is an output bus.

4   Close the Bus Assign window.

All the tracks are assigned to a submix bus, which in turn are all assigned to the Stereo output bus.

> **NOTE** The Bus Assign window can be used to assign and unassign tracks and busses. For more information about using the Bus Assign window, refer to that section of the *DaVinci Resolve Reference Manual,* available via the Help menu.

Working with Busses in the Mixer

Now that you've verified that the signal flow is working for all the tracks, let's take a minute to test-drive the new submix bus faders in the mixer. In this exercise, you'll play some or all of the timeline and use the submix bus faders to raise or lower the levels of the dialogue (DX), sound effects (FX), background sound effects (bgFX), and music (MX) during playback. First, you'll reset the UI layout and change the mixer to Single Mixer view so there is no separation between the tracks and busses in the mixer and tracks index. This makes it easier to scroll to see the busses in the timeline.

> **NOTE** If you didn't complete the previous exercises, open the timeline
> **8b Groups and Submix Busses Finished**.

1   Choose Workspace > Reset UI Layout to reset the Fairlight page to the default layout.

2   In the Mixer Options menu (…), choose the Single Mixer View option.
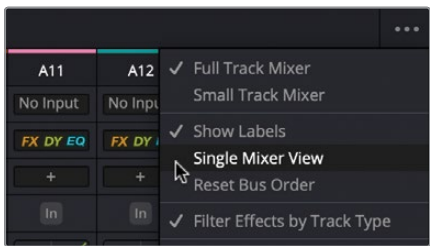
3 Extend the mixer as far to the left as possible. Scroll to the end of the mixer to see the channel strips for the last tracks and all the busses. If you are working with dual monitors, the mixer and monitor will extend across the entire second monitor.
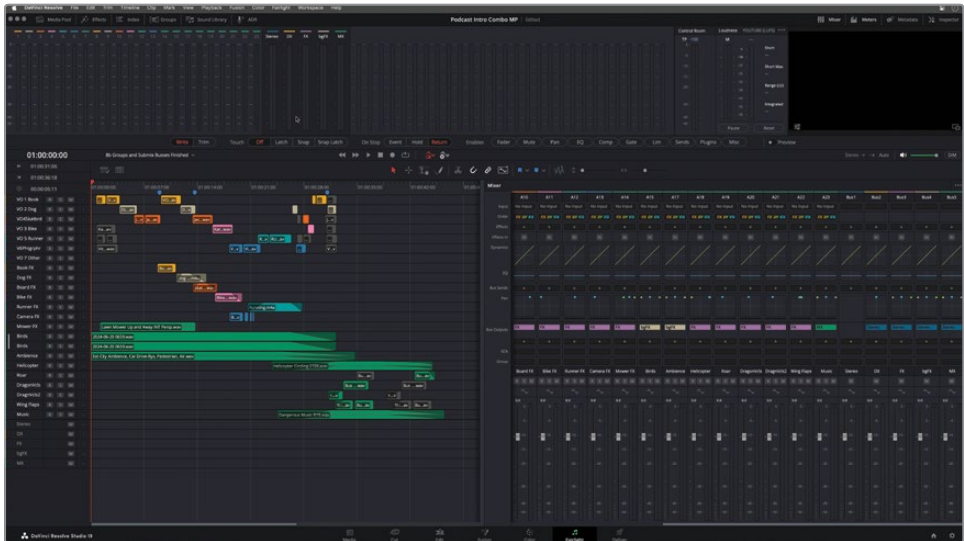
Notice there is no longer any separation between the tracks and busses in the mixer and monitoring panel.

4 Press Shift-Z to fit all the timeline clips horizontally in the visible timeline.

5 Play the timeline from the beginning and listen to the current mix.

The mix should still sound pretty good. You haven't actually changed any of the levels; you've just altered the way you will control them. Keep in mind that you can always adjust clip levels within a track or the levels of individual tracks if needed.

6 Start playback and try adjusting the levels of the FX and bgFX busses on the fly while you listen to the results. When you are finished, stop playback.

Now you know why submixes are a mixer's best friend. It is much easier to move one fader that lowers multiple tracks than to manually lower multiple separate faders on the fly. You'll get a chance to record mix automation as you change track levels in the next lesson.

> **TIP** You can control multiple selected faders at the same time with the mouse pointer by employing the Option/Alt modifier as you drag the selected faders.

Creating an Auxiliary Echo Bus

Previously, you applied plug-ins to individual clips and tracks. What would you do if you had multiple tracks that needed the same effect at the same time? Instead of adding the same plug-in to every track, you can simply send the tracks to the plug-in via an auxiliary (Aux) bus. Doing so saves processing and time. Auxiliary busses are often used to add reverb to similar elements in a scene, futz effects, or in this case, Echo.

In this exercise, you'll create an auxiliary bus for the Fairlight FX Echo plug-in and send the dialogue tracks where characters are yelling from a distance to the Aux bus to add echo.

1   Open your TML Audio Post project. Then open the **8 Surf Add Aux Echo** timeline.
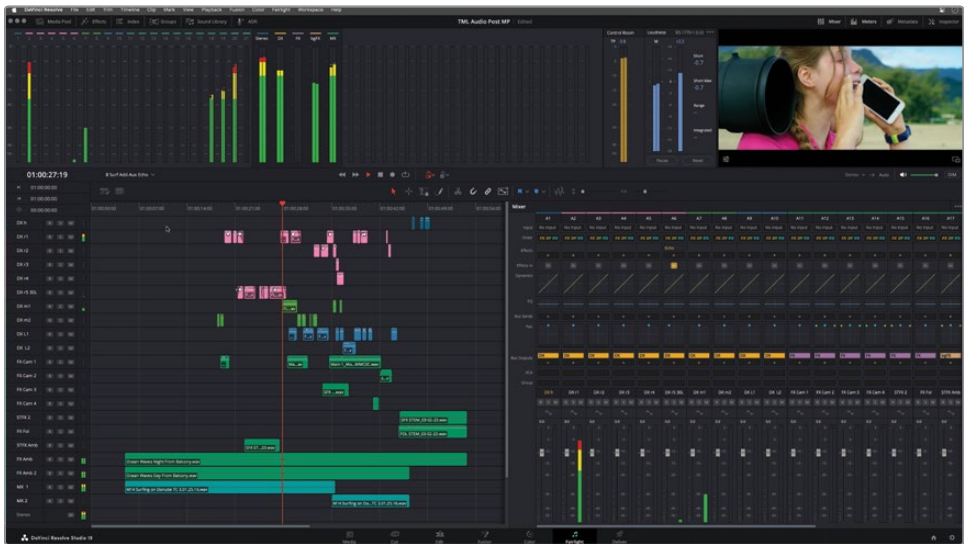
This version of the timeline includes standard submix busses. Your goal will be to add one more bus that will be used as the auxiliary Echo bus instead of adding echo directly to individual tracks.

Auxiliary busses have several advantages over applying effects directly to tracks, such as shared processing, applying effects with a wider channel format like stereo, and simple fader control of the effect amount as it is applied to tracks during playback.

2   Play the first half of the timeline until you've heard Raina's yelling offscreen with the Echo effect.

The Echo effect still works fairly well, but it is an echo applied to a mono track, so you can't achieve the same expansive sound as you can on a stereo bus. Plus, you'll have greater control to apply it to this track and others if needed by sending the track to an auxiliary bus with the effect instead. Let's turn off the Echo effect on the track and create the new bus.

3   In the mixer, hover over the left side of the Echo effect in the A6 channel strip to see the red Bypass button. Click the Bypass button to turn off the Echo effect.
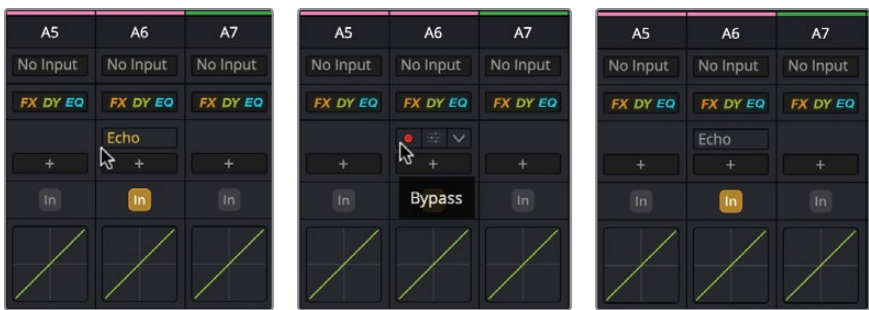
4   Choose Fairlight > Bus Format to open the Bus Format window.

The project currently contains five busses: Stereo output bus, DX, FX, bgFX, and MX submix busses.

5   Click the Add Bus button to add a new bus to the list. Bus 6 will be used as an auxiliary bus for the Echo effect.
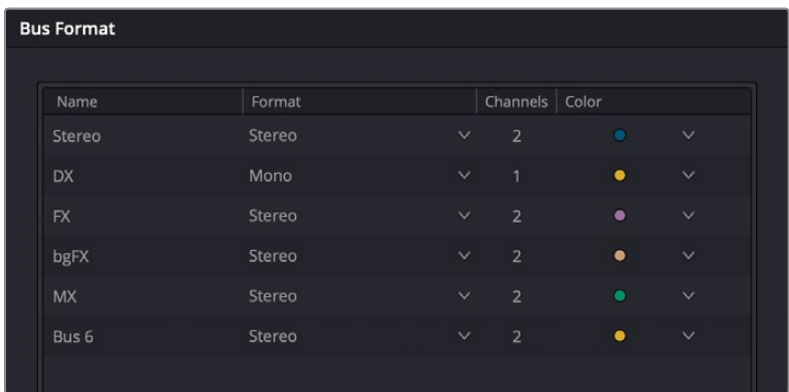
The new Bus 6 appears below MX in the Bus Format pane.

Let's rename the bus and change its color. You'll also want to ensure that the DX Echo bus format is set to Stereo.

Wait. Why stereo if all the dialogue tracks are mono? Great question! You are applying an Echo effect to dialogue to create a sense of space. Stereo effects such as echo, delay, or reverb are intended to blend the dialogue into the environment naturally, making it easier to place within a stereo or surround sound mix.

> **NOTE** It's a good idea to use a different Aux bus for FX tracks to keep the elements separate for mixing and removing all dialogue if needed for dubbing and localization.

6   In the Name column, double-click the Bus 6 name and enter **DX Echo**.

7   Set the Format to Stereo and the color to yellow.

8   Click OK to close the Bus Format window. Expand and scroll the mixer as needed to see the new Echo Bus to the right of the MX bus. Notice that the new bus, labeled DX Echo, is also located to the right of the MX bus in the monitoring panel.
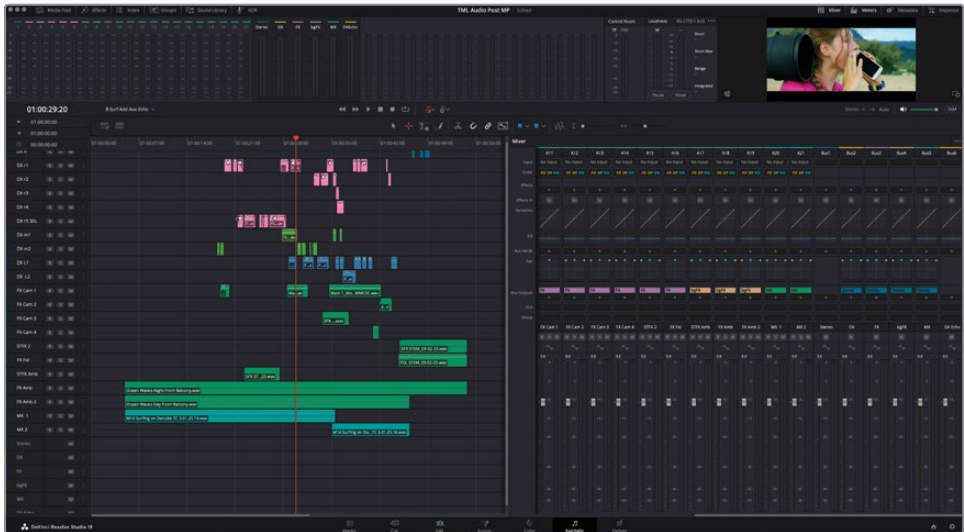
You are all set up with the Aux bus. The next step is to add the Echo plug-in.

9   In the mixer, on the DX Echo bus, click the Add Effect button and choose Delay > Fairlight FX > Echo.

The Echo window opens, and the Echo plug-in appears in the Bus6 effects slot.

10 In the Echo window, in the Presets pop-up menu, choose the TML Surf Scene preset you made in Lesson 7.

> **NOTE** If you did not make a preset in the previous lesson, use the Large Hall preset for now.

11 Close the Echo window.

Don't worry if the Echo preset is too intense for the scene; it will work fine for demonstrating the auxiliary Echo bus. You'll change the Echo settings later.

Since this Aux bus is specifically for adding echo to dialogue tracks, let's move the DX Echo bus to the left of the dialogue tracks in the mixer. This won't change the sound or the processing order, but it will keep the bus near its constituent tracks.

12 In the mixer, click the DX Echo bus's name and then drag the DX Echo channel strip toward the left to the first track position in the mixer before the dialogue tracks.
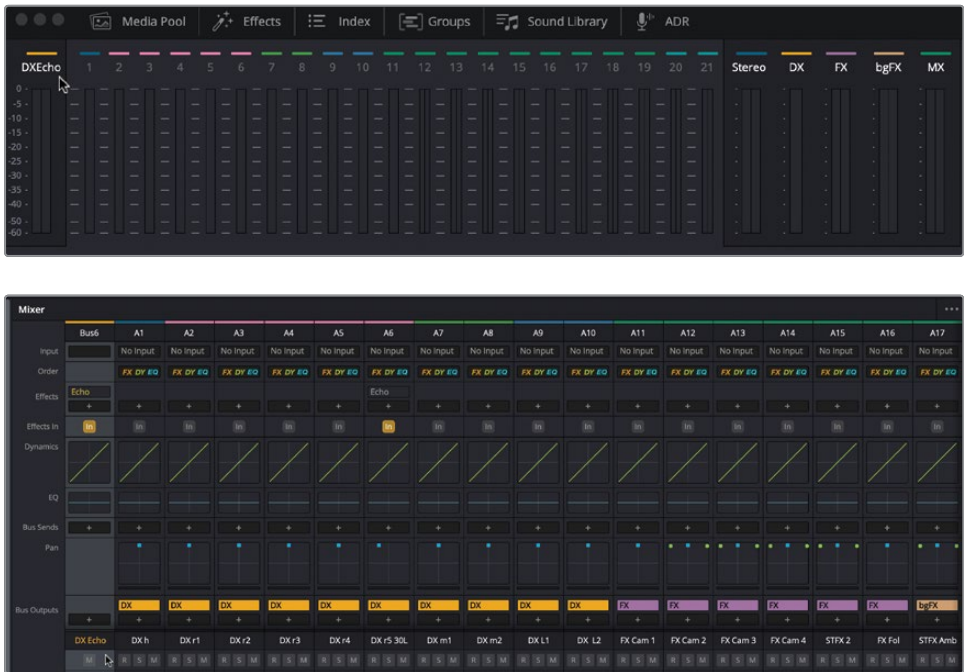
The DX Echo is in its new position in the mixer and monitoring panel.

The last step is to send the signal from the tracks to the Aux bus.

NOTE A yellow track or bus name indicates that it is the most recently selected track or bus.

Sending Track Signals to the Auxiliary Bus

Currently, the auxiliary DX Echo bus is configured with the Echo plug-in ready to use, but you still need to send the signal from the tracks to the bus. This is one of those times when audio mixing terms and functions are interchangeable. That's right, you are about to employ the use of *sends* to do exactly what their name implies. If you look closely at the mixer, you'll find the Bus Sends between the EQ and Pan controls.

1   Select the A6 DX r5 30L track to highlight it in the mixer.

2   In the mixer, in the A6 channel strip, click the Bus Sends Add (+) button and choose DX Echo from the pop-up menu.

The DX Echo bus is now in the Bus Sends list along with all busses that are not already assigned to the track. If you hover over the bus name, you can access the Bypass, Controls, and Delete buttons for the DX Echo bus.

3   Hover the pointer over the DX Echo and click the Controls button to open the Bus Sends – DX r5 30L window.
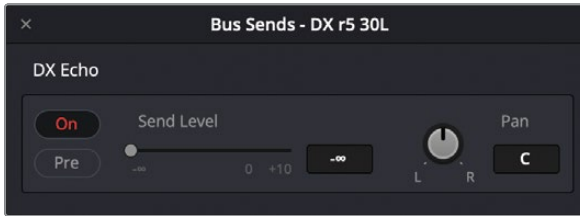
The Bus Send is already on. The Send Level adjusts the amount of signal sent from the track to the bus.

4   Double-click the Send Level handle or drag the Send Level handle to 0.0 to send the full signal to the DX Echo bus.

> **NOTE** The send level is also visible as a colored bar beneath the Bus name in the Bus Sends area of the channel strip. Bus names in the mixer match their user-defined color in the Bus Format window. You change the bus color in either the Bus Format window or Tracks Index. For this lesson, all dialogue busses are yellow regardless of the track colors that were used to differentiate between different characters.

5   Play the set of clips in the A6 DX r5 track with the auxiliary bus Echo effect applied.

Hold on. There is no Echo? Why? We forgot to plug it in. That is, in terms of audio signal flow, the signal may be routed from track to track, track to bus, bus to track, bus to bus, or all these options as long as it eventually reaches an output bus if you want to

hear it. In this timeline, all tracks are assigned to the Stereo output bus, as you can clearly see in the mixer. The DX Echo bus still needs to be assigned to the output bus.

6   In the mixer, in the Bus Outputs area of the DX Echo bus, click the Add (+) button and choose Stereo from the pop-up menu.

You should now be able to hear the A6 track with the echo effect.

7 Solo the A6 track and play the set of clips in that track.

Wow! That's a whole lot of echo, and not in a good way. Why does it sound so different from the echo with the same settings from the previous lesson? One word: stereo. Time-based effects like echo, delay, and reverb are designed to create the illusion of space.

Don't worry; the settings can easily be adjusted to rein in the effect so it works better for this scene.

The last step is to use the fader on the Bus 2 VERB bus in the mixer to raise or lower the amount of reverb applied to the sends. This is a fantastic way to control effects on multiple tracks over time. Keep in mind that any changes you make to the auxiliary bus levels will apply to all the incoming sends. If you want to vary the amount of the effect on a specific track, lower the Send Level on that track's send.

Customizing Auxiliary Bus Effects Parameters

Now that you've heard the over-the-top stereo TML Surf Scene Echo preset with the tracks, let's make some quick changes to rein in the effect and save it as a new preset. To customize an effect-applied bus, you just hover your mouse pointer over the effect in the mixer and click the Controls button to open the corresponding plug-in window.

1 In the mixer, hover the mouse pointer over the Echo effect in the Bus 6 DX Echo bus and click the Controls button to open the plug-in controls window.

2 In the DX Echo controls window, continue using the TML Surf Scene preset. If you don't have that preset, use the Large Hall preset instead.

3 Locate the Input Format dropdown menu in the upper right of the window. Change the Input Format from Stereo to Mono since the dialogue track being sent to the bus is mono.
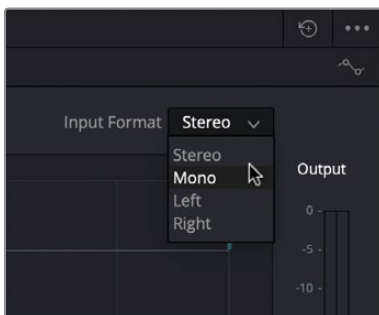
4 Using the image below as a guide, make the necessary changes to the Echo controls. Once finished, solo the A6 DX r5 30L track and play the first set of clips to hear them with the new settings.

Now that is a much better echo! Let's save it as a preset so it can be used again later if needed.

5 In the upper left corner of the Echo controls window, click the Add button. In the Echo preset dialog, click Create New. Name the preset **TML Surf Scene v2**.
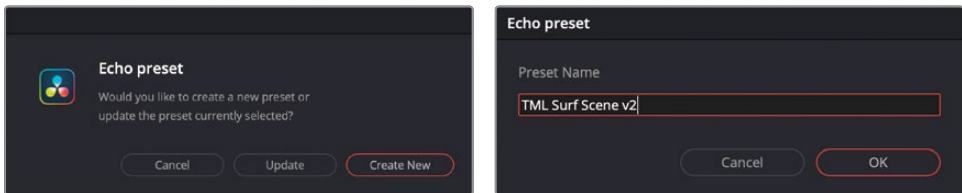
6 Close the Echo controls window.

7 Unsolo the A6 track.

8   Play the scene from the beginning to hear how it sounds with the echo applied to Raina's r5 track when she shouts from the beach to Harper.

9   Play the scene again, starting with the pink clips in the A2 track. This time, while Raina is shouting offscreen, adjust the fader level for the DX Echo Aux bus to increase or decrease the amount of echo during playback. When finished testing the fader-driven Aux bus, double-click the fader to reset it to its default position (unity).

Nice echo! This time, it totally works with the scene. Did you notice how easy it is to use the fader to control the echo on the track during playback? Welcome to bussing and the power of the Aux bus. Let's add another track.

Send Another Track to the DX Echo Bus

Now that you have successfully sent a track to an Aux bus and seen how well it works to apply a custom effect, let's send another track. In this self-guided exercise, you'll send Harper's track to the DX Echo bus as well. In this timeline, Harper has only one brief exchange of dialogue at the end, and she is shouting to her friends back on shore. Although she is closer to the camera, her sheer volume level and the fact that she is surrounded by reflective water means her sound would likely have a bit of echo too.

Your goal is to send her track to the DX Echo bus. Use the A6 track as a guide to make sure you are assigning it correctly. And for fun, during playback, use the fader to find a good DX Echo level for Raina during her yelling clips, and then find a different fader level for Harper's clips when she pops up out of the water and bellows, "Did you get it?"

Your motivation is that once you can find levels on the DX Echo fader that you like for each section, you'll realize that you could easily automate those levels to fit this scene and many other scenes during a mix. Trust your ears and have fun!

Of course, increasing the Echo effect on a track may also increase the track level, so you'll also need to watch the track levels along the way. You'll focus more on mixing in the next lesson.

NOTE If you didn't complete these exercises but would like to see and hear a finished version of the timeline with the busses and DX Echo Aux bus applied, open the **8 Surf Aux Echo Finished** timeline. You'll notice that some EQ adjustments were made to Raina's A6 track to simulate the loss of high frequencies in her vocals, reflecting her offscreen distance from the camera.

Working with Nested Timelines

Nested timelines are a powerful tool for combining elements from different timelines. In the next set of exercises, you'll explore two practical ways to use nested timelines in everyday workflows.

In Lesson 3, "Editing Sound Effects and Music," you used a nested timeline to transfer an edited music timeline into a separate timeline containing only a picture. Now, you'll apply nested timelines in two different projects.

First, in the TML Audio Post project, you'll add an FX timeline containing all the sound effects elements to the master timeline, which already includes dialogue and music. Then, in the Fusion VFX project, you'll move a music mix with over a hundred tracks and instrument parts into the Fusion VFX timeline, allowing the composer and clients to collaborate on finalizing the mix.

Moving an FX Timeline into a Master Timeline

This first example involves using nested timelines to move a pre-mixed sound effects timeline into a master timeline that already contains the dialogue and music tracks. Often, on large shows, there will be separate dialogue, sound effects, and music mixers working on separate mixes for their designated elements. These pre-mixes can include clip keyframes, plug-ins, track automation, and bussing specific to that timeline. To combine the elements of different timelines, you can use nested timelines to move the entire timeline into a master timeline and then decompose. This time, you'll move a simple FX timeline complete with sound effects-specific busses to a master timeline and then decompose to add it to the mix in progress.

1   Open the **8c FX premix** timeline.

As you can see, this timeline has one stereo bus, named FX.

2   Play the timeline once to hear the sound effects for the scene without any dialogue or music.

A sound effects editor worked on crafting this version of the timeline, while the dialogue editor performed a checkerboard edit, recorded ADR, and edited the final version of the dialogue edit.

Let's open the dialogue edit.

3   Open the **8 Dad and Harper Add FX** timeline.
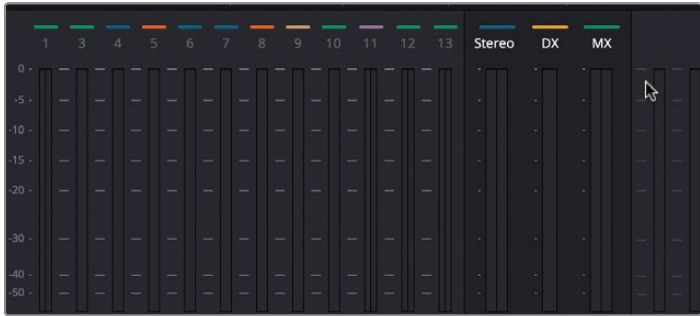
At a glance, you can see in the timeline, mixer, and meters that this timeline has dialogue, music tracks, and busses but no FX busses. The only FX track is the PFX 1, which has been edited out of the original dialogue. Those clips have been disabled, and the track has no output bus.

There are many tracks with disabled clips that don't need to be visible. Before combining the timelines, let's hide the unnecessary tracks.

4   In the Tracks Index, turn off visibility (eye icon) for tracks A1 through A6. Hide the A10 track as well.
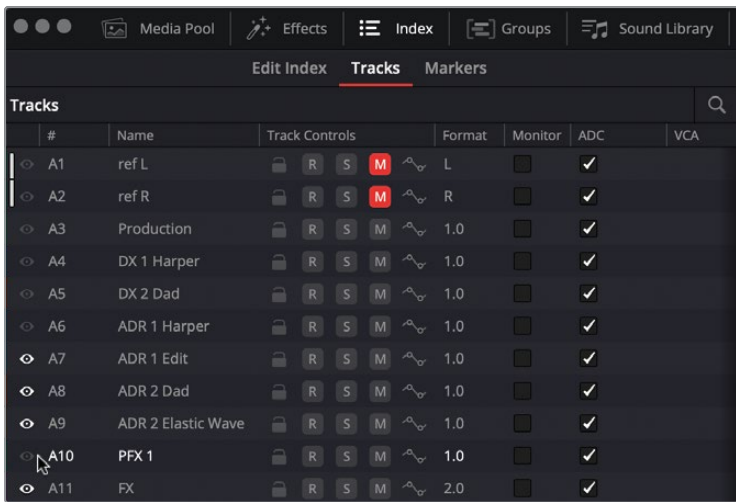
5 Hide the Index.

Now, it's time to combine these timelines. In this exercise, you'll add the FX premix timeline to the empty FX track in the master timeline. Then, you'll decompose the nested FX timeline to reveal all the tracks, clips, and busses.

6 In the timeline, select the A11 FX track. Move the playhead to the beginning of the timeline.

You can drag a timeline from the media pool into another timeline or insert it using timecode if the two timelines have matching timecode. In this case, both timelines are duplicates of the same timeline from editorial, so the timecode will be the same.

7 In the media pool, right-click the 8c FX premix timeline and choose Insert Selected Clips to Timeline Using Timecode.
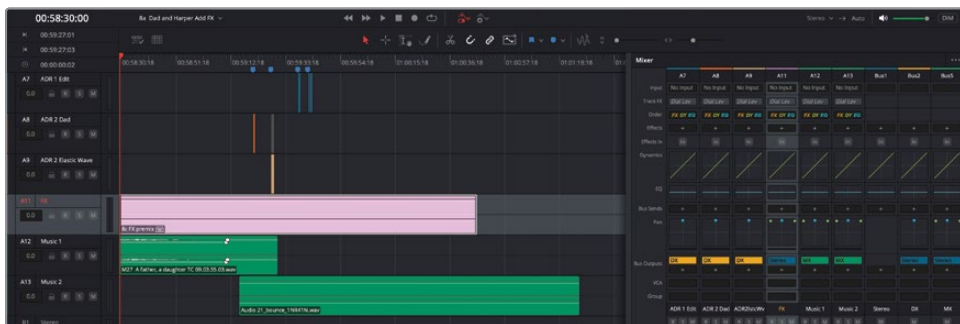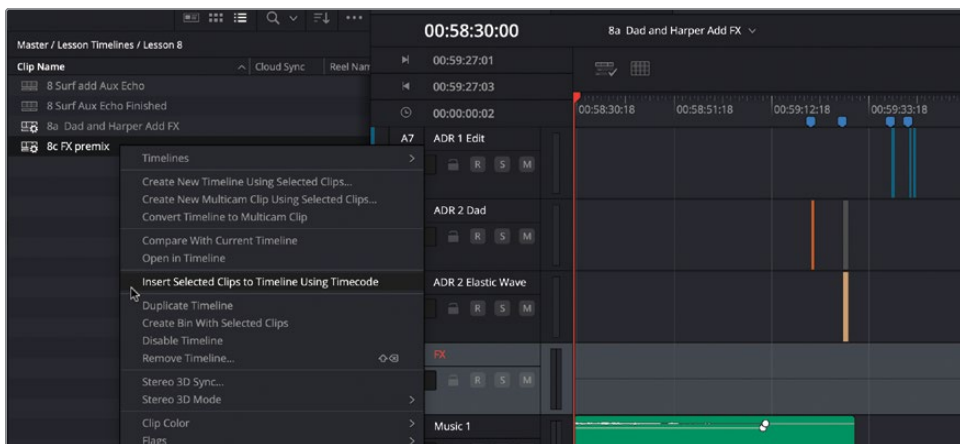
The nested 8c FX premix timeline appears in the A11 FX track.

8 Hide the media pool. Solo the A11 FX track, start playback, and listen for the sound effects in the nest. Feel free to unsolo the track and listen to the entire timeline with the nested timeline contributing to the FX during playback.

Now, let's decompose it and add the FX bus to the busses already in the master timeline.

9 In the A11 FX track, right-click the nested timeline and choose Decompose in Place > Preserving Audio Data.
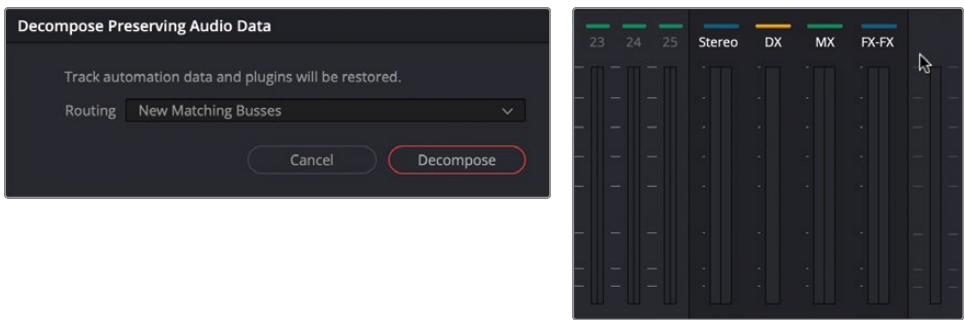
10 In the Decompose Preserving Audio Data dialog, set the Routing to New Matching Busses. Click Decompose.
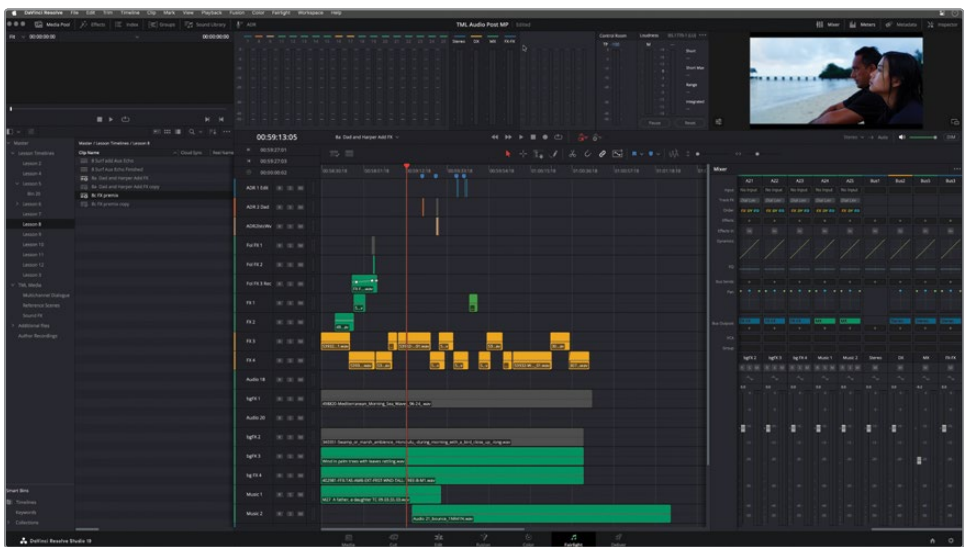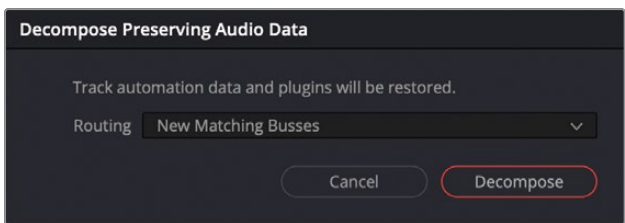
The FX premix timeline is added to the master timeline, including effects, processing, automation, and bussing. In this case, there were three busses originally named FX,

bgFX, and Stereo. They were incorporated into the master timeline and tagged with the name of the track the nest was decomposed in. Now, a new FX-FX bus has been added to the master timeline. Why FX-FX? When you decompose a timeline using the New Matching Busses option, matching busses from the nested timeline are added and appended with the track name the nest was opened in. This is handy for keeping track of busses coming in from other mixes.

11 Expand the mixer if necessary to see the FX-FX bus.

The timeline is set up with busses and ready to mix!

Although this is a very simple nested timeline example, it should give you a glimpse of the possibilities for collaborative audio workflows and moving mixes from one timeline to another.

Nesting and Decomposing a Music Mix

Let's look at nesting a more complex timeline with over 100 tracks. In this exercise, you'll return to the Fusion VFX project, where you'll open a mix-in-progress version of the music with all the instrument parts and music elements in one timeline. Then, you'll nest it in a version of the VFX timeline with the video to quickly add all the tracks and processing to the master timeline.

1 Open your Fusion VFX v1 project. Then open the timeline
8 Fusion VFX add Music Mix.
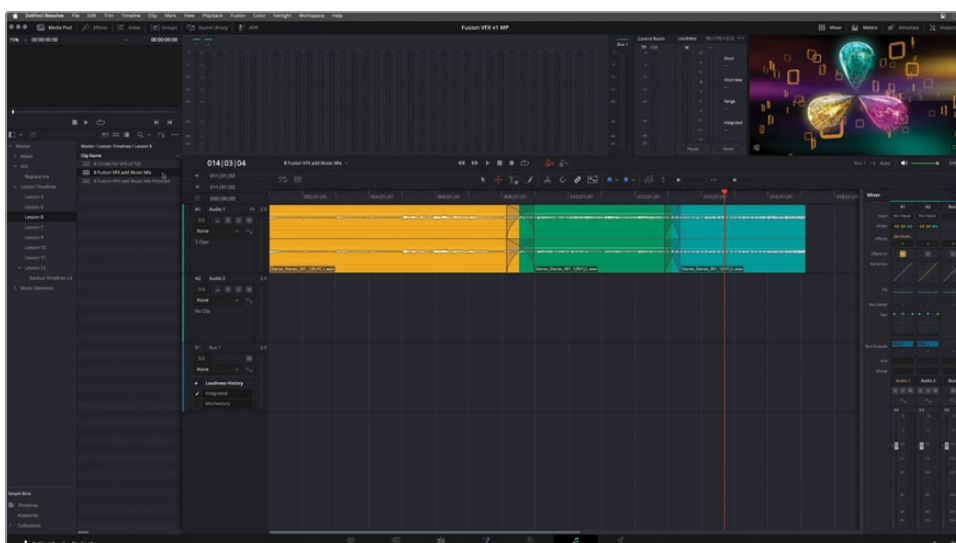
The familiar timeline opens with the Fusion VFX video and the edited music with crossfades in the A1 track.

You'll add the timeline with the full music mix to the A2 track. First, let's look at the other timeline.

2   Open the timeline **8 Circles for VFX v2 full**.
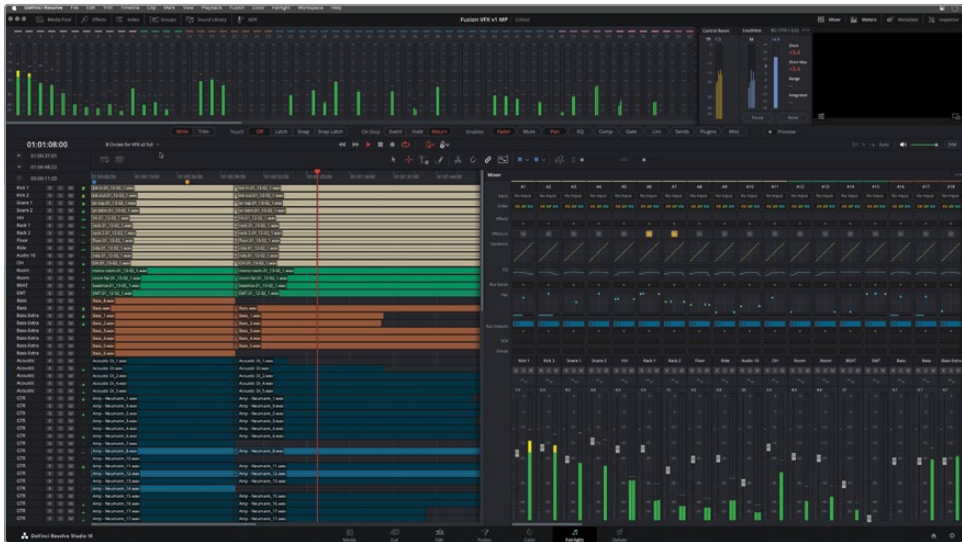
This timeline includes the intro and outro of the song "Circles," which is edited from the full song to match the version you edited in the Fusion VFX timeline in Lesson 3.

> **NOTE** The crossfade between music sections was applied to all tracks at once by selecting a range that included a few seconds on either side of the split between sections and all tracks. Then, a crossfade was applied to the selection range via the Batch Fades window in the Fairlight menu.

You'll find many of the different tools and workflows that you've learned throughout this book in this timeline. For this lesson, your goal is to edit this timeline as a nest into the VFX timeline and decompose it to bring the full mix into that project. However, you can always come back to this timeline to play (literally and figuratively) on your own.

Let's take a quick tour before nesting the timeline.

In the monitoring panel across the top of the screen, you'll see meters for 112 tracks.

3 Double-click the meters in the monitoring to stack the meters in two rows.
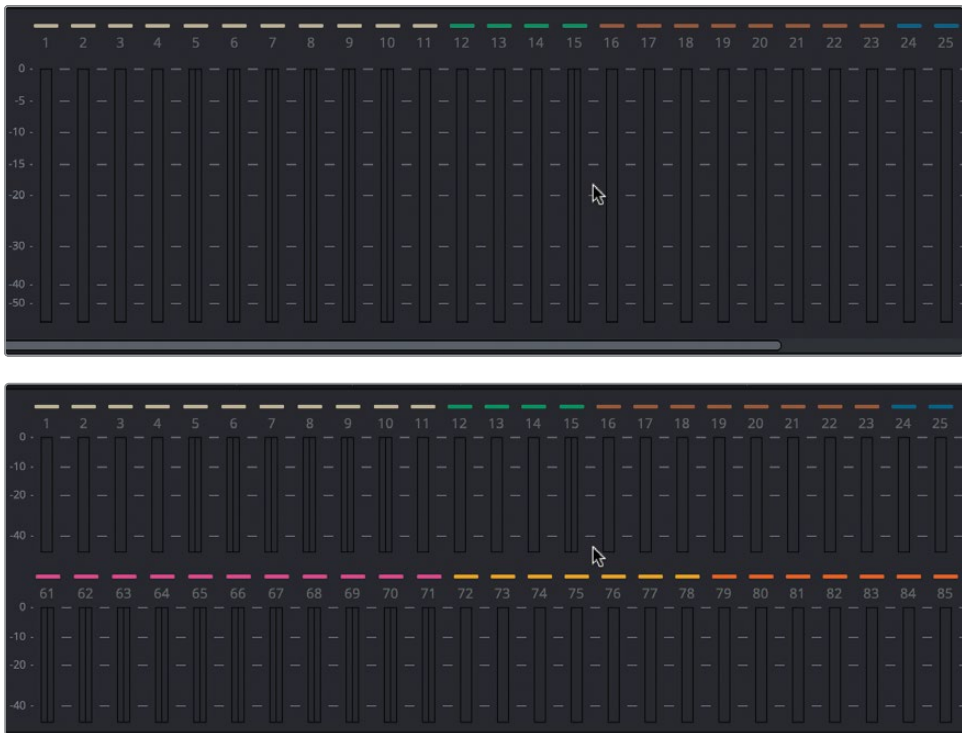
> **NOTE** You can double-click the meters to toggle between single-row and dual-row meters. This option is also available via a right-click menu in the meters.

4 Show the Groups panel to see the track groups that were added for mixing. Hide the Groups panel.

In the timeline, you'll see that the tracks are colored based on types of instruments or effects.

In the mixer, you'll see that the tracks are panned front and back, as well as left and right, to fill the panoramic field for a 5.1 mix. There has also been EQ applied to many of the tracks.

Now, let's proceed with the nesting exercise. First, you'll need to mark an In point to set the start of the nested timeline so that it is in sync with the music in the other timeline.

5   Move the playhead to the blue marker in the timeline and mark an In point.

Setting an In point here will automatically set an Out point at the end of the last clip in the timeline.

6   Show the media pool. Open the **8 Fusion VFX add Music Mix** timeline.

7   Drag the 8 Circles for VFX v2 full timeline to the empty A2 track in the timeline. Make sure that the nested timeline starts at the very beginning of the A2 track. Hide the media pool.

8   Play a few seconds of the timeline to hear both A1 and A2 tracks together.
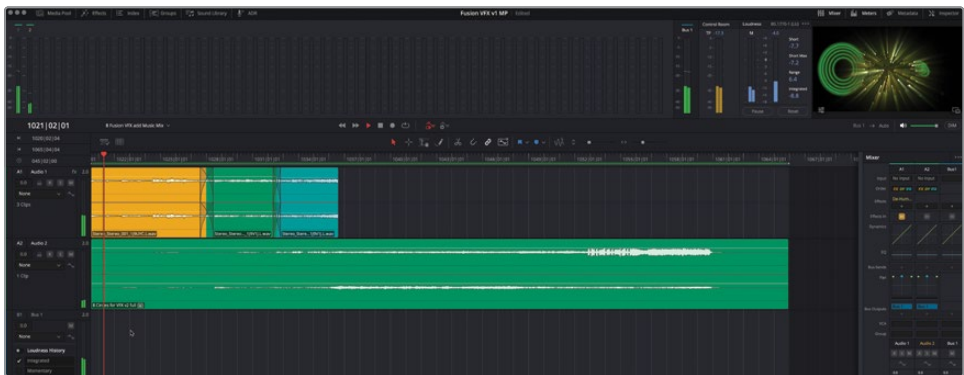
The nested timeline has a 5.1 output bus, and this timeline has a stereo output bus, so the nested timeline will play, but you won't hear all the audio channels until you decompose the timeline and the 5.1 bus is active.

9 Mute the A1 track.

10 Right-click the nested timeline in the A2 track and choose Decompose in Place > Preserving Audio Data.

11 In the Decompose dialog, choose the New Matching Busses routing and click Decompose.
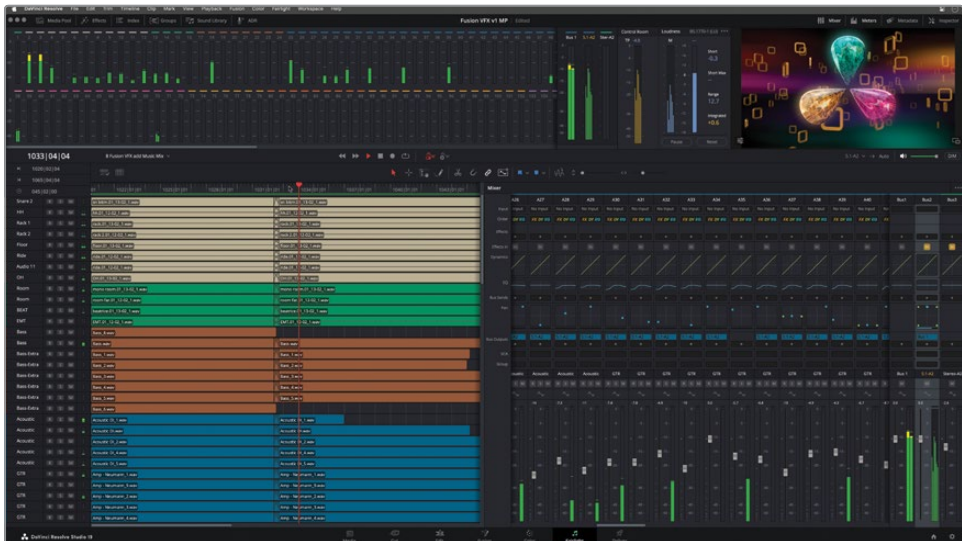
Well done. You can monitor Bus 1, which is stereo, or the 5.1-A2 bus for surround sound.

12 Double-click the meters to see dual rows in the monitoring panel.

Now, the music is in place and ready to be mixed with different versions for the clients if needed. You'll revisit this timeline in the next lesson to explore using track groups to automate mutes and other mixing and sweetening tricks along the way.

Creating a Timeline Template

To finish off this multi-stop bus tour, you'll head over to the timeline, where you'll apply new skills to transform an empty timeline with 100 tracks into a usable template.

For this exercise, you'll import a DaVinci Resolve project (.drp) containing some sample timelines from different types of projects. The premade timelines in this project are also

available as DaVinci Resolve timeline (.drt) files that can be imported into another project. You'll find this project and timelines for this exercise in the R19 Fairlight Part 2 folder in your R19 Fairlight book media folder on your system.

1   Choose File > Import Project. Then, navigate to the R19 Fairlight Part 2 folder in your R19 Fairlight book media folder on your system.

2   Locate the Sample Timeline Templates folder.

3   Inside the Sample Timeline Templates folder, select **Fairlight Timeline Templates.drp** and click Open.
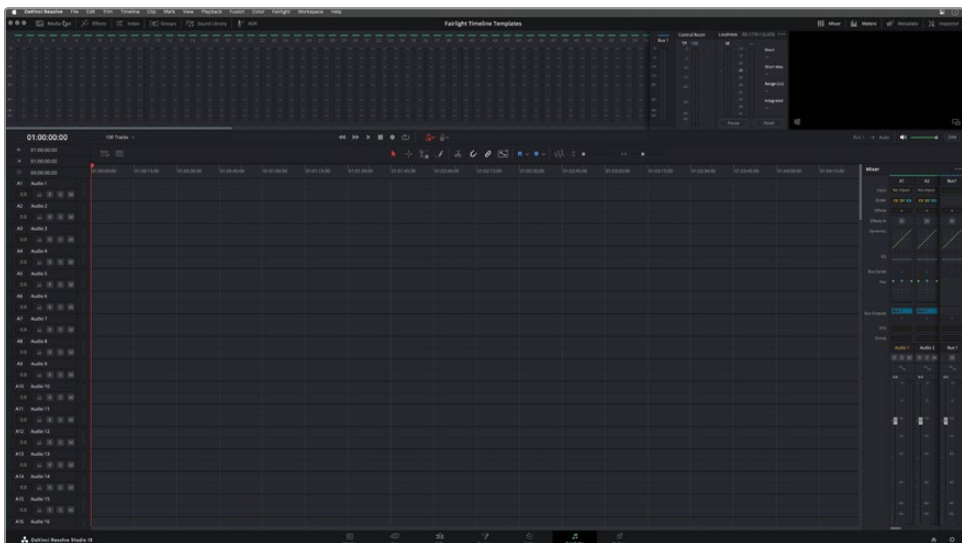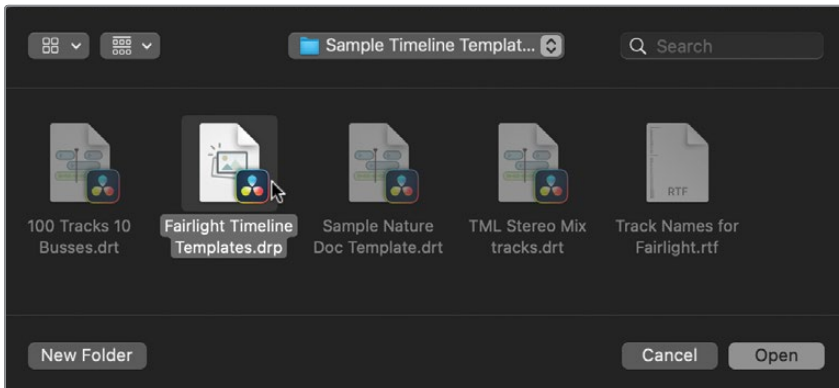
The project opens with an empty timeline named 100 tracks. True to its name, the timeline contains 100 stereo tracks. There is also one default output bus aptly named Bus 1. This is a perfect starter timeline for building a template.

The first step for building a template is naming the tracks. Track names and abbreviations can vary significantly between types of projects, audio post facilities, and the re-recording mixer's current tracks.

Let's condense the vertical track heights in the timeline.

4   Drag the vertical zoom slider all the way to the left to reduce the vertical track height and see more tracks in the timeline.

This step allows you to view more tracks and their corresponding track names in the timeline for this exercise.

For this example, you'll use a basic naming structure that includes the big three sound categories: dialogue, sound effects, and music. You'll find the names in an .rtf file in the Sample Timeline Templates folder. The track name list was also added to the Project Notes for easy access during this exercise.

5   Choose File > Project Notes to open the Project Notes window.
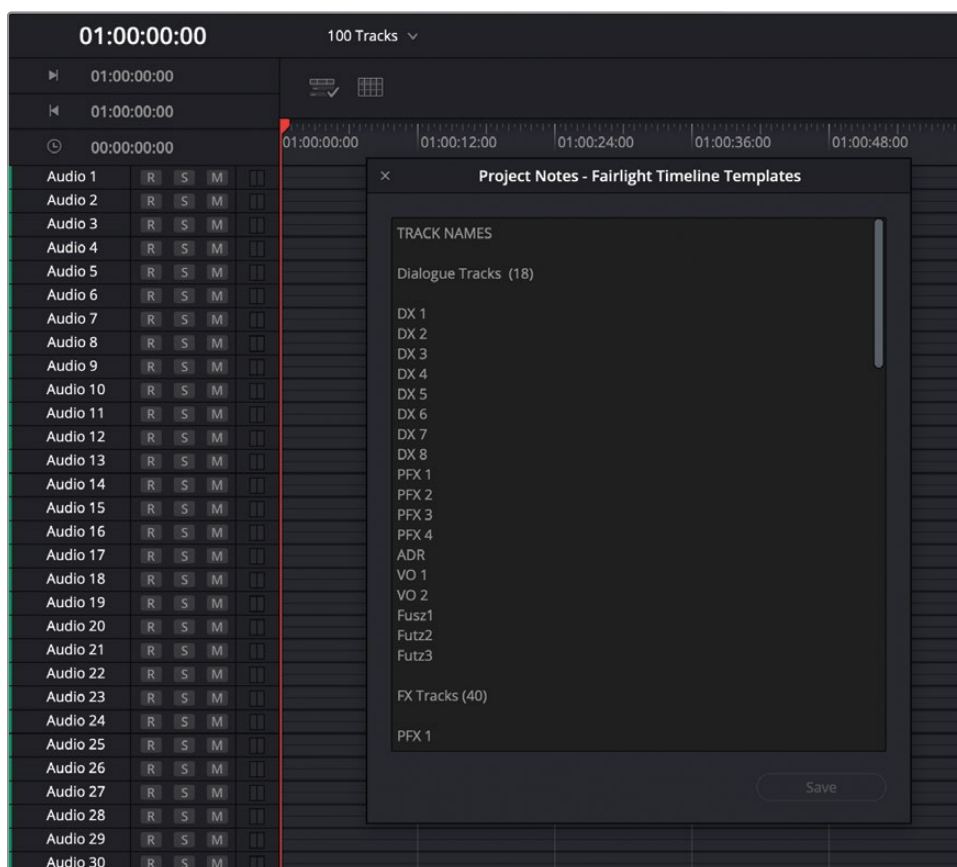
The Project Notes include a vertical list of all the track names for this template, including 18 Dialogue tracks, 40 FX tracks, and 24 Music tracks.

Manually naming 100 tracks could take a while. Luckily, the Fairlight page features a batch track-naming function that allows you to copy all the track names from a list and paste them into all the tracks simultaneously. Let's try it.

6　In the Project Notes window, drag a selection starting with DX 1 and continuing down through the entire list until you have also selected the last music track name, MXStem8.

Don't worry if you select the header between track types, such as FX Tracks (40). Those tracks can be used as spacers between track types.

7　Once you've selected all the track names, right-click the empty space in the Project Notes window and choose Copy from the shortcut menu.
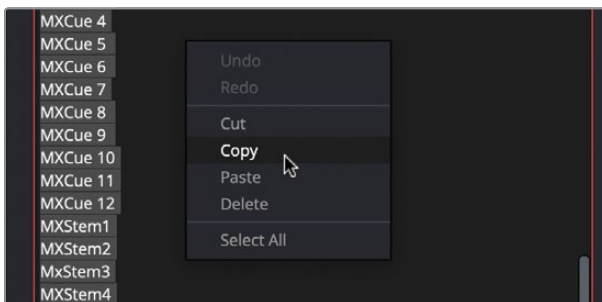
8　In the timeline, double-click the Audio 1 track name to select it in the A1 track.

9　Choose Edit > Paste or press Command-V (macOS) or Ctrl-V (Windows) to paste the copied track names into the A1 track name field. Press Return or Enter.
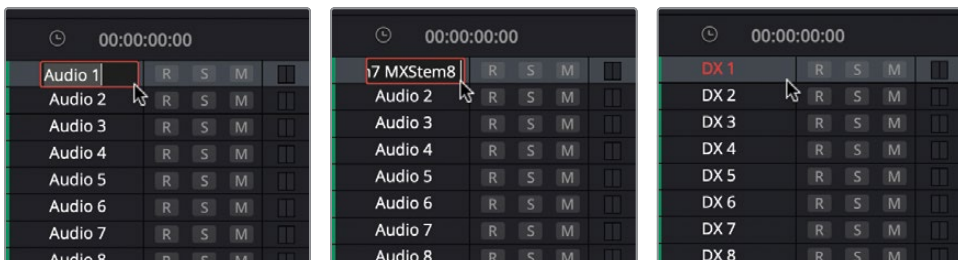
Bam! Just like that, the tracks are renamed according to the vertical list in the Project Notes. Now you know that you can copy and paste a vertical track name list from any text file directly into a timeline track's name field, and the renaming will begin from that track.

10　Close the Project Notes.

Step 1 is complete. Next, you'll locate the header track for the FX and Music and create those spacer tracks. Spacers aren't necessary but can be useful when working with high track counts. Some mixers like to use Aux busses as spacers between sections.

11 In the timeline, zoom vertically to increase the track heights until you can see track numbers in the headers.

12 Scroll down to the A19 track. Right-click the A19 FX Tracks (40) track header and choose Lock Track Height to > Micro. Change the A19 tracks color to brown.
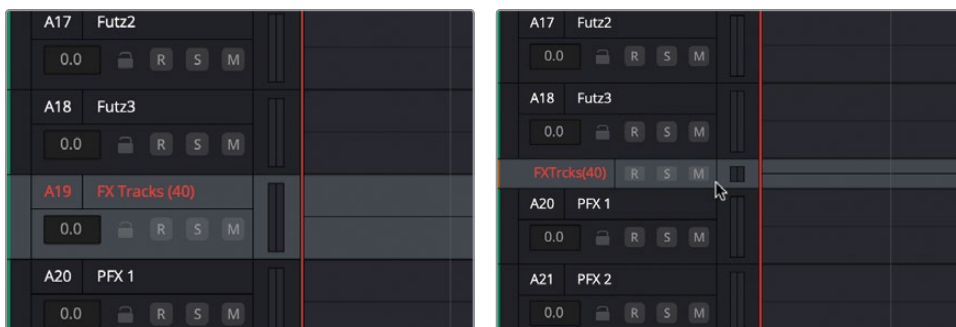
13 Scroll down to the A60 track. Lock the track height and change the color to make it a spacer track.

Excellent! The track names are all the guides you need to build a template. You can select track types and make groups, change track color and format, add busses, and assign busses. Don't worry, you'll get a chance to build a template at the end of this lesson. First, let's take a quick look at a finished version of one possible template based on these tracks.

14 Show the media pool and the Groups panel. Open the timeline **100 Tracks 10 Busses**.
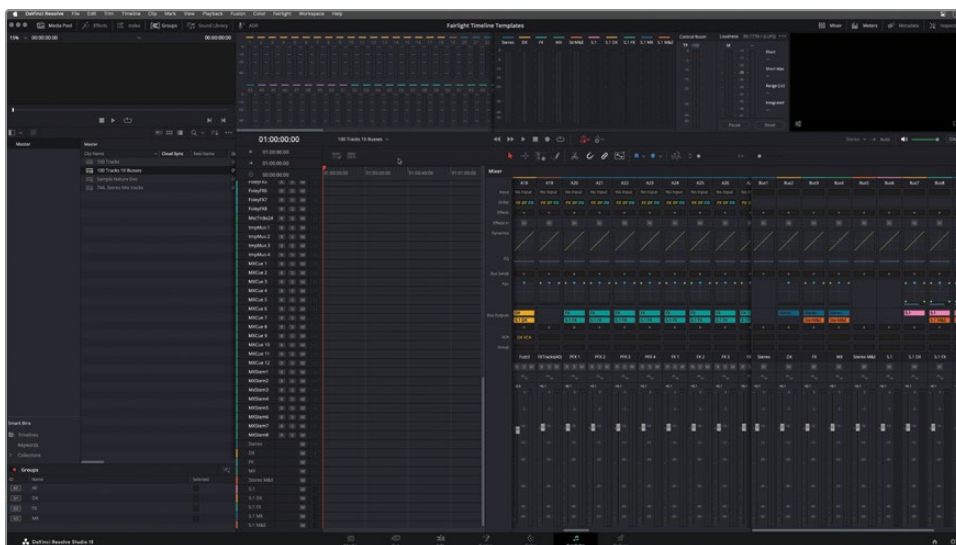
This colorful version of the timeline includes an assortment of busses and groups and is ready for media and mixing!

Saving a Timeline Configuration in the Presets Library

Once a timeline template is complete, you can export the timeline as a .drt file or save the timeline configuration in the Presets Library, allowing you to open a new timeline using the saved preset configuration on your system. Timeline configurations include all bus and track information, including color, routing, plug-ins, panning, and processing.

In this exercise, you'll save the 100 Tracks 10 Busses timeline as a Fairlight configuration preset in the Presets Library. Then, you'll test using the preset on a new timeline.

1   Open the **100 Tracks 10 Busses** timeline, if necessary.

2   Choose Fairlight > Presets Library.

3   In the Presets Library window, change the "Filter by" dropdown menu to Fairlight Configuration Presets.

4   Click Save New. Then, click Create New in the Fairlight Configuration Presets dialog.
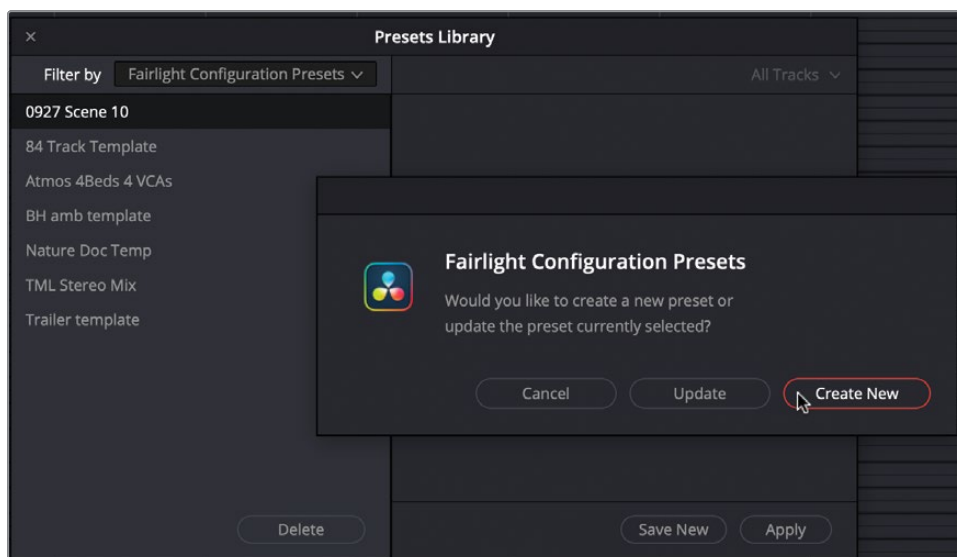
5 Name the new configuration with your initials followed by **100 Tracks 10 Busses**. Click OK.
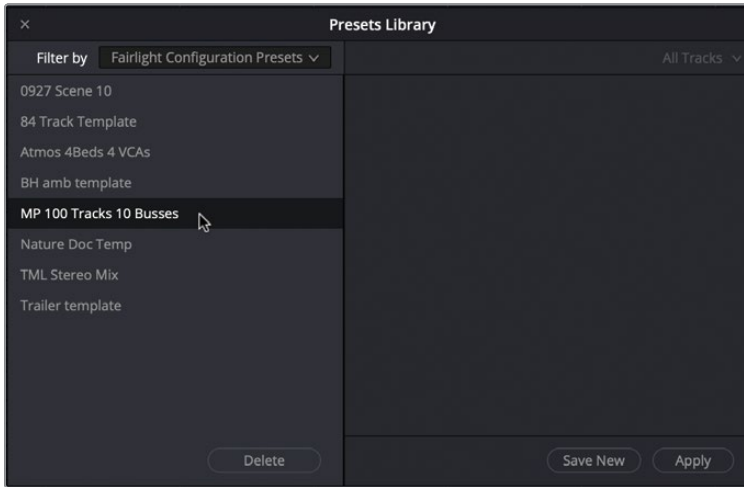
Your new Fairlight configuration preset appears in the presets list on the left of the Presets Library.

6 Close the Presets Library.

Applying a Timeline Configuration Preset to a New Timeline

Now that you have created a timeline configuration preset, how do you use it? Timeline configurations are applied to new timelines as they are created. Let's try it.

1 Choose File > New Timeline.

2 In the Create New Timeline dialog, click the Use Fairlight Preset checkbox.
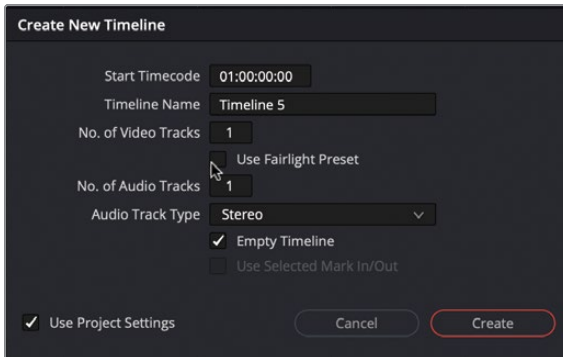
The Fairlight Presets dropdown menu appears.

3   Select your 100 Tracks 10 Busses preset from the dropdown. Click Create.
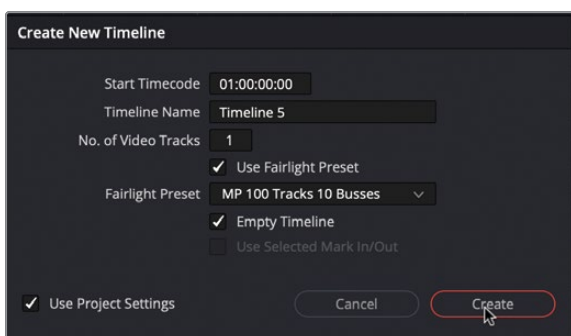
Your new timeline opens with identical settings—including groups, tracks, busses, and routing—as the original timeline you used to create the preset.

Congratulations! You have reached the end of the "Simplifying the Mix" tour in the Fairlight page. Along the way, you have worked with track groups, created busses, nested and decomposed timelines, and created a timeline configuration template. Best of all, you can apply these skills to your own projects.

Create Your Own 100-Track Template

Now is your chance to return to the initial 100 Tracks timeline that started this entire template journey. Use your new skills to select similar tracks, beginning with the DX (dialogue) tracks. Create a group, color-code the tracks, change their format to mono, and set up a submix bus. You've got this!

Remember the power of working with track groups, selecting multiple tracks, and using the Option/Alt-modified click to apply changes to all selected elements as you build your template.

When you're finished, save the timeline with a unique name in the Presets Library as a Fairlight timeline configuration.

For added inspiration and to explore the many possibilities for setting up tracks and busses in your projects, check out two example timelines from actual shows in the media pool. Here, you'll find empty timelines from two productions: Sample Nature Doc and TML Stereo Mix Tracks.

Sample Nature Doc showcases the track and bus routing used in a nature documentary series. TML Stereo Mix Tracks represents the track and bus configuration from the *Too Much Life* feature film, which you've been working with throughout this book. In this example, you'll see multiple tracks for each main character, each with their own set of futz tracks for phone, computer, and other effects. Additionally, a submix bus is assigned to each main character, with all character submix busses ultimately routed to a DX submix bus. Enjoy!

Lesson Review

1   Which Fairlight feature is used to link multiple mono tracks as a single multichannel-formatted channel strip in the mixer?

    a) The link button in the toolbar

    b) Track Groups in the Groups panel

    c) Choose Link Selected Tracks in the right-click menu

    d) The Link Group window in the Fairlight menu

2   What types of Group Settings can you apply to a track group? (Choose all that apply.)

    a) Editing

    b) Fader

    c) Mute

    d) Solo

    e) Channel configuration

3   What type of bus can you use to apply one plug-in, such as Reverb, to any track in the timeline?

    a) Main bus

    b) Effects bus

    c) Submix bus

    d) Auxiliary bus

4   Where do you access the Bus Format and Bus Assign windows?

    a) Mixer

    b) Monitoring panel

    c) Fairlight menu

    d) Auxiliary controls

5   True or False? New DaVinci Resolve projects open in the default Flex Bus format.

6   Where do you save a timeline configuration to use as a template?

    a) Presets Library

    b) Media pool

    c) Timelines Smart Bin

    d) Timeline Options menu

Answers

1 d

2 a, b, c, d

3 d

4 c

5 True

6 a

Mixing and Sweetening the Soundtrack

The final step of audio post-production involves enhancing and mixing tracks to prepare them for output, assuming all other steps have been completed. This process is straightforward for experienced audio engineers or re-recording mixers, since they know how to turn a timeline full of tracks into a professional mix. However, if you're an editor or new to audio post-production, this series of exercises will help you understand mixing by introducing the essential Fairlight tools and how to use them. Once the levels are balanced and tracks are panned, you'll dive into primary sweetening tools like equalization and dynamics processing to improve clarity and elevate the overall sound.

The last step of audio post involves enhancing and mixing the tracks to prepare them for output. Assuming that all other steps were completed before the mix, this process is straightforward.

Time

This lesson takes approximately 90 minutes to complete.

Goals

If you are a seasoned audio engineer or re-recording mixer, you already know how to transform a timeline full of tracks into a professional-sounding mix; you just need to learn how to do it using the tools in DaVinci Resolve.

Mixing is an ongoing process. Every variable you change on every track can affect how other tracks interact. In other words, you have no "set-it-and-forget-it" in mixing. That's why you start small at the clip level by balancing levels within each track.

In this lesson, you'll share the stage (sound stage) with a re-recording mixer as you explore, experiment, and experience various mixing tasks. You'll focus your attention on the track levels, how they sound together, and the placement of sound within the panoramic field. Then, you'll move on to sweetening the sound.

What Does a Re-Recording Mixer Do?

A *re-recording mixer*, also referred to as a *dubbing mixer*, is an audio engineer who specializes in post-production audio mixing. The name indicates that this mixer is not recording a live set, live audience, or live performance. All the sound they are mixing—including recorded dialogue, sound effects, and music for a soundtrack—has already been recorded and assembled into a track (although a re-recording mixer may also work as the sound designer on lower-budget productions).

To build the final mix, re-recording mixers pre-mix the tracks to enhance the sound and reduce the number of tracks going to the final mix. The re-recording mixer carefully balances those tracks to create a final mix based on the sound designer's or director's audio goals. Along the way, the mixer records the output of the mix, or groups of tracks, back into the timeline into a new track. Hence the name re-recording mixer—because they continually re-record mixed sections of the timeline or the entire mix back into the timeline to create finished stems or mixes. The mix must also comply with regulations that enforce sound mixing standards for broadcast or theatrical distribution.

Although you can mix projects in a home office or recording studio, full-sized mixing or dubbing stages are preferred when mixing feature films destined for theatrical release. They enable the mixer to fully hear how audiences will experience the final mix.

In audio post-production, a re-recording mixer typically begins by reviewing the dialogue, sound effects, and music elements, making sure they are clear and cohesive. This involves adjusting the volume of each track, ensuring that dialogue is intelligible, sound effects are prominent but not overpowering, and music supports the emotional tone of the scene. Once the levels are balanced, the re-recording mixer moves on to panning, spatial placement, and other techniques to create a polished and immersive mix, followed by sweetening (enhancing tonal qualities and dynamics) and finalizing the mix for output.

Preparing the Project

In the first series of exercises, you'll continue working with the end of the "Learn to Surf" scene that you've been editing and building since Lesson 2. Before you dive into your first mixing task, let's take a moment to set up your Fairlight workspace.

1 Open your TML Audio Post project. Then open the timeline
9 Mix Balance and Pan Start.

This version of the scene represents the culmination of your work throughout this book.

2 Choose Workspace > Rest UI Layout.

3 Extend the mixer to show at least 10 tracks.

4 Press Shift-Z to fit the timeline clips horizontally in the visible timeline area.
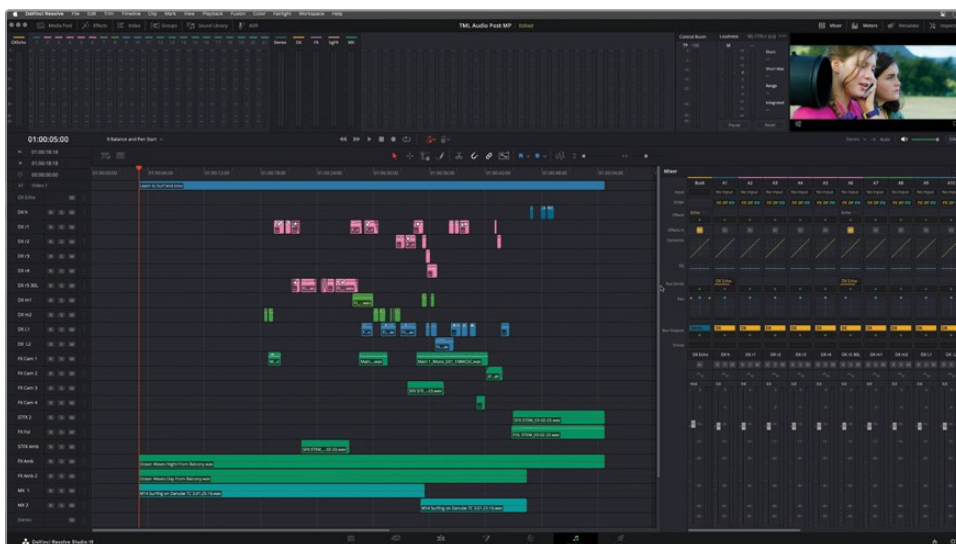
Let's resize the viewer in the monitoring panel. Because this timeline has only 21 tracks, you don't need to see all the empty track meters at the top of the screen. Also, at any time, you can increase the height of the monitoring panel while decreasing the height of the mixer. In this exercise, you'll customize your interface for mixing. Then, you can make changes as you go to accommodate the mixing tasks at hand.

To resize the viewer or the monitoring panel, you can simply drag the viewer's boundaries.

5   In the monitoring panel at the top of the screen, move the pointer over the left edge of the viewer until it becomes a resize pointer. Drag the left edge of the viewer to the left until the loudness meters are to the left of the track and bus meters.
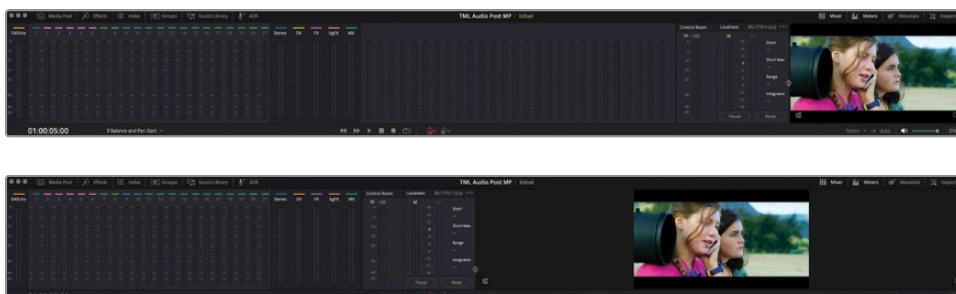
This customized layout has several advantages. First, the gray space around the viewer makes it easier to glance at, like a stand-alone window. Second, all the meters are together in the monitoring panel, making it easier to see them all at once.

Next, you'll resize the monitoring panel in both directions to see how easily you can quickly adjust the height of the panel or mixer.

6   Drag the lower edge of the viewer down to increase the height of the viewer and monitoring panel. Stop dragging when the monitoring panel fills the upper third of the screen. You should still be able to see the pan controls above the bus outputs in the mixer.

This layout is great when you need a larger viewer, loudness meters, and overall track meters.

7 Drag the bottom edge of the viewer up as far as you can to minimize the height of the viewer and monitoring panel.
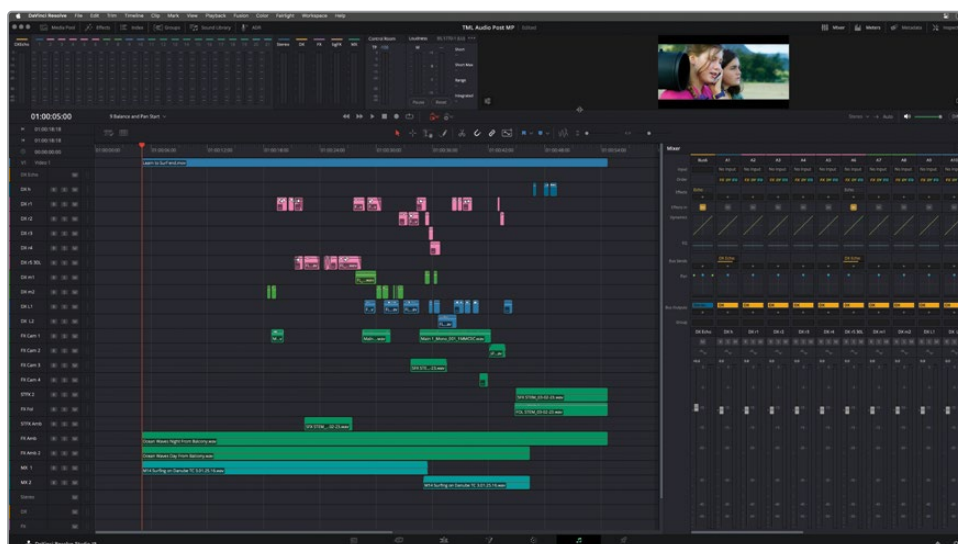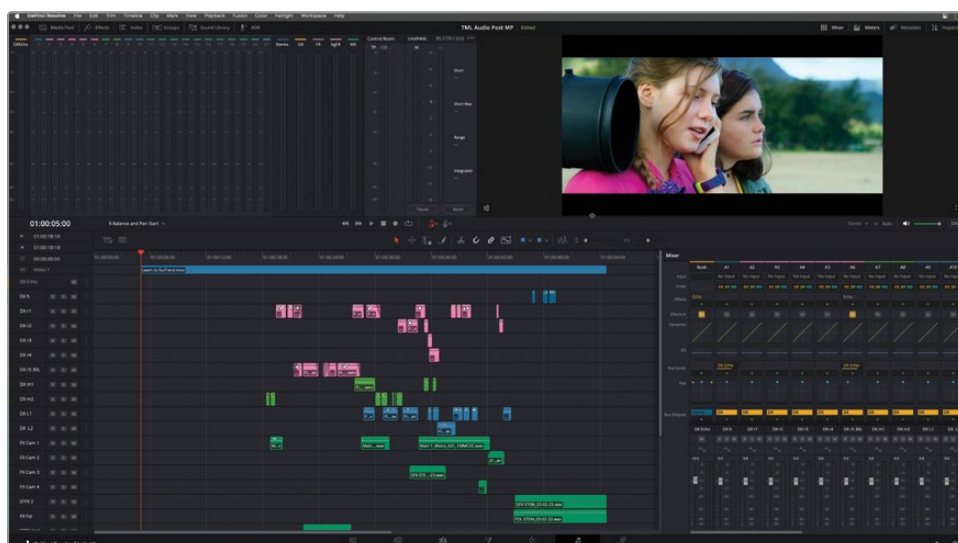
Now you know how quickly you can resize the interface when needed. The trick to resizing your interface is to maximize the size of the elements you need as you need them.

> **TIP** You can save your favorite interface layouts in Workspace > Layout Presets options. Here, you can Save, Import, and Delete custom layouts.

Using Reference Tracks to Set Monitoring Levels

In previous lessons, you learned some of the guidelines for balancing dialogue and sound effects. Those are important considerations, but—stepping away from the clips and tracks for a moment—everything comes down to volume. Your personal preferences for volume levels may be completely different from your family and friends. That's why when you use the television remote control, you usually change the volume as well as the channel. Regardless of your personal preferences, audio levels should be consistent from scene to scene and from one show to the next.

How do you achieve this? Meters are only part of the story. You still mix with your ears as well as the meters. So, before mixing a single track, you should set your computer output monitoring levels. Of course, you may be at home or in a classroom while stepping through this training guide, so you may not have the equipment to calibrate your listening environment—or even the speakers to listen to the output. And if you already have professional calibration gear and an awesome surround speaker setup at your mixing station, chances are your room is already calibrated.

> **NOTE** The engineering details for calibrating your room go far beyond the scope of this book. Furthermore, the standards vary from region to region and are subject to your equipment, room size, project type, and delivery requirements. If you are considering a career in audio post-production, by all means, become an expert in the hardware, standards, and calibration. You can find reference details and sample wave test files online through professional organizations like the EBU, SMPTE, or ATSC, as well as some audio post facilities.

Regardless of your setup, for the purposes of this lesson, how loud should your monitoring output be? Basically, if your room, computer output level, and speakers are properly set up, the levels should be comfortable to *your* ears while you mix. Loud sounds will sound loud, quiet sounds will sound quiet, and if something isn't working, you'll hear it.

One of the best ways to set your listening levels is to use a reference track that contains professionally mixed content similar to your current project or scene. In the real world, you'd need a time machine to reference a finished mix of your current project. Such is the power of training guides like this one. However, it is common for sound-mixers-in-training to use finished mixes as a guide to check levels and practice re-mixing a scene.

For this exercise, you'll use the finished reference mix from the "Learn to Surf" scene to set your listening levels. These can also be used later while mixing to check your balancing and sweetening skills against the stereo mix.

1 Open the timeline **9 Full Surf Scene Reference**. Resize the layout as you see fit.
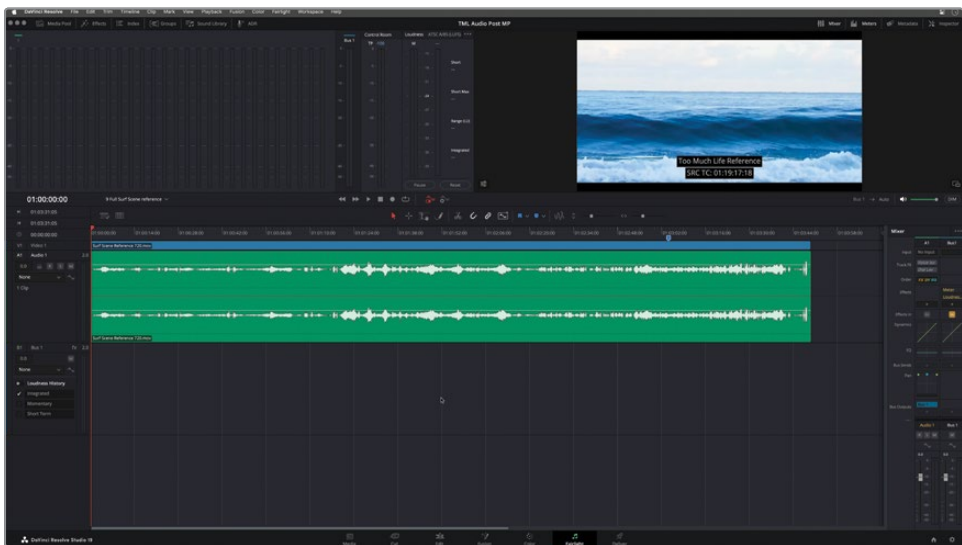
Take a moment to familiarize yourself with the various meters on the Fairlight page.

2 Move the playhead to the blue marker, which is just before the end of the scene that you'll be working with shortly.

3 Start playback from the blue marker. Look at all the meters in the track header, mixer, and monitoring panel.
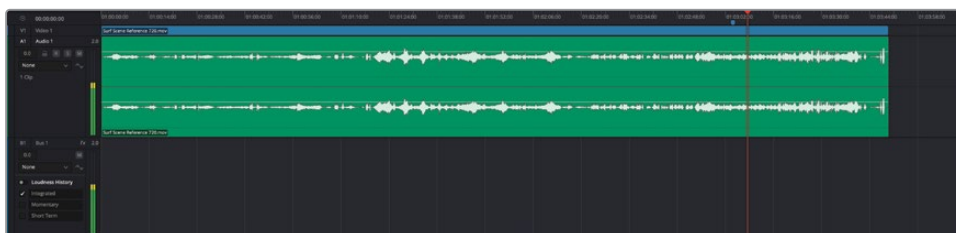
Track header
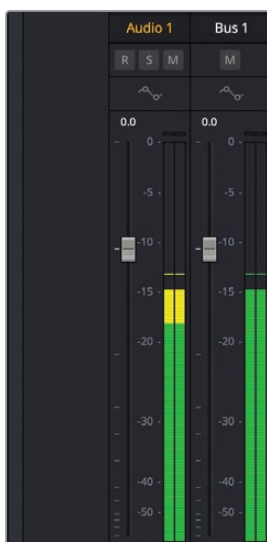
Mixer
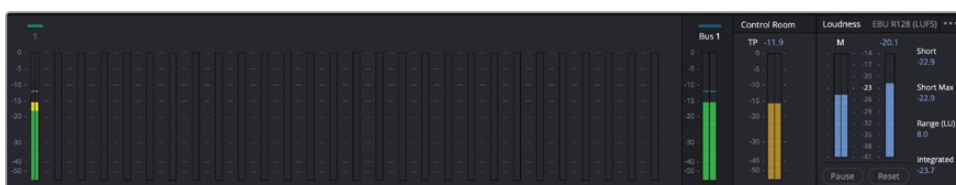
Monitoring panel

Seasoned audio engineers should feel right at home among these meters and controls. However, if you're new to audio post, this setup may be as intimidating as a space shuttle cockpit. If so, relax. In the next few exercises, you'll discover just how useful and user-friendly the meters and mixing controls can be.

In the meters to the right of the monitoring panel, you'll see that each meter tells the same story but simply uses different scales to do so: the reference track levels peak

at the nominal levels between -10 and -15 dB in the mixer and correspond with the Control Room (mustard colored) meter and fluctuate around -23 LUFS in the blue loudness meters. You'll work more with the Control Room and loudness meters in the next lesson.

> **NOTE** American loudness standards are -24 LUFS, which you can change in the project settings. Also, keep in mind that this is a stereo signal.

Now that you are confident in the reference levels, you can adjust your monitoring levels.

4   In the master playback monitoring controls, drag the fader to the far right position, 0 dB. If you are monitoring through an external audio I/O device, adjust the monitoring levels accordingly. Press Option/Alt-L to replay that section from the blue marker if necessary.
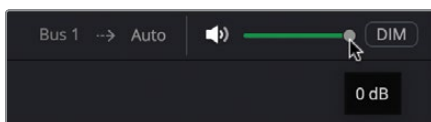
5   While listening to the reference track, adjust the output level of your computer or speakers so that the levels are comfortable and clear for you. You can do this whether you are using headphones or external speakers. If necessary, you can also adjust the playback monitoring level.
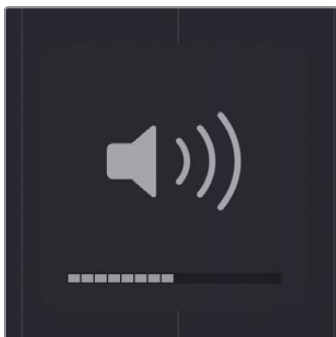
How did the levels sound to you? If they sounded too low, you may have set your computer output level a bit too low based on the reference track. Conversely, if the dialogue was too loud, you probably set the levels too high. Setting the best levels comes with practice. The important goal is to set a comfortable level for you.

6   Adjust your computer output level as needed.

Once you have set up your monitoring levels for mixing, you must abide by the number one rule: Don't touch the levels again until you finish the mix. Really! Moving forward, when the tracks sound too loud or too quiet, they truly are. Fix them in the timeline or the mixer, but don't touch the computer volume controls. Trust your ears as well as the meters.

NOTE If you're working in a quiet room with a good set of stereo audio monitors, you should be good to go. If you have been using your built-in computer speakers or an inexpensive single speaker up until now, you are advised to use headphones when performing these mixing exercises. Stereo headphones are made for casual listening, while professional film mixing headphones are built for accurate, detailed sound to ensure a balanced mix. For this lesson, mixing with standard stereo headphones will suffice for learning purposes.

Finding Useful Reference Tracks

What should you use as a reference track? Something that is as close as you can get to the project or scene you are mixing. Of course, no two projects or scenes are the same, so when looking for reference tracks for comparison, here are some basic guidelines:

— Compare apples to apples whenever possible. In other words, find a project that has the same delivery format. For example, if you are mixing a podcast, use a downloaded podcast as a reference. If you are mixing a film (even a short film) for theatrical release, use the highest-quality theatrical mix you can of the same genre. Blu-ray and 4K DVDs often use the theatrical mix or something close to it. You can patch a player to your system so you can hear the soundtrack, see the meters, and set your listening levels accordingly.

— If you are working on an episodic show, scripted or unscripted, use mixed elements from previous episodes as a guide.

— Choose reference scenes or sections that reflect the overall feel and sound experience (soundscape) that you're trying to convey in your mix.
For example, if you are mixing an intense dialogue scene that involves a heated exchange ranging from hushed whispers to loud shouting, use a scene with the same dynamic dialogue range as a reference.

— Choose a reference soundtrack that successfully balances and mixes the subtle elements in the scene as well as the big moments. Pay attention to the background, ambience, and Foley sound effect levels, as well as the placement of the music and non-diegetic sound in the mix.

Evaluating the Reference Track Levels

It's one thing to read about dialogue levels, loudness, and balancing tracks. It's another thing entirely to mix the levels yourself. One of the best ways to understand the art of balancing dialogue, FX, music, and overall levels is to listen to other mixes and watch the meters as a guide. In the movie theater or on your television at home, you don't have the luxury of meters to watch while you listen to the show. Here in the Fairlight page, you have meters everywhere, and even floating plug-in meters that you can watch during full-screen playback if you'd like. Why not?

In this exercise, you'll dive a bit deeper into the various types of meters by changing the project settings from the default IEC 60268-18 Peak Program Meter (PPM) that you've been working with to the Digital VU (Volume Unit) Root Mean Square (RMS) meter for mixing. What is the difference between the meter types?

In audio post-production, a PPM detects quick peaks, helping prevent distortion and ensuring compliance with broadcast standards. On the other hand, an RMS (Root Mean Square) meter measures average loudness, reflecting how audiences perceive sound, making it crucial for balancing dialogue, music, and effects. PPM meters are essential for avoiding clipping, while RMS meters help maintain consistent loudness across a mix. For optimal results in post, both meters should be used together to ensure that a mix is clear, balanced, and broadcast-ready.

1   Press Shift-9 to open the Project Settings. In the Fairlight settings Audio Metering section, choose Digital VU from the Meter Type dropdown menu.
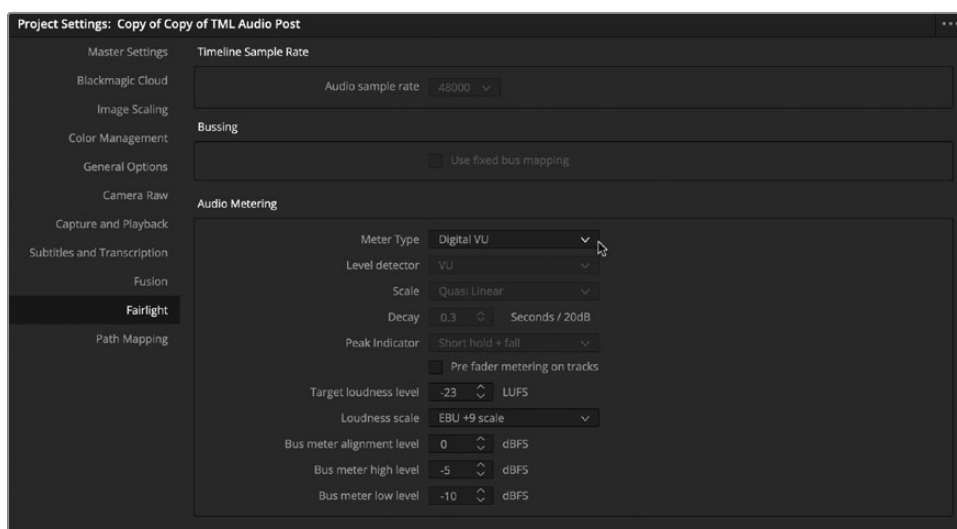
2   While you are in the Project Settings window, make sure that the "Pre fader metering on tracks" option is unchecked so the changes you apply to the faders will be reflected in the meters.

3   Click Save.

Next, you'll open the Fairlight FX Meter plug-in, which has already been added to Bus 1 and offers additional metering to guide you while monitoring playback.

4   In the mixer, locate the Meter plug-in on the Bus 1 channel strip. Then click the Controls button to open the floating Bus 1 meter.

You are already familiar with the Meter plug-in from previous lessons. This meter is a Peak Program Meter, just like the default DaVinci Resolve mixer, timeline, and monitoring meters have been all along.

Now that you've changed the Fairlight meters in the Project Settings to Digital VU, the monitoring panel and mixer will display RMS meters. This gives you both types of meters to look at while you evaluate and mix levels. Let's look at them in action.

5   Move the floating meter to the lower part of the timeline next to the mixer.

6   Undock the viewer as a floating window. Resize the viewer and move it to the bottom of the timeline near the floating meter and mixer.

7   Start playback from the blue marker and listen to the playback while you watch the meters.

These dialogue levels are right in the dialogue sweet spot for a mix, even set against heavy music. Do you remember your target levels for dialogue? They're between -15 and -10 dB, with the average at -12dB. Also, if you recall, these target dialogue levels appear yellow in the track meters, mixer, and monitoring panel track meters. The dialogue in the reference track fits the target levels perfectly. At powerful moments, music and sound effects swell to the same levels when dialogue is not present. The loudest peaks in this scene reach around -6 dB but not above that.

In the last step of evaluating this reference mix, you'll watch the entire scene from the beginning with the floating meter showing so that you can keep an eye on the levels throughout.

8 Move the playhead to the beginning of the timeline.

9 Press Command-F (macOS) or Ctrl-F (Windows) for Cinema Viewer full-screen playback.

10 Move the floating viewer to the upper right corner of the screen.

> **NOTE** If you are using dual monitors, with a full-screen clean feed to the second monitor, move the floating meter over the video output screen if possible.

11 Play the scene from the beginning to listen to the mix and watch the meter in action. Feel free to use the JKL keys during playback to fast forward or rewind to specific parts of the scene.

12 When you are finished, stop playback. Press Esc or Command-F (macOS) or Ctrl-F (Windows) to exit full-screen playback.

13 Close the floating viewer and meter.

This scene has come a long way since the original production sound you checkerboard-edited back in Lesson 2. You can refer to the reference timeline whenever you need a little mixing inspiration, to see the levels, or to listen to the balance between sound elements.

Setting Initial Track and Submix Levels

The four fundamental elements of mixing are volume level, pan, dynamics, and equalization. Each of these elements affects the overall sound. In many ways, mixing a soundtrack is like cooking a single-pot dish. Many parts influence the final dish, so you continually mix, add more ingredients (tracks), taste (listen), and add spices (effects and EQ) until it's ready to serve.

The most apparent mixing element is the volume, so let's start with that. You have only one way to find out if the starting levels are balanced. First, as a re-recording mixer, you'll want all the faders in their default positions before you listen to the tracks. If a change in level is necessary, you'll want to be the one to do it.

In this exercise, you'll work with the end of the surf scene from the previous lesson and reset the faders to the default position (unity). Then you'll find starting levels for the tracks and busses.

1 Open the **9 Balance Start** timeline.

2 Expand the mixer as far to the left as it will go.

For this first exercise, let's change a setting in the mixer options menu to show more channel strips in the mixer.

3 In the Mixer options menu, choose Small Track Mixer.
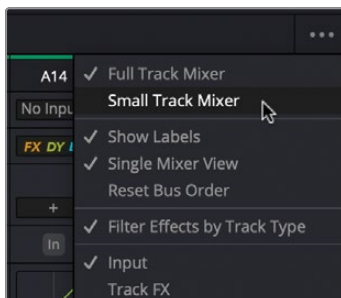
The channel strips are narrower but still offer all the same controls and information.

In the mixer, you can see that some of the faders are not in their default positions—specifically, the aux bus and some of the submix busses. Luckily, you only need to double-click a fader to reset it. This is the starting position for mixing.

4   Double-click any fader not in the default position to reset it.

OK, the faders are all at unity. What's next? Assuming that all the clip levels are balanced within each track, you can use the individual track faders to adjust the levels, then use the submix busses to adjust the balance and levels between the dialogue, FX, and music within the mix. Remember that the faders are only in their starting positions; their final positions will change constantly until the final mix is bounced or rendered in the deliver page.

First, it's a good idea to check the levels, rather than assuming "all is well in Levelville." To do this, you'll use tools you are already familiar with to systematically check levels of each submix group in order of priority, starting with dialogue (DX). If there is an issue with a specific clip, this is the time to fix it. As you check the levels, you can determine if it is something you'll fix on the clip, on the track, or with a submix bus during the mix.

5   In the monitoring controls, beneath the viewer, set the monitoring dropdown menu to DX to monitor only the dialogue bus.
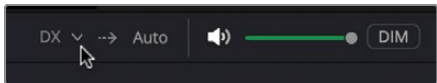
6   Open the corresponding Meter plug-in for the DX submix bus and place it above the timeline and mixer where you can easily see it.

Let's play the scene, dialogue submix only, to see and hear the current dialogue levels. There should be some dynamic range in the dialogue levels between talking levels, -10 dB to -15dB, and shouting, peaking as high as -6 dB. If any track levels are obviously out of place, you can balance them in the track header or in the mixer.

7   Move the playhead to 01:00:18:00, just before the first dialogue clip on the A8 DX m2 track.

8   Play the timeline from the first dialogue clip and listen to the levels in context while watching the viewer and floating DX meter.

The floating meter shows the peak program level, with the highest peak value at the top. If you glance at the track levels and the DX bus meter in the monitoring panel, you will see that these depict the peaks as a horizontal line. The solid-color bar in the meter is the RMS perceived level, which is similar to the loudness meter.

> **NOTE** The track colors and subsequent clips are different for each character, and the initials in each track header following DX are the first letter of the character's name, followed by their track number. For example, DX r1 is Raina's first dialogue track, and DX m2 is Marley's second dialogue track.

What did you think of the dialogue levels? Objectively, they are all within the dialogue target levels and fit the scene's context. Subjectively, Raina's offscreen shouting could be a little lower, but it would be better to lower it when you can hear it with the music and sound effects.

The DX bus has been checked, and it's good to go. Dialogue is the most important element in the scene. Once the levels are good, you can add the next most important ingredient, which in this case is the music. If this were an action scene where sound effects drive the scene, the FX bus would be the next element to add to the mix.

Wait. Busses don't have a Solo button, and you can only monitor one bus at a time. So how do you add only the music bus (MX) to the mix? No problem, just mute the busses you don't want to hear and monitor the Stereo bus.

9   Move the playhead to the blue marker near the beginning of the timeline.

10 Set the monitoring dropdown menu to Stereo bus.

11 In the mixer, mute the FX and BG FX busses. Then open the Meter plug-ins on the Stereo and MX busses.

12 In the monitoring panel, drag the right edge of the loudness meters toward the left to make room for the three floating meters.

The music levels will seem loud, because they are. You'll need to find a comfortable level for them during playback that works alongside the dialogue and complements the scene. Music without dialogue is usually around the same levels as dialogue, but with dialogue, it's lowered by -6 to -10 dB. Keep in mind that you'll be applying sidechain compression and EQ carving to the music to favor the dialogue later in this lesson. For now, your goal is just to find a level that works for music with dialogue.

13 In the mixer, click the MX bus fader and prepare to reduce the level.

14 Start playback from the beginning of the scene. Use your ears and the Stereo meter as a guide to drag the MX bus fader downward to lower the level of the music going to the Stereo bus.

15 Play the timeline a second time if needed. Once you've set the MX bus level, stop playback. If you aren't sure what level to set, try moving the fader to between -10 dB and -15 dB.

Now that you have a strategy for balancing clip, track, and bus levels, let's try a track FX designed to use the levels of one track (or tracks) to duck (lower) the levels of another.

Using the Ducker to Lower Music or FX Tracks

The Ducker is a built-in Fairlight Track FX, like the Dialogue Leveler, that makes it easy to get a good mix automatically, by using the levels of one track or multiple tracks to manage the levels of another track, without the need for keyframes or automation. Commonly used to lower music or sound FX tracks based on active dialogue, the Ducker is an invaluable tool for quickly reducing dominant tracks to benefit dialogue levels. In this exercise, you'll apply the Ducker Track FX to a dominant music track and adjust the settings as needed.

In this exercise, you'll revisit a scene where the music track is overpowering the dialogue. In just a few steps, you'll enable the Ducker on the music track, choose the dialogue source tracks, and then adjust the amount that you want to lower the music.

Let's start by opening the timeline and playing it to hear the dominant music track.

1   Open the timeline **9a Ducker Start**. Move the playhead to the first marker, if necessary.
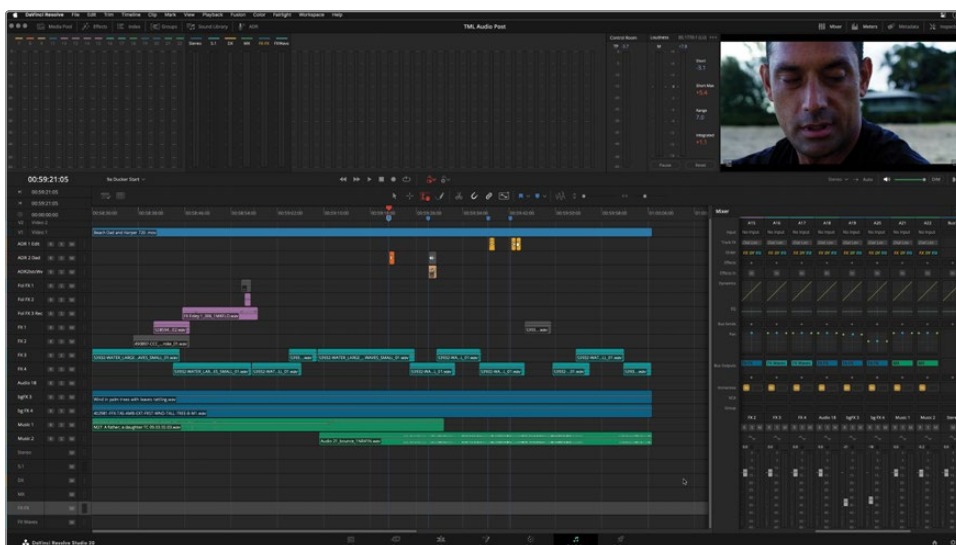
2 Play the timeline from the first marker and listen to the music with the dialogue.

What are your thoughts? The music is sweet and really adds some emotional resolution to the scene and the film, but it is a bit overpowering for the dialogue.

This is the perfect time to employ the powerful Ducker Track FX to the Music 1 track. First, let's determine which tracks have active dialogue.

3 Play the timeline again from the first marker. See if you can identify the active dialogue tracks by looking at the meters in the track headers and monitoring panel.

As you can see, and hear, the active dialogue clips for this scene are on tracks A7 ADR 1 Edit, A8 ADR 2 Dad, and A9 ADR 2 Elastic Wave. Now, let's open the Inspector.

4 Hide the video tracks via the Timeline Options menu by deselecting the Display Video Tracks option. Close the Timeline View Options menu.

5 Hide the mixer and show the Inspector.

6 Zoom the timeline as needed to see all clips in visible tracks. Resize the monitoring panel, if necessary, until the timeline is high enough to see all visible tracks containing clips and the track number and name in the headers.
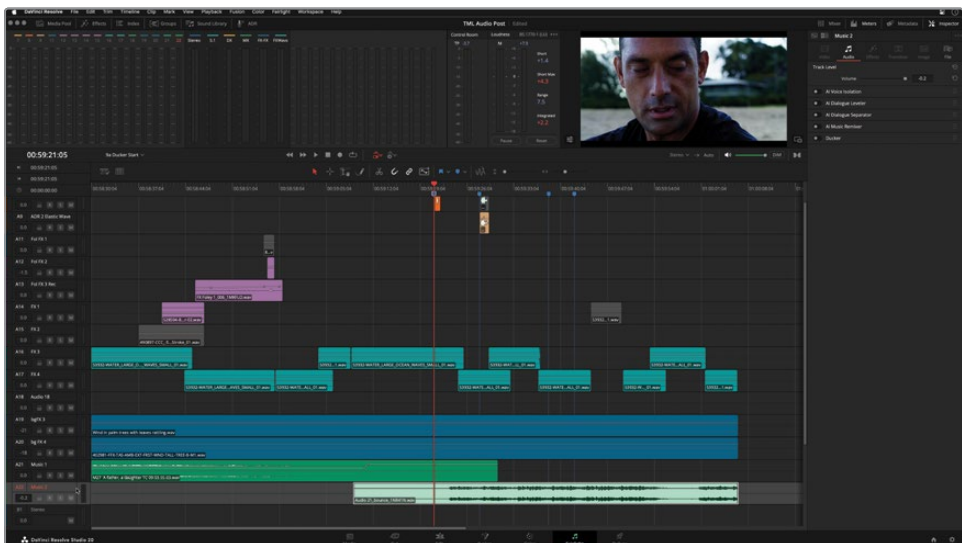
7 Select the A22 Music 2 track.

8 In the Track FX list of the Inspector, enable the Ducker.
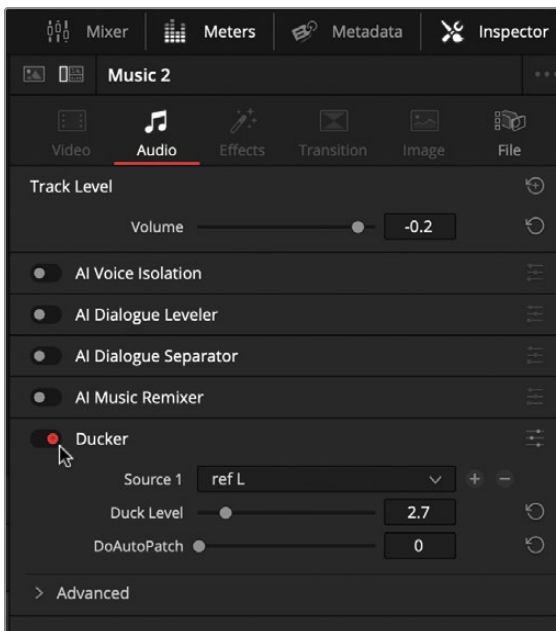
> **NOTE** If you are using the free version of DaVinci Resolve 20, you'll see two Track FX, including the AI Dialogue Leveler and the Ducker. The screenshot is of the DaVinci Resolve 20 Studio Inspector and therefore includes five Track FX.

The default Ducker settings include a Source 1 dropdown menu for selecting which track will control the ducking of the selected track. You've already determined that the dialogue for this scene is on tracks A7 ADR 1 Edit, A8 ADR 2 Dad, and A9 ADR 2 Elastic Wave. Now all you'll need to do is assign them as the source tracks for the Ducker, and the music will automatically lower as needed for the dialogue.

9 In the Ducker controls, set the Source 1 dropdown to ADR 1 Edit.
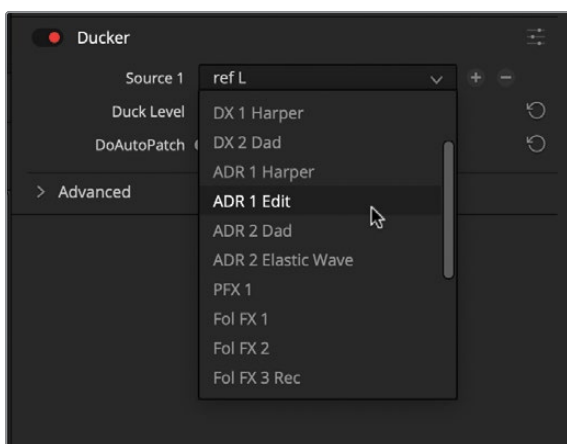
10 Click the Add button (+) to the right of the Source 1 dropdown twice to add Source 2 and Source 3 dropdown menus.
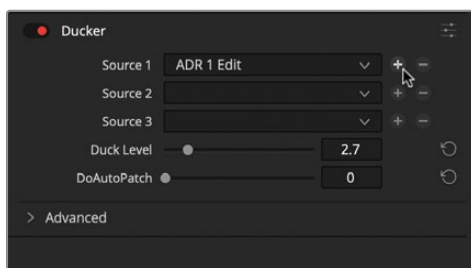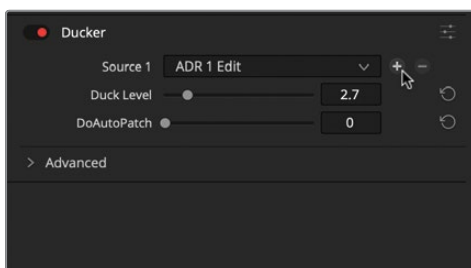
11 Set the Source 2 dropdown menu to ADR 2 Dad. Then set the Source 3 dropdown menu to ADR 2 Elastic Wave.
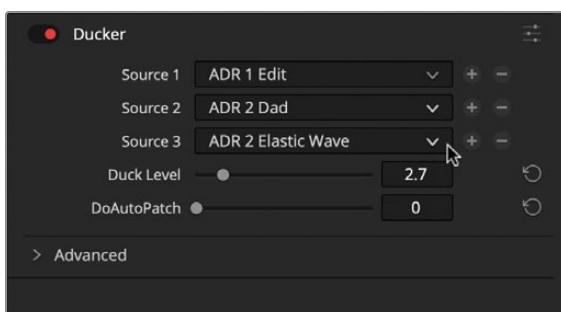
Now that you've set all three source dropdown menus, you can open the Ducker controls window.

12 Click the Custom button in the top right corner of the Ducker controls in the Inspector to open the Ducker window.
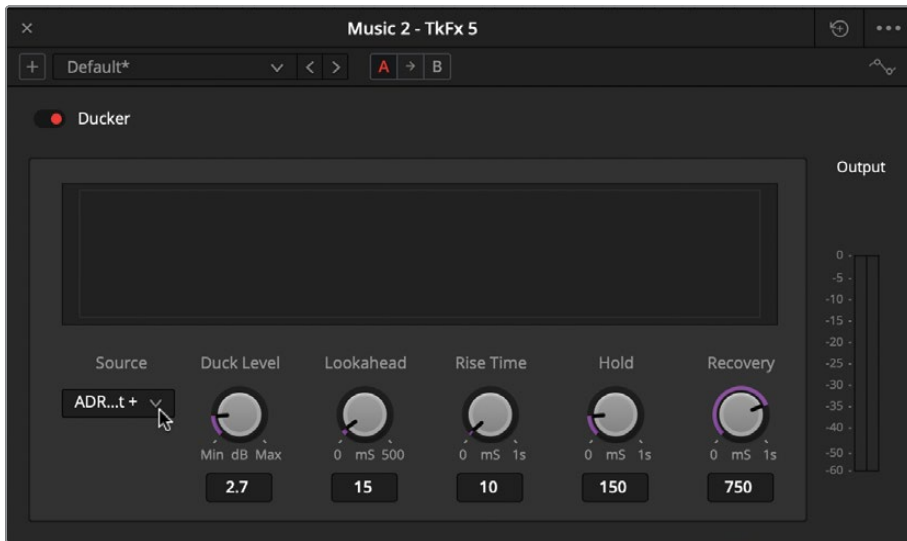
13 In the Ducker window, click the Source dropdown menu to see which source tracks are controlling the signal on the Music 2 track.
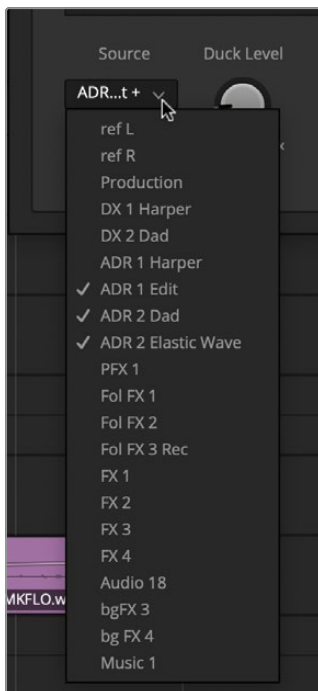
You can also select (check) or deselect (uncheck) source tracks in the Ducker Source dropdown menu.

In the Ducker window, you'll see the Ducker controls, including Duck Level, Lookahead, Rise Time, Hold, and Recovery Time. These controls have literal names that describe their function in ducking the track level based on the incoming signal from the source tracks. The best way to use and understand the Ducker is to see and hear what it is actually doing.

> **NOTE** You can find more detailed information about the Ducker controls in the *Davinci Resolve User Reference*, available via the Help menu.

14 Start playback from the first marker, watch the Ducker Graph display to see the visual changes between the incoming signal (gray line) and the Duck Level (yellow) when there is spoken dialogue.
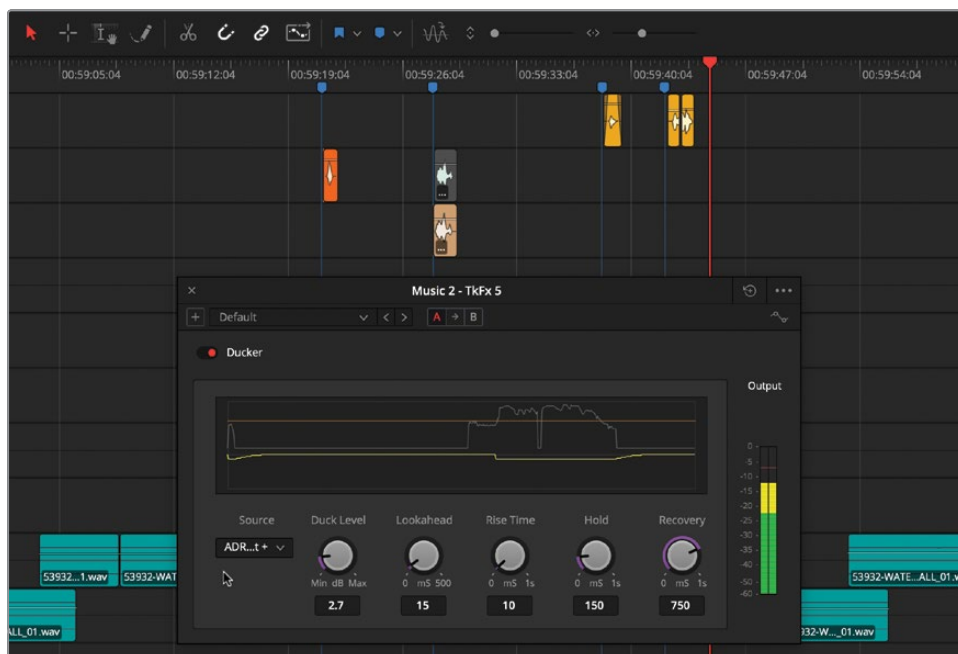
The Ducker window displays the magic behind the scenes as the music is seamlessly lowered just enough for the dialogue to shine through. For a more dramatic example, you can increase the Duck Level. Keep in mind that the more you increase the Duck Level, the more likely the changes will be perceived by the listener.

15 Increase the Duck Level control to 10.0.

The music level will now be reduced by a full -10 dB anytime there is dialogue. You will hear the difference during playback.

16 Start playback from the first marker and listen to the scene until the end of the dialogue.
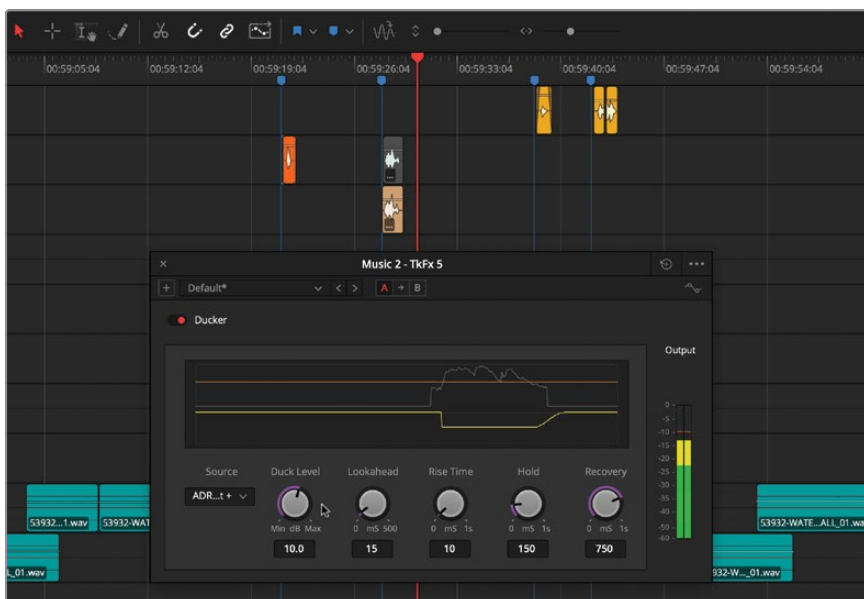
Yikes! Chances are, you clearly heard the music level drop, but not in a good way. This is an excellent example of what *not* to do when applying ducking techniques, whether they are with keyframes or the Ducker, to a track. Unless the story or stylistic directing requires it, your goal should be to keep the level changes *subtle*. Dramatic level changes to any track will be heard by the untrained ears of the audience.

As a sound designer, supervising sound editor, or re-recording mixer, your work is supposed to enhance the story seamlessly without the audience ever being aware of what you are doing. If the audience is focused on or distracted by the technical aspects of a show, whether it's the cinematography, visual effects, or soundtrack, they aren't focused on the story. Of course, plot holes, poor acting, and lousy storytelling are beyond your control.

Let's reset the Duck Level controls.

17 Double-click the Duck Level control to reset it to the default level of 2.7 dB. Feel free to explore and experiment with the other controls before moving on to the next section. When you're finished, hide the Inspector and close the Ducker window.

Now that you've experienced the Ducker for quickly reducing a track's levels based on other sources, let's move on to automating levels using a fader and automation controls.

NOTE The Ducker is a Track FX that can be applied on any track to control the level based on the signal in a user-defined track or tracks. To apply ducking to a bus or use a bus signal, you must apply sidechain compression, which is available in the Fairlight Dynamics window. You'll work with sidechain compression later in this lesson.

Mixing with the Fairlight Desktop Console

The Fairlight Desktop Console is designed to work alongside your mouse and keyboard to give you professional mixing controls for the Fairlight page. Features like touch-sensitive faders and knobs, along with a full automation toolset, make it easier than ever to perform complex mixing and sweetening workflows.

TIP Re-recording mixers working with large mixing consoles typically move hardware faders during playback and can maneuver their hands around the controls like a keyboardist playing a church organ. When you're working in a software-only environment, you must do the best you can using a mouse or trackpad. You can always record automation to your tracks or submix busses to help simplify the final mix. Also, numerous hardware mixing consoles, including the Fairlight Desktop Console and customizable Fairlight Studio Consoles, are compatible with DaVinci Resolve and its Fairlight page.

Automating Fader Levels

Adjusting faders and other controls during a mix is part of your job. You could try making all the changes on the fly during your final mix, or alternatively, record the parameter changes as automation. Recording automation data to a track curve is also called *writing automation*. In previous lessons, you applied automation techniques to pan tracks and dynamically change the Music Remixer controls over time. In this exercise, you'll use Resolve's automation controls on the Fairlight page to record volume changes to the Waves sound FX. You could record automation using either the faders for the three individual tracks containing Waves sounds or focus on adjusting the FX Waves submix bus fader. In this case, you'll use the submix bus to automate the cumulative wave sounds with a single fader.

Automating the changes to your faders and other parameters while you work allows you to free up your hands and focus on each pass of the mix. In the next set of exercises, you'll continue working with the beach scene with Harper and her dad. This time, you'll use your own ears and instincts to adjust the fader levels over time and record your changes along the way.

Preparing the Project

When automating track levels using a mouse and keyboard, it's a good idea to adjust your tracks and mixer for easy access to the tracks and tools you'll need for automation. To simplify the mix, an FX Waves submix bus was created so you can control the cumulative background wave sounds from multiple FX tracks at the same time.

Let's open the timeline and make a few visual changes to automate the FX Waves bus.

1   Open the timeline **9b FX Waves Bus Snap Start**.

2   Zoom the timeline vertically so that all the visible tracks and busses are in the upper half of the timeline.

3   Select the FX Waves bus header located in the lowest timeline track position.

4   Scroll the mixer until you see the FX Waves bus and fader in the furthest right position in the mixer.

5   Increase the height of the FX Waves bus at the bottom of the timeline for a clear view of the bus track and header.
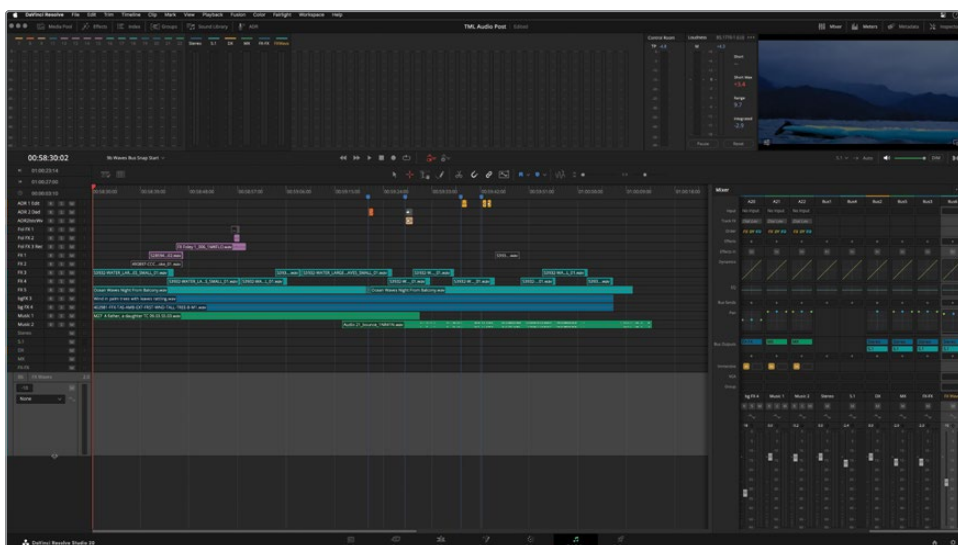
With the larger track height, you can more clearly see the Automation Arm button and Automation dropdown menu in the track header. The timeline is set up and ready for automation.

Showing Per-Track Automation Controls in the Mixer

Fairlight's automation toolset includes global automation controls that affect all tracks and busses, and independent automation mode settings on each channel strip in the mixer, in case you need some tracks to be in a different mode while mixing. For example, the global settings could be to write automation in Snap mode for fader adjustments, but Read mode on the auxiliary busses, and Trim mode for the busses that already have automation applied. By default, all tracks and busses follow the global automation settings as shown in the Automation Controls toolbar. You'll find the controls to set individual track automation modes in the mixer options menu.
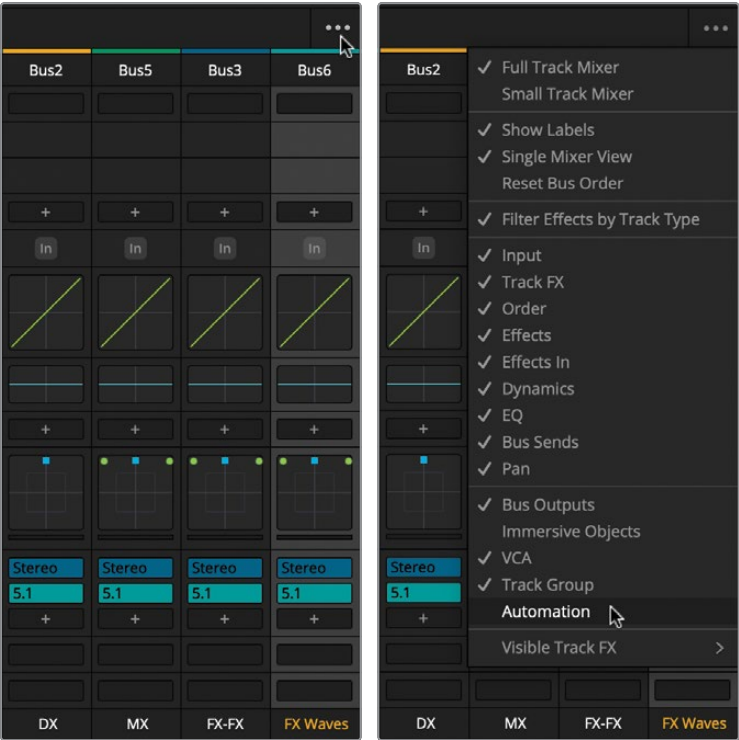
Show options with a click.

Setting the Automation Controls

The automation toolbar includes controls that let you automate a wide range of parameters in the mixer with choices to suit the type of automation you need to apply, whether recording all new automation data or trimming levels with a few extra decibels to previously recorded data. Before you dive in to recording automation, let's open the automation toolbar and take a quick look at the controls and what they mean.

1   Click the Automation Controls button to open the automation toolbar.

The automation toolbar includes buttons that control every available option for setting up and recording automation for your mix. The buttons are organized in groups from left to right.

You can record automation data in either Write or Trim mode. Write mode records absolute changes to controls, whereas Trim mode records relative changes that increase or decrease levels already recorded.

The **Touch mode** settings determine what happens when you begin automation. When Touch mode is turned off, no automation is recorded. Touch mode includes three automation recording modes:

— **Latch mode** begins recording as soon as you touch a control enabled for automation and continues to record automation after you release the control.

— **Snap mode** begins recording automation when you touch a control and stops recording when you release the control. Additionally, once you release the control and automation stops recording, the physical control glides back to the starting value or position where it was at the start of the automation recording. For example, if you are recording fader automation with a starting position of -12 dB in Snap mode, you can record new fader automation as long as you hold the fader. Once you release the fader, the automation recording stops, and the fader glides back to the -12 dB position. The default glide time is 250 ms (milliseconds) and can be changed in the Fairlight User Preferences tab.

— **Snap Latch** offers a combination of Snap and Latch mode in that the faders work in Snap mode while all other controls are in Latch mode. This is an optimal mode when using a Fairlight control surface like the Fairlight Desktop Console or studio consoles because you can adjust fader levels in Snap mode while all other parameters are in Latch mode, so you can make simultaneous quick adjustments to pan, EQ, FX, or dynamics control knobs while also automating faders.

The **On Stop** controls determine what happens when you release the control that you are recording:

— **Event** maintains the most recently recorded automation value and overwrites previous levels for that parameter until the playhead reaches the start of the next recorded data on the track.

— **Hold** maintains the most recently recorded value and deletes all previously recorded data for the rest of the track.

— **Return** creates a ramp from the automation value you just recorded to the previous values on that track.

The Enables buttons are self-explanatory and let you enable or disable different controls for recording automation.

The Preview switch toggles Preview mode on or off. Preview is an additional mix automation workflow that frees the faders (and other controls) from automation control and lets you move them while you experiment with different levels and settings until you are ready to write or trim new automation data.

Now that you are familiar with what the controls do, let's set up the automation toolbar so you can record fader automation to the FX Waves bus in Snap mode. Why Snap mode? Because that way you'll be able to make an adjustment to the level when needed, and the fader will automatically glide back to the previous level when you release it.

Since this scene takes place at the beach near the water, it is important to always hear the water and waves, without them overpowering the dialogue or music.

2   In the Automation Toolbar's On Stop controls, click the Return button to select that option.

3   In the Enables controls, click the Fader button.
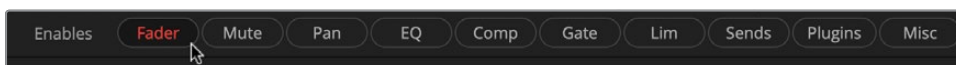
As you can see, active automation buttons turn red to indicate they have been selected.

> **TIP** Before recording automation, it's always a good idea to set the initial track levels and practice changing levels on the fly.

Next, you'll find the fader level that you wish to use most often and the level you are likely to use when you increase or decrease the level over time. This step gives you a solid starting point before automating levels.

Let's start by listening to only the FX Waves bus, and then switching the monitoring back to the Stereo mix bus.

4   In the monitoring controls above the mixer, set the monitoring dropdown menu to FX Waves.
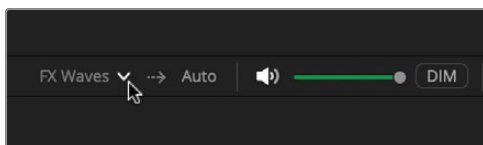
5   In the mixer, double-click the fader on the FX Waves track to reset the level.

6   Play the beginning of the timeline and listen to the FX Waves bus while watching the picture.

These levels work well with the visuals. Now let's hear them with the music.

7   Set the monitoring dropdown menu to Stereo. Then play the beginning of the timeline again to hear the waves with the music. Continue playback until Dad sits down and the first piece of music ends.

What do you think of the waves now? In a word, *nope*. There is a distracting music versus waves battle for attention happening in this scene's soundtrack. When sounds compete, let context be the judge. The music is clearly the dominant force going into

this scene, and the waves sound FX are a distraction. Additionally, the musical score was written and recorded specifically for this moment and offers an emotional transition from the previous scene. In other words, the music wins. That doesn't mean you need to exclude the waves; you just need to tame the levels to make them fit into the soundtrack's background where they belong.

Let's lower the FX Waves bus level to around -6.0 dB.

8   Start playback from the beginning of the timeline and drag the FX Waves fader downward to lower the level. Hold Shift while dragging for fine-tuned incremental control. Set the level to around -6.0, which you will see above the fader in the mixer and in the upper left of the bus header in the timeline.
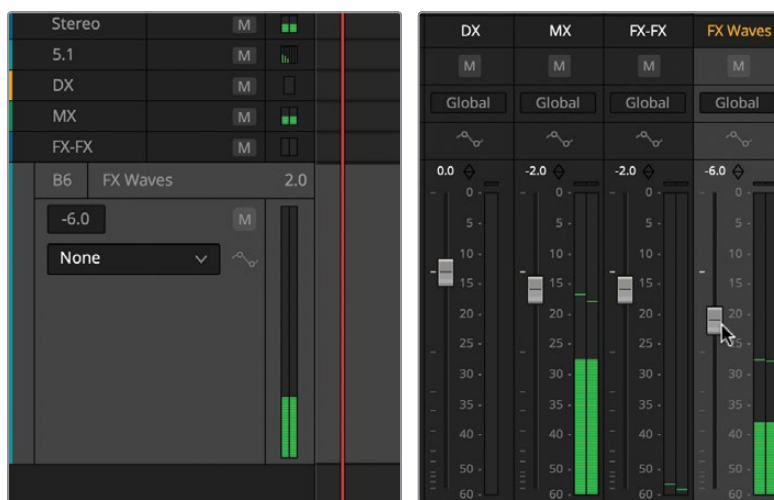
What do you think of the sound of the waves in this scene now? This time, they are still audible, leave plenty of room for the music, and stand out nicely once the music ends. Let's listen to them during the dialogue.

9   Play the timeline from the first marker and listen to the dialogue with the waves sounds.

Too much. Once again, the waves are a bit distracting. Let's find a level that works well during dialogue.

10 Play the timeline from the first marker again and lower the level to around -10 or until you are satisfied with the level.

> **NOTE** You can adjust the fader level by dragging the fader or by dragging the level field in the B6 FX Waves track header.

11 Stop playback.

12 Move the playhead to the beginning of the timeline.

13 Practice changing the B6 FX Waves bus level from around -6.0 dB to -10.0 dB and back several times to get a feel for where those levels are and the movement from one to the other.

One last step. Let's check the glide time for the automation in User Preferences to make sure the glide amount is around 1 second (1000 ms).

14 Choose DaVinci Resolve > Preferences. Click the User preferences tab, if necessary, and then click the Fairlight tab in the sidebar.
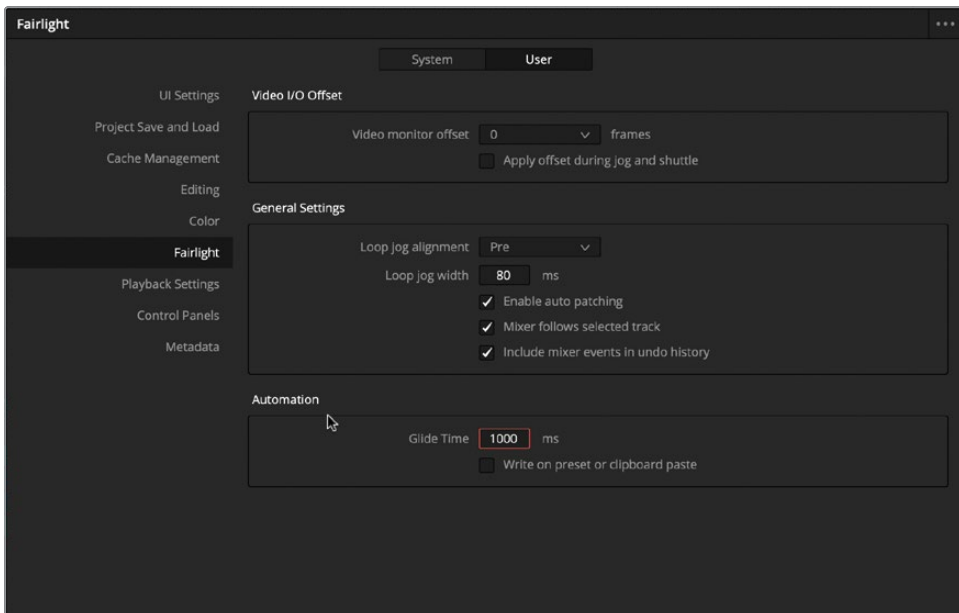
Locate the Automation options. Here you will see the Glide Time and a number field. The Glide Time determines how long it takes for an automation parameter to return to the previous level once the control has been released. You can set this amount as high as 4 seconds (4000ms).

15 Set the Glide Time to 1000 ms, if needed.

16 Click Save.

You are ready to automate the FX Waves bus for this scene!

Recording Fader Automation

To record automation data, the only thing left to do is choose which Touch mode you want to use for recording automation. In this exercise, you'll use Snap mode so that the fader will return to the previous level when you release it. Your goal for this scene is to set the initial Waves FX bus level at the beginning of the timeline. Then, during playback, you'll lower the level before the dialogue starts and release the fader when the dialogue ends. Let's try it!

1   Press A for Pointer mode. In the timeline, select the B6 FX Waves bus track.

    Selecting a track is not necessary for automating the track, but it makes it easier to see which track you are working on.

2   Right-click the FX Waves bus fader to show the Fader Level curve for that bus track.
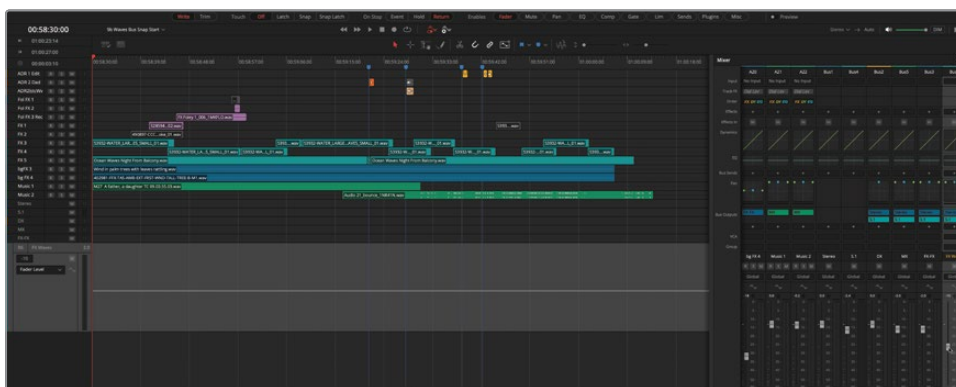
3   Move the playhead to the beginning of the track and set the B6 FX Waves fader to the starting level (around -6).

4   In the Touch controls, click the Snap button. Also, ensure that automation is in Write mode and On Stop is set to Return.
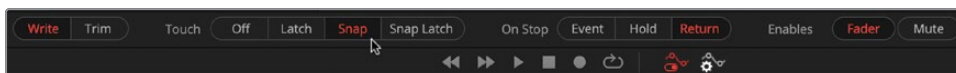
5 In either the timeline or mixer, click the Automation Arm button for the B6 FX Waves bus track.
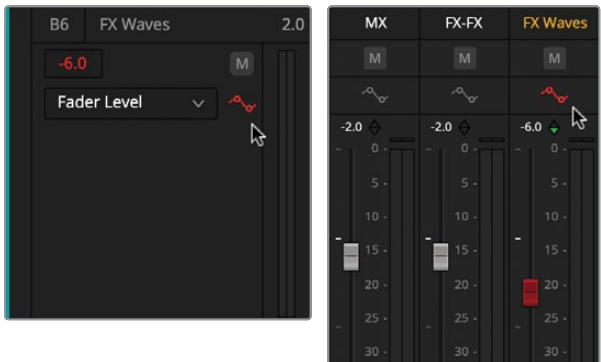
The Automation Arm button turns red to indicate that the enabled automation curves for this track are being recorded at the playhead position based on the global automation settings. Now that the initial track level is recorded at the beginning of the track, you can move the playhead forward, closer to the start of the dialogue.

6 Move the playhead to the beginning of the music clip in the Music 2 track (approximately 00:59:16:08).
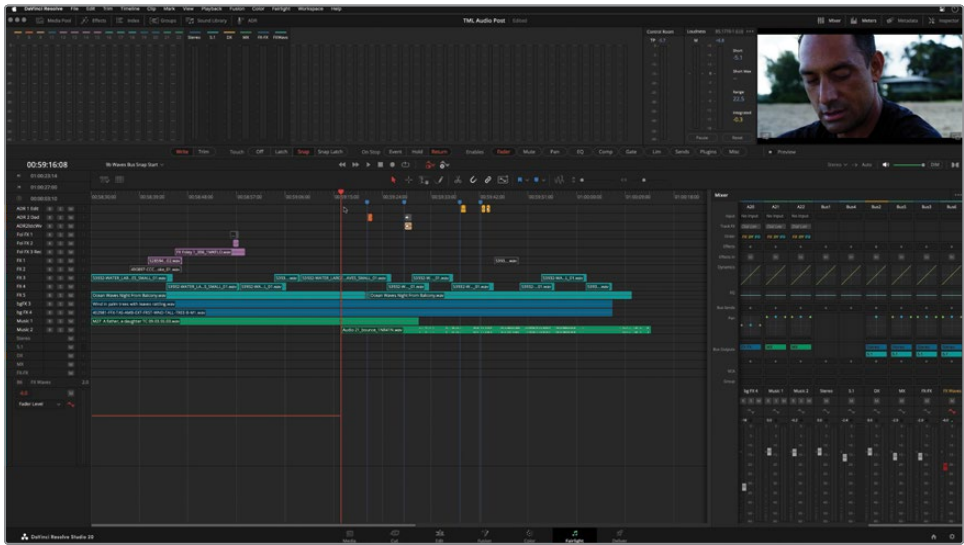
The red Fader Level curve in the FX Waves track indicates that level data is being recorded starting at the beginning of the track. Now it's time to move that fader during playback! Good luck. As you record automation during playback, you'll see the fader turn red to indicate that it is recording automation data.

7 Start playback, and as the playhead approaches the first marker (and first dialogue clip), lower the FX Waves level to around -10 dB. Continue holding the fader in that position until you reach the end of the last dialogue clip, and then release the fader. Stop playback.
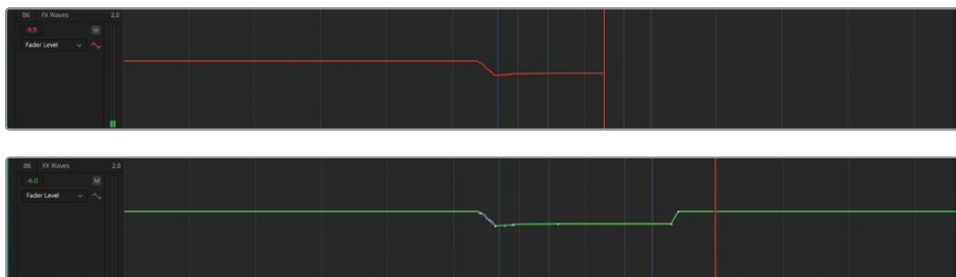
Nice curve! Don't worry if it isn't perfect. This is a learning experience. You'll be invited to try it again shortly.

The Fader and Level curve colors go from red during recording to green once you stop playback to indicate recorded automation data. Notice the smooth glide ramp in the curve from the lowered level to the initial level where you released the fader.

8 Set the Touch mode to off.

> **TIP** When working with automation, it's a good idea to turn off the Touch mode when you aren't actively recording. Otherwise, you could accidentally record or overwrite automation during playback. Also, you can click the Toggle Automation button to the right of the transport controls to disable or enable all automation applied to a timeline.

9 Play the timeline just before the automated section of the scene and watch the B6 FX Waves fader as it moves automatically to follow the recorded automation.
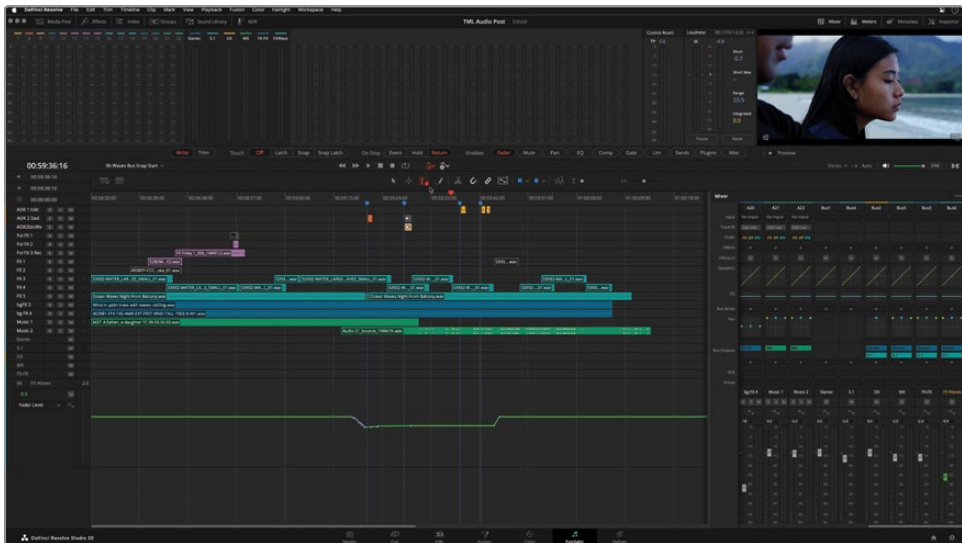
Editing Automation Curves with Standard Tools

Once you have recorded automation, you can write new automation over the original, trim the levels by a few decibels as needed in Trim mode, or edit the automation curve using standard tools like the Focus mode multi-tool. In this exercise, you'll use the Focus mode multi-tool to select, nudge, and trim the Fader Level curve without the need to record new automation.

1 In the timeline toolbar, click the Focus Mode button.

2 Using the multi-tool, drag a selection range on the B6 FX Waves track from anywhere after the last clip in the timeline to the beginning of the timeline.

3 Drag the Fader Level curve downward to decrease the level by 1 dB. View the tooltip to see the amount of change.
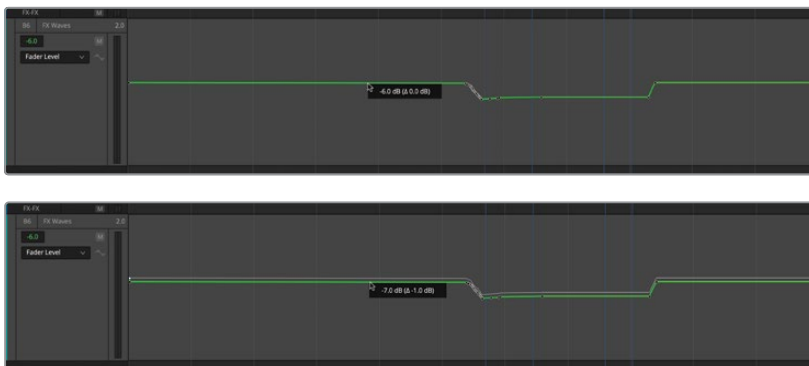
Now let's select the glide ramp at the end of the lowered section of the curve and nudge it toward the right.

4   Drag a selection around the curve, including the glide ramp, after the dialogue section. Press period or Shift-. (period) several times to nudge the selected section of the curve toward the right.
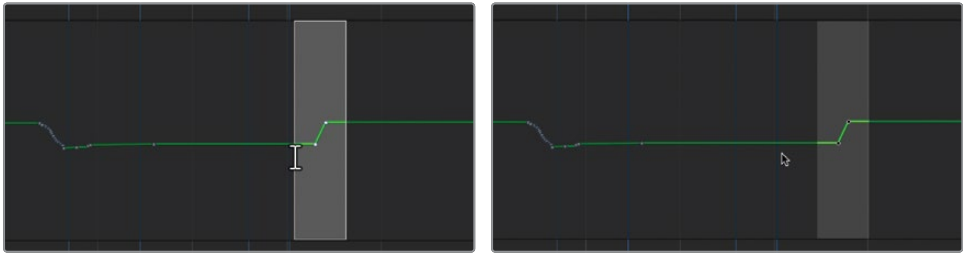
> **NOTE** The automation curves offer visual feedback of the curve's previous position as you make changes to the levels. The actual curve remains green, while a gray version of the curve remains as a placeholder to indicate the previous position until the curve is released in its new position. You can also use the multi-tool to select, nudge, copy, paste, and delete a selection containing automation keyframes.

Congratulations! You automated and trimmed the levels of a sound effects bus using the Fairlight Automation toolset.

Take Two: Automating the FX Waves Bus

Now it's your turn to clear the automation from this bus track and try it again using what you have learned. In this self-guided exercise, you'll reset the fader level curve and re-record the automation. This time, don't worry about exact level numbers. Instead, once you set the initial levels, trust your ears and your instincts to guide your hand on the mouse and fader. You'll start by moving the playhead to the beginning of the timeline. Right-click the FX Waves track header and choose Clear Track Automation. Once you've cleared the automation, set your initial levels, turn on Touch Snap or Latch mode, and try setting the FX Waves bus track levels during playback. When finished, feel free to trim, edit, or redo your work. Have fun!

Sweetening the Mix

A professional sound mixer's process of enhancing audio is very similar to a colorist's workflow for grading the picture. The colorist's process is referred to as *color grading*, while the process for improving and embellishing sound is often called *sweetening*. As the name suggests, sweetening makes everything sound better. Now that the levels have been balanced and tracks are panned, it's time to focus on the soundtrack's dynamic range and tonal qualities. In the next set of exercises, you'll explore the primary audio sweetening tools, dynamics processing, and equalization, to improve clarity and elevate the soundtrack.

> **NOTE** A spirited debate rages among audio professionals about which comes first: dynamics or equalization. This is a bit of a chicken-and-egg scenario because both processes affect the sound and each other. For this lesson, you'll address dynamics first, but only because it makes sense to modify one character's voice before adjusting her offscreen dialogue.

Compressing Dialogue Tracks

The difference between a good soundtrack and a fabulous, professional-sounding soundtrack often comes down to dynamics control. Well-balanced dialogue tracks with modest compression have more consistently strong levels and therefore stand out more in a mix, leading to a better experience for the audience. Keep in mind that the entire audio post-production process is about delivering that awesome audience experience. Viewers don't care how it's done; they just want it to be incredible.

If you recall, the difference between a track's loudest and quietest levels is its *dynamic range*. If you've ever worked with a waveform or Parade scope in the color page, controlling a track's dynamics is very similar to adjusting the white and black levels of a clip. Just think of white as the loudest and black as the quietest.

In this set of exercises, you'll apply compression to a group of dialogue tracks all by the same character in the same scene. First, you'll apply a compression preset to Raina's first track A2 DX r1 in the "Learn to Surf" scene. Then you'll copy and paste those compression settings to her other four tracks to help her voice stand out in the mix. Luckily, her tracks are all colored pink, so it's easy to spot the tracks that you'll work with.

Let's start by finding the high and low average levels in Raina's first track. To do so, you can mark a play range around a group of clips.

1 Open the timeline **9c Dynamics Start**.

2 Zoom the timeline as needed until you clearly see tracks A2–A6 and all the pink clips within those tracks.

3 Solo the A2 DX r1 track.

4 In the Soloed track, drag a range with the multi-tool around the three consecutive pink clips from approximately 01:00:38:00 to 01:00:40:10.
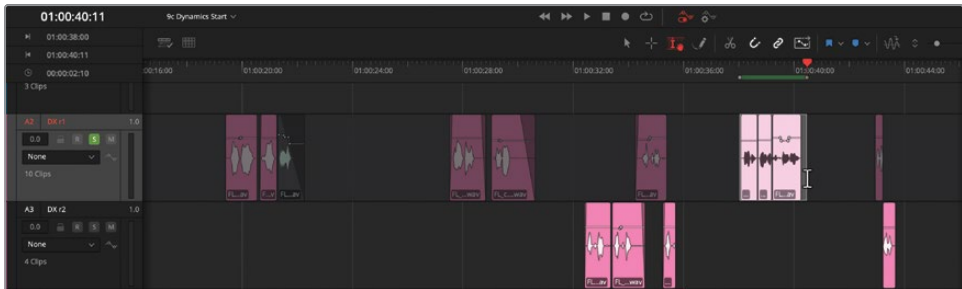
5 In the mixer, on the A2 Channel strip, double-click the Dynamics area to open the Dynamics window. Move the Dynamics window to the timeline area to the left of the mixer and the selected range.
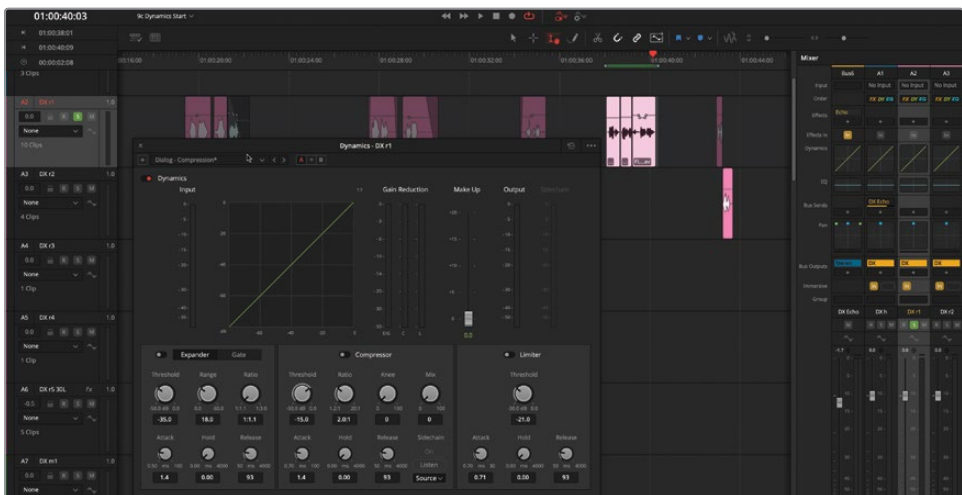
The Fairlight page Dynamics controls include four tools for modifying a track's dynamic range. So far, you have used only the Gate to eliminate low-level noise.

The *Compressor* is the most common control and is used to narrow the dynamic range by lowering the highest peaks and bringing them closer to the lowest peaks. It's a great tool for bringing out some of the quieter spoken words while simultaneously lowering the level of the loudest words.

6 Start looped playback. In the Dynamics – DX r1 window, watch the Input meters and green dots on the dynamics graph to determine the average levels as well as the lowest and highest peaks.
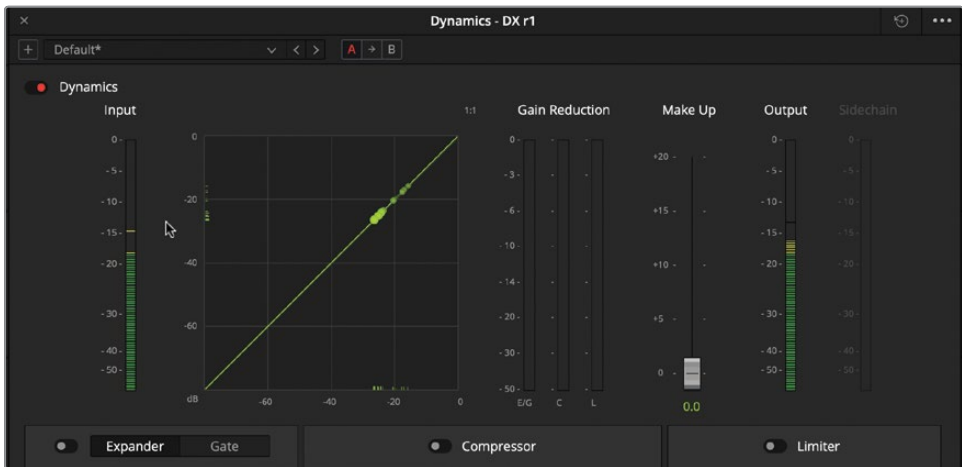
Even though Raina's clips were balanced, her peaks dance above and below -15 dB, and the average levels range from around -13 to -18 dB. Most of this dialogue is within the desired -15 dB to -10 dB range; however, it hovers on the low end and could easily be lost amid the music and chaos of this part of the scene. Therefore, some light compression and make-up gain would be useful to narrow the dynamic range and increase the overall level of the track.

> **NOTE** When working with the compressor, one thing to consider when dealing with a wide dynamic range is the compression Threshold value, which is the level at which the compressor kicks in. If you have strong dialogue tracks, you can play them a little lower to rein in more of the louder peaks. If the dialogue is quieter than desired, you can increase the Threshold value. In most cases, you'll set your dialogue compression Threshold between -10 and -20 dB.

7 Click the Compressor switch to enable the default compressor controls. During playback, look at the Output levels.

In the Compressor controls, you can see six knobs that represent different compression settings, including Threshold, Ratio, Knee, and Mix. The latter two control the level and shape of the compression applied to a signal, while the lower three knobs control how aggressively the compression is used to Attack, Hold, and Release the signal during playback.

The default compression settings are working on this track. However, the levels are still a little low for this action-packed moment of the scene. Let's apply a dynamics preset to see if it improves the levels.

8 Continue looped playback. In the Presets dropdown menu, choose the first option, Dialog – Basic. Listen to the results.

9 Continue looped playback and toggle the Dynamics controls off and on to hear the before and after results during playback. When finished, stop playback.

The dialogue with the Dialog–Basic dynamics preset applied has a more consistent level and a tighter dynamic range between the peaks and average levels.

Now that you have a Dynamics setting that works for Raina's first dialogue track, let's copy and paste the settings on her other tracks.

10 Close the Dynamics window.

11 Clear the range in the timeline.

12 Unsolo the A2 DX r1 track.

13 Select the remaining pink tracks, A3–A6.

14 In the mixer, right-click the Dynamics area of the A2 DX r1 channel strip and choose Copy from the shortcut menu.

15 Right-click the A2 Dynamics area again and choose Paste to Selected.

All the pink tracks containing Raina's dialogue have the same dynamics settings. Let's hear how they sound with the other tracks.

16 Play the scene and listen to the dialogue with the music and sound effects.

Mission accomplished! What a difference a little mixing TLC can make on the dialogue tracks. Raina's dialogue really stands out in the mix now. Compression can also be applied to an entire bus, such as the dialogue bus, for additional dynamics control of all dialogue levels.

> **TIP** In the Fairlight page, the floating windows—such as plug-in controls, Pan, EQ, and Dynamics—will stay in front of the full cinema viewer if you want to watch the playback full-screen while making adjustments during playback. Also, pressing Esc will close the active floating window.

Auto–Ducking Busses with Sidechain Compression

Previously, you applied keyframes, the Ducker, and fader automation in the timeline to dynamically control volume levels of a track or bus. You also used the compressor to control the dynamic range of dialogue tracks. In addition to standard compression, the Dynamics window also offers sidechain compression, which lets you use the signal from one track to control the amount of compression applied to another track. Sidechain compression is often referred to as *auto-ducking* because it automatically "ducks," or attenuates, the level of one track based on the content of another. While similar to the Ducker, one advantage of sidechain compression in dialogue scenes is the ability to use either tracks or busses as the compression source. This is especially useful in scenes with numerous characters and dialogue tracks.

In this exercise, you'll explore the sidechain compression controls on the MX bus that control the music bus levels with the signal from the Dialogue bus. First, you'll listen to the scene from the teal marker with the dynamics on the music bus (MX) disabled. Then, you'll enable the dynamics on the MX bus and listen again to hear the difference. Once you've heard the power of sidechain compression in action, you'll open the Dynamics controls to see what is happening under the hood in the Dynamics window.

1 Open the **9d Dynamics Sidechain** timeline.

2 Scroll the mixer to the right to see the busses. Look at dynamics area for the busses.
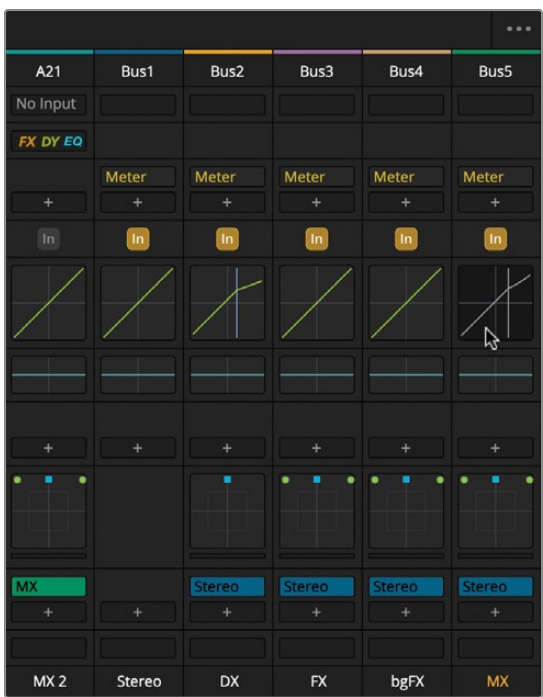
Notice that compression has been applied to the DX bus, and the dynamics are enabled. The MX bus also appears to have dynamics applied, but the graph is gray, indicating the dynamics are disabled.

You can enable or disable Dynamics, Pan, and EQ in the mixer with a Command-click (macOS) or Ctrl-click (Windows).

3 Play the timeline from the teal marker and listen to the competing music and dialogue levels.

Although the comically dominant music drives the scene like a cartoon montage, it's the dialogue that tells the story and must be heard clearly over the score. There is room for both a heavy score and clear dialogue. All the scene needs is a little sidechain compression to seamlessly reduce the music just enough to let the dialogue shine through.

4 In the mixer, Command-click (macOS) or Ctrl-click (Windows) the Dynamics area of the MX bus to enable the dynamics processing on that bus.

5 Play the timeline from the teal marker again to hear the difference.

Wow! It's as if the focus shifts instantly from the music to the dialogue, without losing the comically dominant music. Now, let's open the Dynamics controls for the MX bus to see how it's done.

6 In the mixer, double-click the Dynamics area of the MX bus to open the Dynamics window.

Notice that the Compressor controls are turned on and have been customized for this scene. In the lower right corner of the Compressor settings, you'll find the Sidechain controls. Here, you'll see On and Listen buttons as well as a source dropdown menu where you can choose the source track or bus that will trigger the compression on the MX bus.

Sidechain On and Listen buttons perform exactly as their names suggest:

— **On** toggles Sidechain compression on and off.

— **Listen** allows you to hear only the source track or bus driving the compression. This is great for verifying your compression source while you mix.

7 Move the playhead to the teal marker and start playback.

8 When the dialogue starts, click the Listen button to hear only the source dialogue bus (DX).
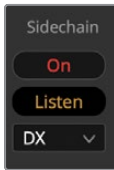
The Listen button flashes yellow while it is toggled on.

9 Click the Listen button again to toggle it off. Stop playback.

10 Click the Sidechain Source dropdown menu to see all the available tracks and busses that can be used as a source.

11 Click the Sidechain Source dropdown menu again, or any empty timeline space to hide the dropdown menu.

> **NOTE** For detailed information on Compression and other processing controls in the Dynamics window, go to the *DaVinci Resolve Reference Manual* available in the Help menu.

Test–Driving the Sidechain Compression Controls

Now that you've seen and heard what the sidechain compression controls can do for your mix, it's time to test them on your own. For this self-guided exercise, you'll keep the finished version of the compression settings in the A Bank of controls and copy them to the B Bank of controls for experimentation. This is a great way to learn how things work while keeping the example settings just a click away.

At the top of the Dynamics window, click the Copy A to B button (arrow) to copy the settings in the A Bank to the B Bank of controls. Then, click the B Bank button to show that set of controls.
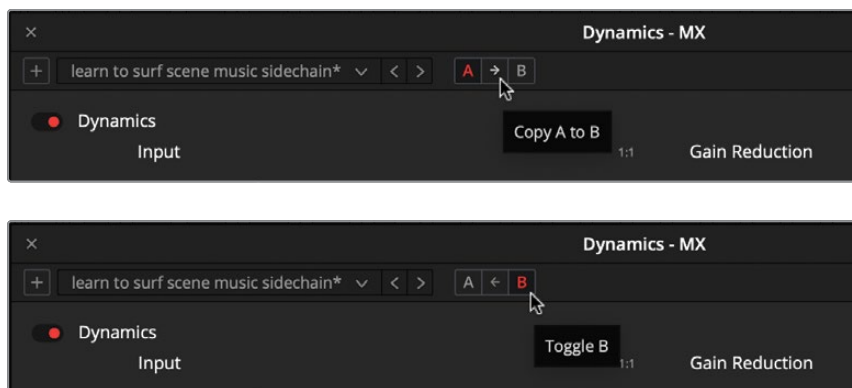
You now have a copy of the settings in the A bank that you can experiment with: toggle, reset, adjust, and explore the settings to hear how they affect the sidechain compression results during playback.

Adjust the Threshold and Ratio to set the amount of this gain reduction, and adjust Attack, Hold, and Release to set how quickly gain reduction responds to changes in the sidechain level (as defined by the source levels).

These controls take practice, so the more you use them, the easier it will be to set up and apply sidechain compression to your own projects. However, as you can hear for yourself, this is an awesome way to quickly "duck" your music bus levels beneath your dialogue bus levels.

When you are finished, click the A Bank button to return the MX bus to the A Bank set of compression controls.

The levels may be playing nicely, but they are competing in the same frequency range. No worries; you'll fix that shortly with some EQ carving.

Applying Equalization to Dialogue Tracks

Equalization (EQ) controls manipulate specific frequencies to shape or enhance the overall sound, just like working with color, saturation, and hue in color correction. For example, the human voice is based on a fundamental frequency range shared by millions, but additional frequencies add tonal qualities to "color" each voice and make it unique and recognizable. The primary function of equalization is to lower frequencies that detract from the voice and boost frequencies that clarify the overall sound.

If you recall, the Fairlight page includes a six-band *parametric equalizer* for each clip in the Inspector, and another six-band equalizer for each track, which is the perfect tool for enhancing and "sweetening" audio tracks during the mix. Additionally, the Fairlight page mixer includes a six-band equalizer on each bus, and with DaVinci Resolve 20, there is even a Fairlight FX six-band equalizer that you can add to a clip, track, or bus for additional equalization control.

In the following exercises, you'll look at three EQ techniques during mixing. First, you'll use the six-band EQ on Raina's dialogue tracks to "sweeten" her voice. Then, you'll use the Equalizer to reduce high frequencies in Raina's off-screen dialogue to emulate the effects of off-axis, distant dialogue. Finally, you'll apply an EQ carving technique to reduce similar frequencies in the music to make room for the dialogue.

First, let's go over some key things to know about dialogue equalization.

Fairlight Track EQ window showing real-time dialogue frequencies during playback

Things to Know About Dialogue Equalization

Audio frequencies are measured in Hertz (Hz) or thousands of Hertz, called *kiloHertz* (kHz).

Low numbers represent low frequencies, and high numbers represent high frequencies.

When you change the amount of gain in a frequency range, you either *boost* (increase) or *attenuate* (reduce) the volume level of the frequencies within that range. Filtering out a specific frequency or a narrow range of frequencies is referred to as *notching* or *cutting*.

The audible frequency range for the average human is between 20 Hz and 20 kHz (20,000 Hz). These frequencies are divided into three main categories:

— Low   50–250 Hz
— Midrange   250–2300 Hz
— High   2500–20,000 Hz

The fundamental frequencies for human voices sit right in the low to lower-middle of the audible frequency range and vary between men, women, and children:

— Men   80–160 Hz
— Women   165–255 Hz
— Children   250–300 Hz

TIP A common rule of thumb when adjusting dialogue EQ is to "cut narrow and boost wide." Also, a little EQ goes a long way, so when possible, make subtle changes (no more than 2–3 dB), just as you would when adjusting hue on the color wheel.

Sweetening Dialogue with EQ

In Lesson 7, you explored limiting high and low frequencies to make dialogue sound as if it is coming from a speaker. In contrast, actively listening, delicately cutting, and selectively boosting frequencies to improve a voice take patience and practice. In this exercise, you'll apply three different EQ adjustments to Marley's DX m2 dialogue track to find and reduce detracting frequencies, and then selectively boost frequencies to enhance the voice.

Every voice is different, so no single EQ setting will magically improve all your dialogue. However, you can tweak three key areas that will usually improve the overall sound of dialogue.

First, you'll start with a high-pass filter to roll off all the low frequencies below 85-100 Hz. Next, you'll sweep the midrange frequencies around 250 Hz. This is the beefiest range of most voices and can often become boxy, muffled, or muddy. Attenuating a wide range of midrange frequencies, even by just a few decibels, can really warm up a voice and improve its clarity. Finally, you'll enhance the high frequencies to add vocal presence, intelligibility, and sparkle by applying a nice wide boost around 3–5 kHz.

> **TIP** First, find and cut (attenuate) the frequencies that detract from the dialogue, and then boost the frequencies that sweeten the voice.

1   Open the timeline **9e EQ Start**.

2   Zoom the timeline as needed until you clearly see tracks A7–A8 and all the olive-green clips within those tracks.
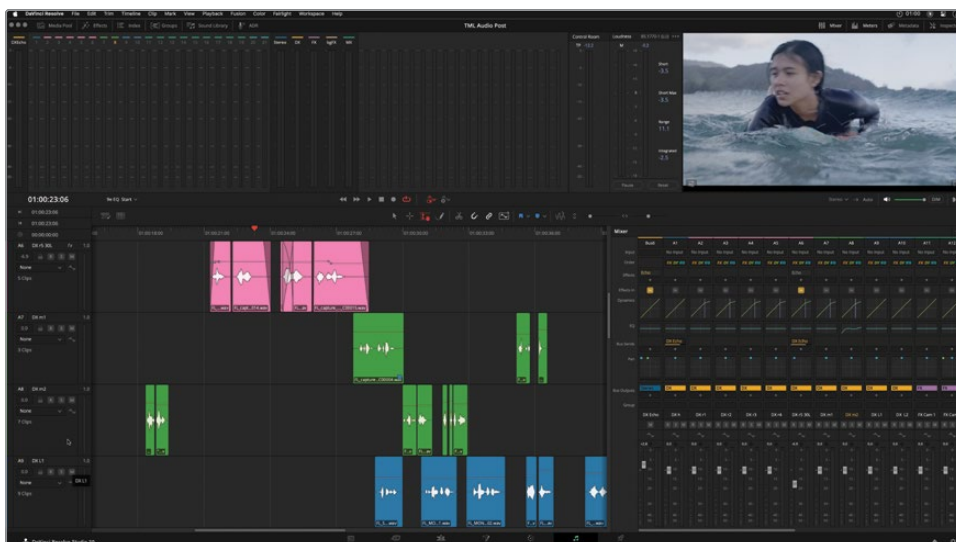
3   Solo the A8 DX m2 track.

4   In the soloed track, drag a range with the multi-tool around the five consecutive olive-green clips where Marley says, "It's happening now. Take the picture!"

5   In the mixer, on the A8 Channel strip, double-click the Equalization area to open the EQ window. Move the EQ window over the mixer, to the right of the selected range.
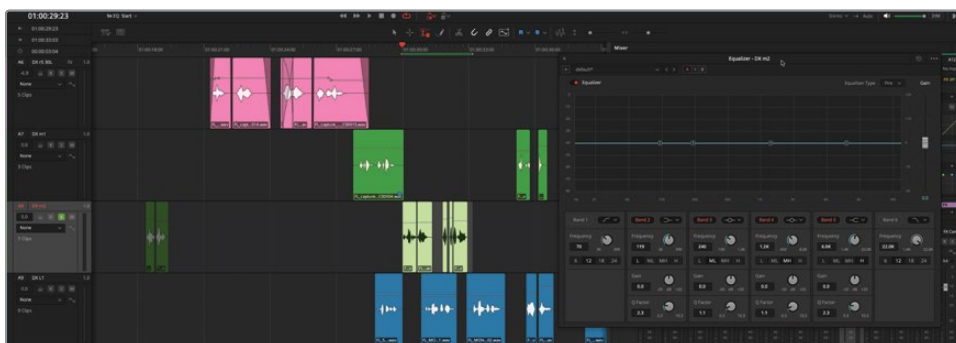
The Fairlight page Equalizer controls include four tools for modifying a track's frequency range. There is also a real-time analyzer (RTA) built into the EQ graph so you can see the tracks' active frequencies during playback.

6   Start looped playback and watch the live frequency analysis of Marley's voice.
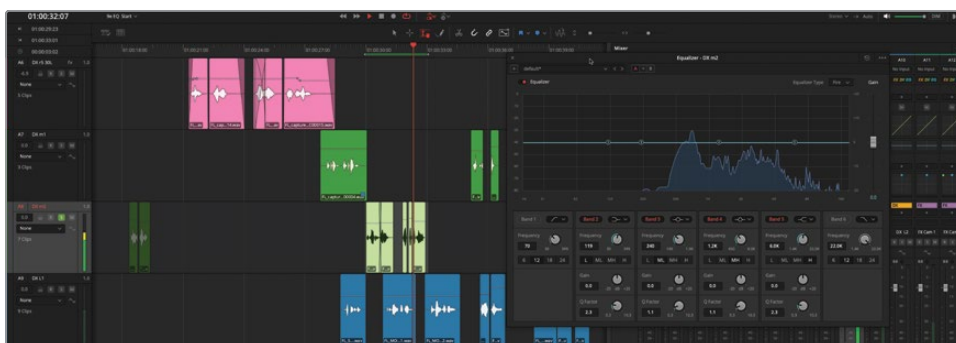
As expected, the meatiest part of her vocal lives between 100–500 Hz.

7 In the Equalizer window, turn on Band 1. Listen to Marley's dialogue while you drag the Band 1 handle right to around 85–100 Hz. You can watch the Band 1 Frequency field to see the current position of the handle.

You probably won't hear any dramatic changes to the dialogue track by rolling off the low frequencies, and some re-recording mixers are against the idea entirely. However, unless the voice you are working with is heavy on the low end, you're unlikely to find any voice-enhancing frequencies below 85 Hz.

Next, you can start sweeping Band 3 around 250 Hz with a wide bell curve to hear what happens if you boost or attenuate around that range. As you sweep, exaggerating the height of the bell curve by at least +10 or -10 dB will help you determine how much adjusting the 250–500 Hz range affects this voice.

8 Start looped playback. Drag the Band 3 handle up to around +10 dB and listen to Marley's voice as you sweep the frequencies between 250–500 Hz. Experiment to determine whether tweaking within this range improves her voice or amplifies

irritating vocal qualities. Drag the Band 3 handle below the 0 dB line to around -10 dB and sweep the same frequency range. When you are finished, stop playback.
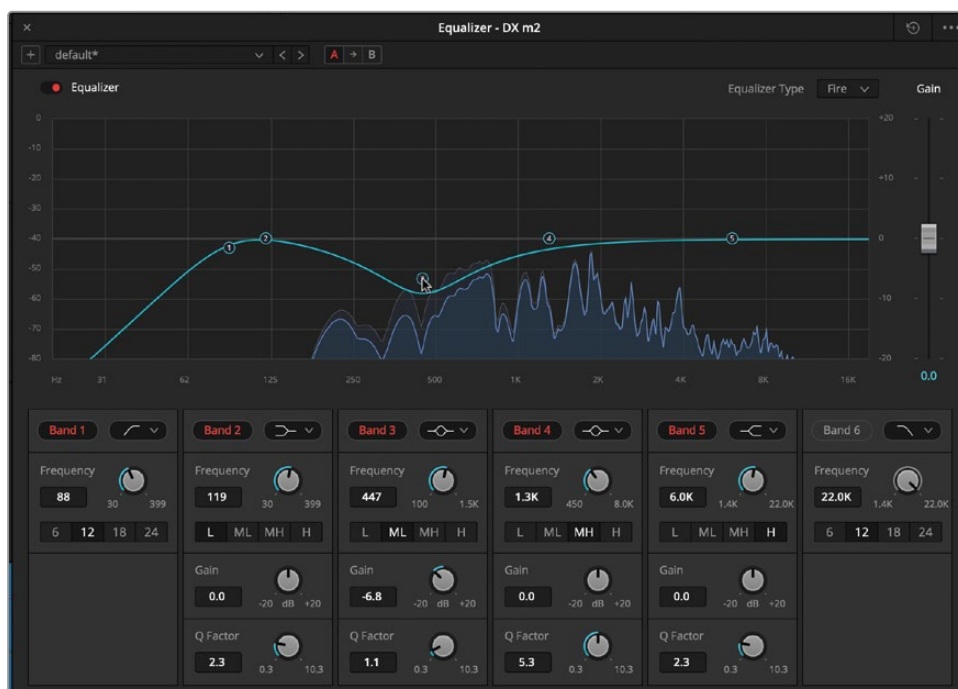
You probably discovered that boosting her vocal frequencies between 400 Hz–500 Hz sounded "boxy" and brought out the most unflattering qualities. Also, cutting those frequencies too much made her voice sound thin and lifeless.

9   Start playback and listen to Marley's voice as you drag the Band 3 handle up to around -2.0 dB at 445 Hz to attenuate that frequency range.
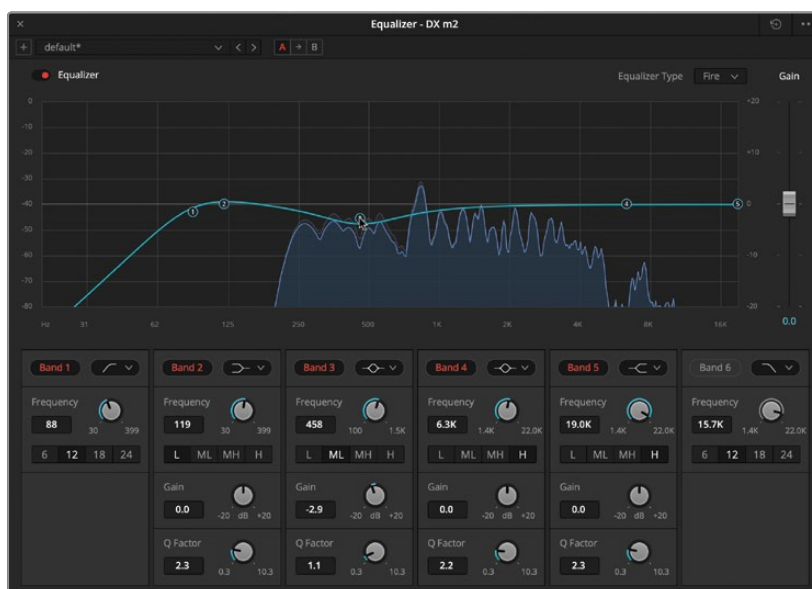
So far, so good; her voice sounds great. Now, let's boost the high end with a wide curve by 1–3 dB right around 3–5 kHz to brighten up the vocal presence and intelligibility.

> **TIP** The secret to finding the sweet spot for vocal presence is to sweep for sibilance between 4 kHz and 8 kHz. When you find the annoying sibilant esses and whistles, back off toward the left by 1–2 kHz and then adjust that frequency amount to a slight increase above zero to accentuate just a touch of presence in the voice. Presence will make it sound as though someone is very close to the listener. This is especially important in close-up and extreme close-up shots.

10 Start looped playback, if necessary. Sweep the Band 4 bell curve between 3–8 kHz and listen for the sibilant esses and whistles. Sweep slightly toward the left until the sibilance is gone, and then lower the curve to around 1–3 dB. Trust your instincts and

your ears. However, if you aren't sure, sweep around 8 kHz to find her sibilance, sweep left to around 6.20 kHz, and set the level to around +2 dB.

11 During playback, toggle the Equalizer Bypass button on and off several times to hear the difference in Marley's voice with and without EQ applied.

12 Stop playback, clear the play range, and unsolo the A8 track.

Since Marley has two tracks in this timeline, let's copy the EQ settings from this track and paste them into her other track. You can do this all from the EQ window's Options menu.

13 In the EQ window, click the Options menu (...) and choose Copy.
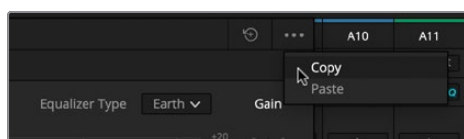
14 Select the A7 DXm1 track.

The EQ window updates to show the newly selected track.

15 In the EQ window, click the Options menu (...) and choose Paste.
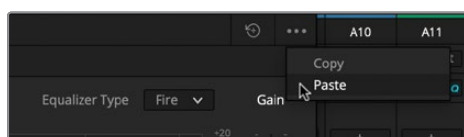
16 Close the EQ window. Zoom to fit the clips to the timeline.

17 Play the scene from the teal marker to hear Marley's sweetened voice with the other tracks.

> **TIP** Training your ears to recognize subtle dialogue differences takes time.

Though subtle, the EQ improves Marley's voice significantly. This is another reason to separate each character's dialogue to its own track during editing so you can not only balance the volume levels but also apply equalization to the entire track.

> **NOTE** The Equalizer Type dropdown menu offers the Native Fairlight response curve as well as three emulations of classic mixing console EQs: Earth—Native Fairlight response (Default), Air—SSL 4K, Ice—Neve V, and Fire—Focusrite.

Applying EQ Carving to Improve Dialogue Clarity

The last "sweetening" technique that you'll learn in this lesson is one of the easiest to apply and is as valuable a mixing staple as brown sugar on Thanksgiving. *EQ carving* involves reducing a wide curve of low-mid frequencies in the music or effects tracks to allow the fundamental dialogue frequencies to shine through. Competing frequencies all in the same range at the same time can "muddy" dialogue clarity. This is similar to having too much of the same color in a shot. For example, a shot of red apples and strawberries on a fancy red tablecloth against a red brick wall may reflect the creative vision of the director, but at the same time presents a challenge for the audience to discern what is important and where they should be looking. If the focus of the "red" scene is the fruit, a colorist may choose to help the fruit stand out by lowering the saturation or brightness of the other red elements. The same is true if music or background sound effects are dominant in the same frequency range as the dialogue. When this happens, and it happens often, you can change the pitch and volume levels of the background sounds or apply some EQ carving. In this exercise, you'll carve the low-mid range frequencies on the music track.

1 Open the **9f EQ Carving** timeline.

2 In the timeline, set a range in the MX bus track that includes the teal marker and the three blue clips in the DX h A2 track (approximately 01:00:14:15 – 01:00:49:20).
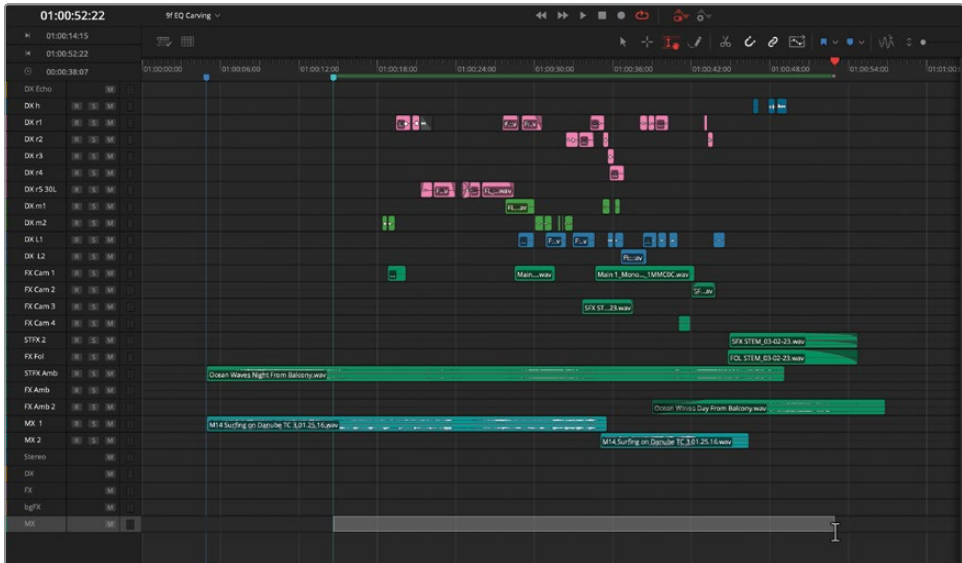
3 Double-click the EQ area of the MX channel strip to open the EQ window.

4 In the EQ window, drag the Band 3 bell curve upward to between +10 and +20 dB.

5 Start looped playback and listen to the music's exaggerated mid-low frequencies from the bell curve. Sweep the curve toward the left and right between 100–500 Hz to hear how the different frequencies "muddy" the dialogue.
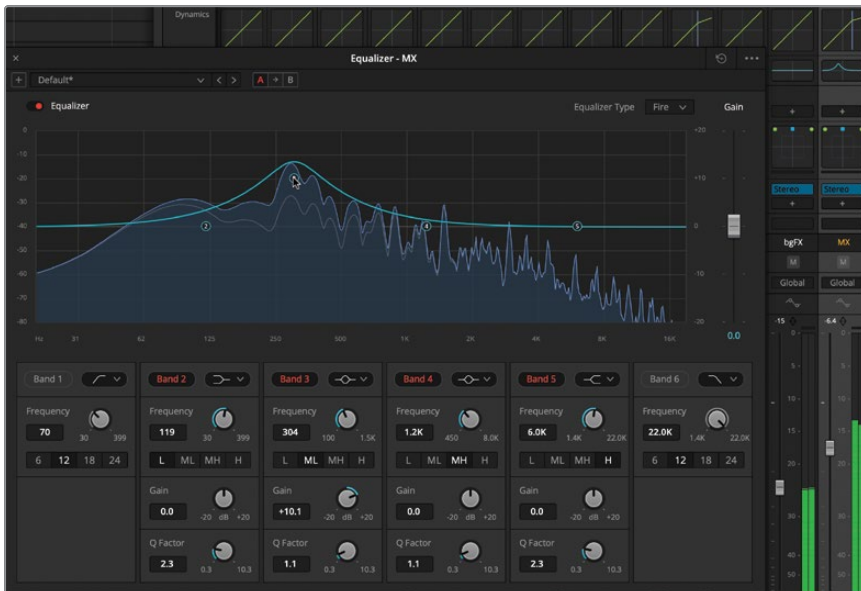
If you recall from earlier in this lesson, the meatiest part of human vocals usually stays between 100–500 Hz. Therefore, that is the same range that needs carving. First, you'll need to widen the bell curve by adjusting the Q Factor control.

6   At the bottom of the Band 3 controls, drag the Q Factor control to the far-left position, 0.3, to create the widest curve.
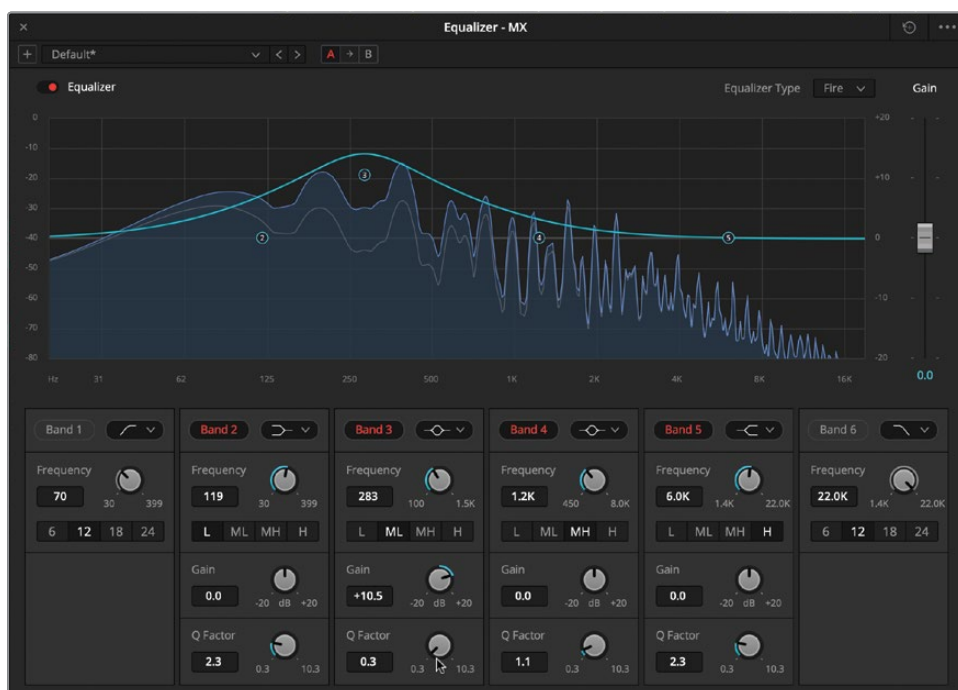
> **TIP** When working with any of the Fairlight EQ graphs, you can scroll the middle mouse wheel to increase or decrease the Q Factor (width) of the bell curve.

7   Continue playback and drag the bell curve down to -20 dB. Then, sweep the wide curve between 125 and 500 and listen to the simultaneous change in dialogue clarity at the expense of the robust musical score. Set the Band 3 Frequency to around 400.

8 Set the curve to between -5 dB and -10 dB. Toggle the EQ window off and on to hear the difference with and without the carving.
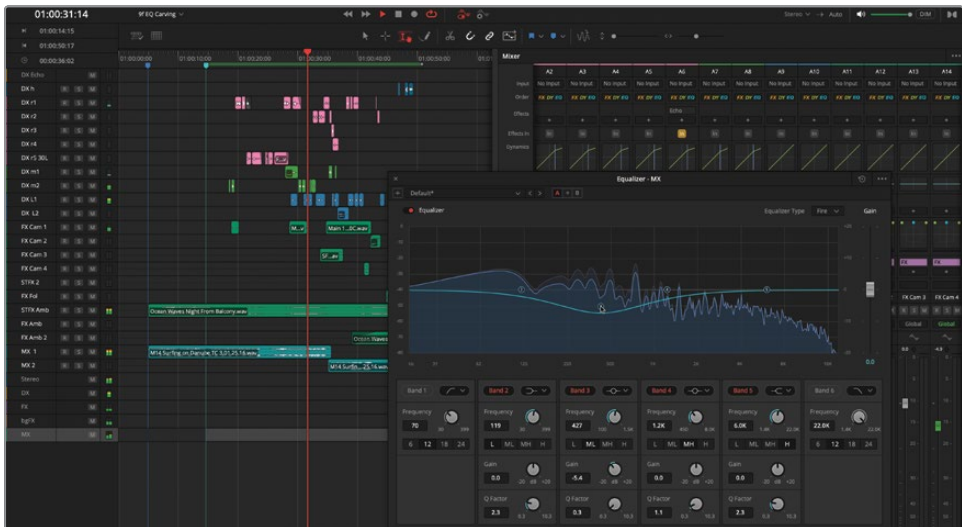
9 Feel free to continue experimenting with your carving skills. When you're finished, stop playback and close the EQ window.

The next time you have background or music tracks competing with your dialogue tracks and you don't want to lower the levels, break out your EQ and carve away!

Exploring EQ, Gain, and Chain FX Plug-Ins

You now have the basic skills to balance clips, tracks, and busses. Additionally, you can automate fader levels, pan controls, and any other parameters available in the mixer. Finally, you have also explored the Dynamics and EQ windows and have experienced setting levels using presets and applying these processing controls toward sweetening dialogue in your soundtracks.

How you go about balancing and sweetening your soundtrack is up to you. However, this is a good time to arm you with a few additional mixing tools that are newly available in DaVinci Resolve 20. Let's start with the new plug-ins that are now available in the Effects panel.

1   Open the timeline **9g New Plugins**.

2   Show the Effects panel on the left side of the screen.
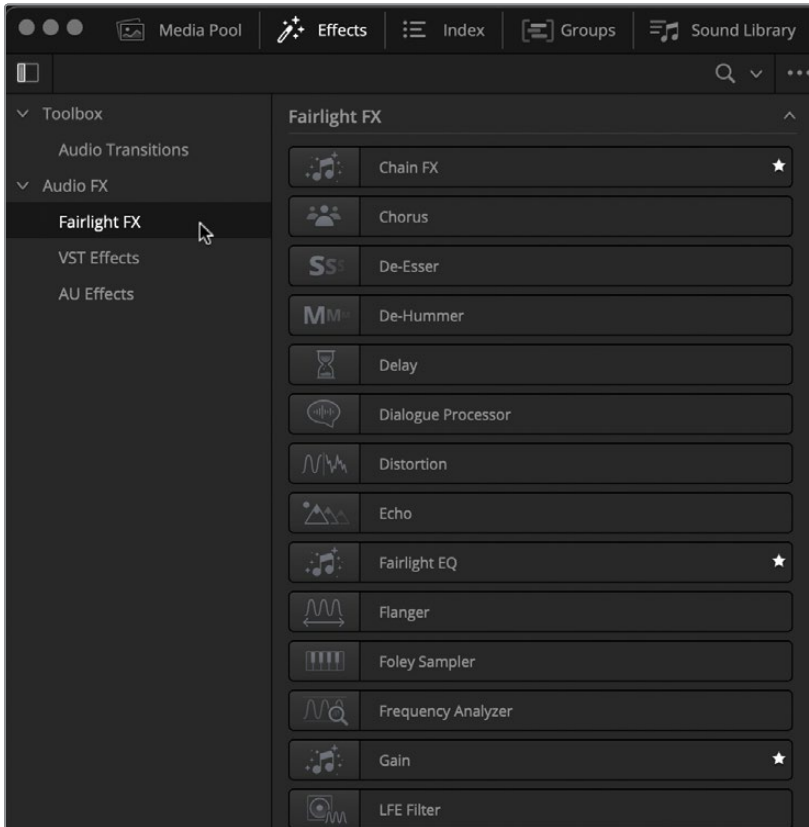
Here, you will see all the Fairlight FX plug-ins, including three new mixing plug-ins: Chain FX, Fairlight EQ, and Gain. Let's look at these in context with the scene you've been mixing in reverse order.

3   Hide the Effects panel. Show the mixer if necessary.

4   In the timeline, set a play range using the pink duration marker for In and Out points. Select the A6 DX r5 30L track and locate the corresponding channel strip in the mixer.
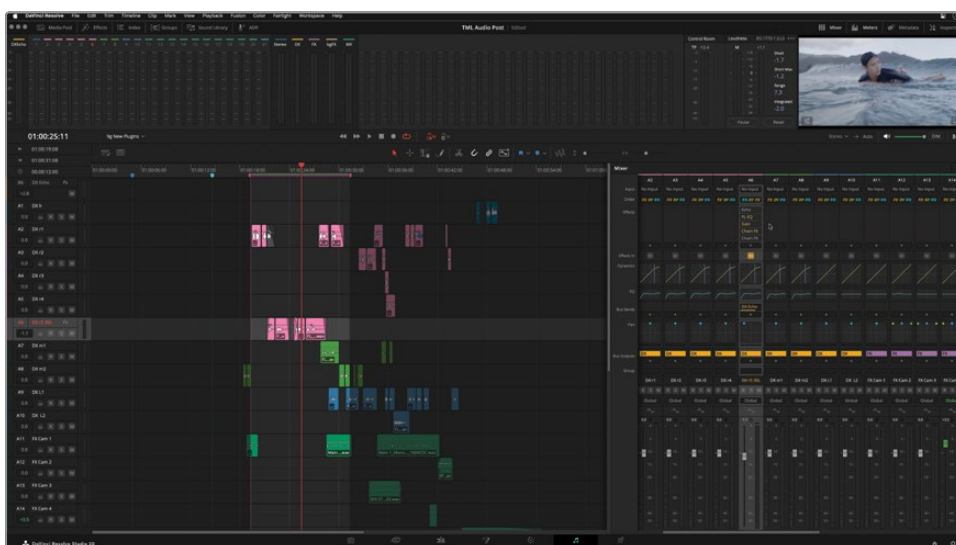
As you can see, this track has five plug-ins in the effects slots: three are enabled (yellow), and two are disabled (gray). The track also has dynamics, EQ, and panning applied, and it is routed to both the Dialogue bus (DX) and DX Echo Auxiliary Bus. The built-in EQ and dynamics are the same for all of Raina's tracks for consistency. However, in this case, the clips in this track are spoken offscreen, so Raina's voice needs to sound as though it is coming from a distance and off-axis from the listener. This requires additional equalization to reduce the high frequencies. With the new Fairlight EQ plug-in, you can place additional EQ control anywhere in your effects chain at the clip, track, or bus level.

If you look at the top of the A6 channel strip, you'll see that the processing order dropdown menu has been modified to EQ DY FX, so that the built-in EQ is the first process applied to the track, followed by Dynamics, and finally FX plug-ins.

5 In the A6 Effects area, open the FL EQ and Gain plug-ins.

These plug-ins are self-explanatory.

The Gain plug-in has a single dial to increase or decrease the clip, track, or bus level by up to 48 decibels. This gives you far more gain control at the clip level if you need to increase the level of a clip. At the track level, the Gain plug-in is useful for maintaining optimal levels at different processing stages, also called "gain staging." In this example, the Gain reduces the level to complete the offscreen effect pre-fader.

The Fairlight EQ plug-in is a fully functioning six-band parametric equalizer. In this example, it is being used as a high shelf filter to reduce the mid to high frequencies, as expected for distant off-axis dialogue.

6 Start looped playback and toggle the Fairlight EQ and Gain plug-in bypass switches off and on to hear the offscreen dialogue with and without the added EQ and Gain adjustments. When you are finished, make sure the plug-ins are turned on.
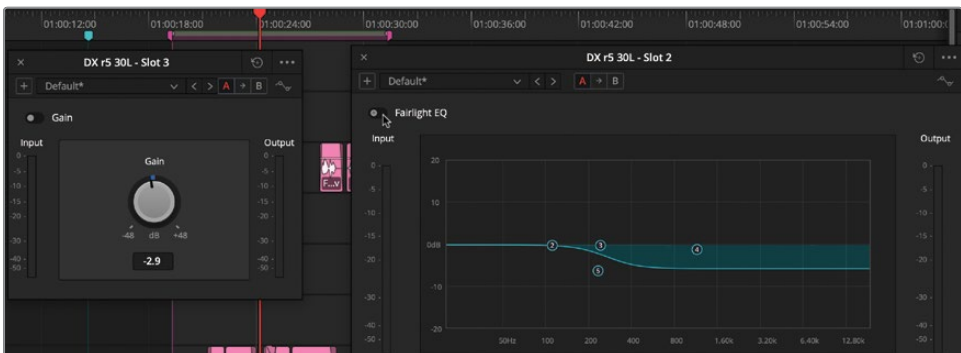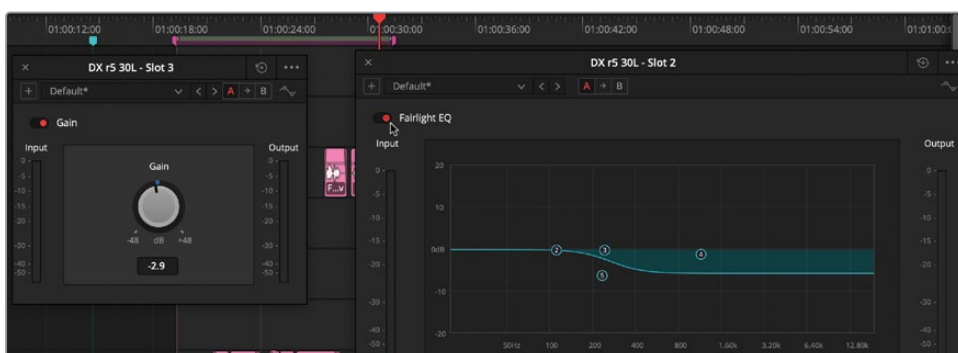
7 Close the plug-in windows.

Next, let's open the Chain FX plug-in located below the Gain plug-in on the A6 channel strip. Remember, there are only six effects slots per track or bus in the Fairlight mixer. The A6 track has five of the six slots already filled. You can now create custom effects chains with your favorite plug-ins and operations with the new Chain FX plug-in. Add up to six effects in a chain, customize settings, and save the preset. You can even combine Chain FX plug-ins for longer chains in the channel effects slots.

8 Open the Chain FX plug-in to see the Chain FX window.
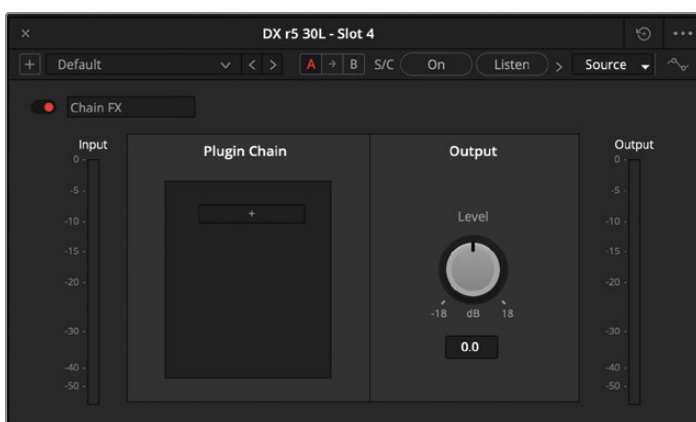
Here, you can see an empty Chain FX plug-in window. You can click the Add button (+) in the Plugin Chain area to add available plug-ins. Once plug-ins have been added, they work just like the plug-ins in the effects slots in the mixer, with controls to enable/disable, open controls, or delete.

You can add a plug-in to a Chain FX plug-in by clicking the Add button. You can also add any plug-in in a channel effects slot in the mixer to a Chain FX plug-in by choosing the option Add to Plugin Chain from the plug-in window's options menu.

9   In the A6 channel of the mixer, open the second Chain FX plug-in window.
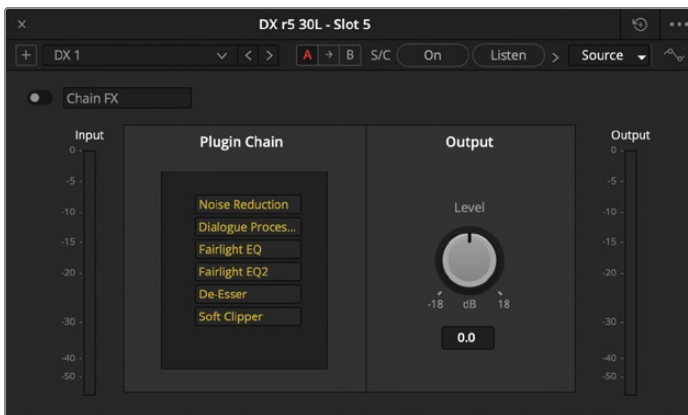
This is a fully populated Chain FX plug-in with various customized Fairlight FX plug-ins applied. Notice that this plug-in window is disabled, so none of the processing is currently applied to the track.

You can open any plug-ins in the Chain FX window and change the settings as needed. Enable only the plug-ins you need in the chain. The controls also let you add or remove plug-ins and save presets like this one.

10   Click the De-Esser Custom button on the Chain FX plug-in to open the window for that plug-in.
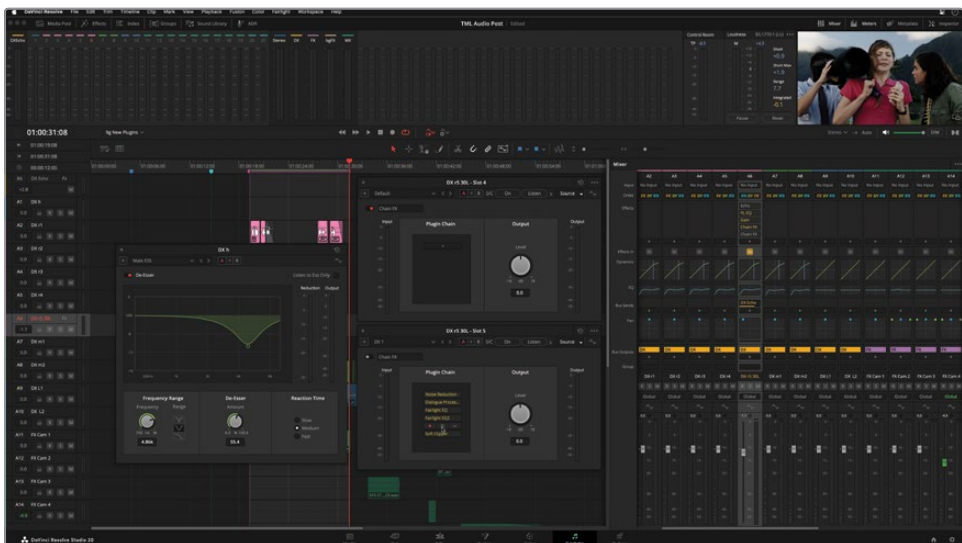
As you can see, the plug-in windows are the same for plug-ins within the Chain FX window as they are if you use them in individual effects slots in the mixer.

11 Close all the open plug-in windows.

You can create and save collections of custom plug-ins, such as effects for Dialogue sweetening or Mix Tools and Meters.

12 Scroll the mixer toward the right to see the busses. Open the Chain FX plug-in on the Stereo bus channel strip.

In this Mix Tools and Meters plug-in preset, you'll see five different plug-ins commonly used for mixing and mastering a soundtrack.

13 Close the open Chain FX window.

Chain FX plug-ins expand your creative options by allowing you to build complex effects chains, create custom plug-in presets, and manage processing more efficiently, beyond the usual six-plug-in limit per channel strip. Each Chain FX plug-in can hold up to six individual plug-ins, and you can insert up to six Chain FX plug-ins on a single track or bus. This gives you access to up to 36 plug-ins on one track, if needed.

Working with New AI Processing Tools (Studio Only)

DaVinci Resolve 20 Studio introduces three new audio processing tools to make dialogue sound more consistent across different clips: EQ Matcher, Level Matcher, and Dialogue Matcher.

EQ Matcher lets you take the tone or frequency balance from one clip, like location audio from a set, and apply it to another, such as a studio ADR recording. You can copy the EQ curve from your reference clip and apply it to individual clips or entire tracks, or even automate it across a sequence. This helps smooth out tonal differences between recordings without needing to manually adjust EQ settings for each one.

Dialogue Matcher goes even further. It not only matches the tone but also adjusts volume levels and the sound of the recording space—like room reverb or ambience. It creates a profile from a reference dialogue clip and applies that to others, even if they were recorded at different times or with different gear. This helps blend dialogue seamlessly, making all your takes feel like they were recorded in the same space.

In this exercise, you'll experience both AI processing tools and their results in just a few simple steps.

1   Open DaVinci Resolve 20 Studio, if necessary.

2   In your TML Audio Post project, open the timeline **9 Studio Additional Tools**.
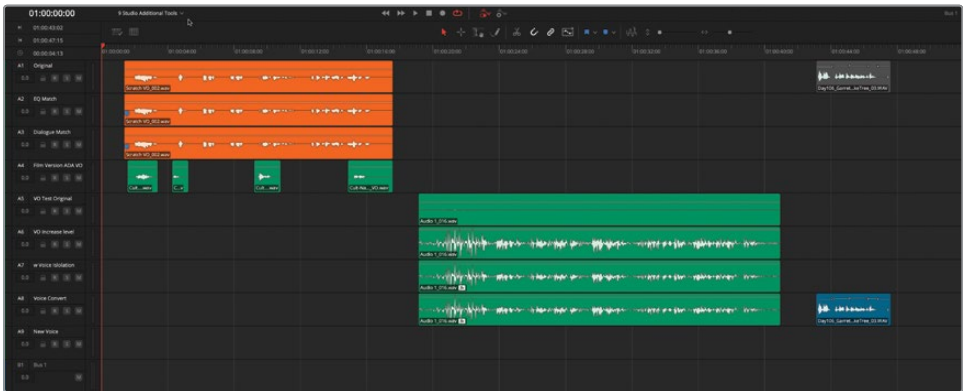
Here, you'll see two different stacks of clips duplicated to different tracks to easily show the progression from the original clip to the version ready for AI processing.

3   Use the Range tool to set a looped playback range around the orange clip in the A1 Original track.

4   Press A for the default Pointer mode arrow tool.

5   In the Fairlight menu, ensure that Exclusive Solo is enabled (checked).

6   Solo the A4 Film Version ADA VO track. Play the first two clips, "Emiliana Newton. Yes."
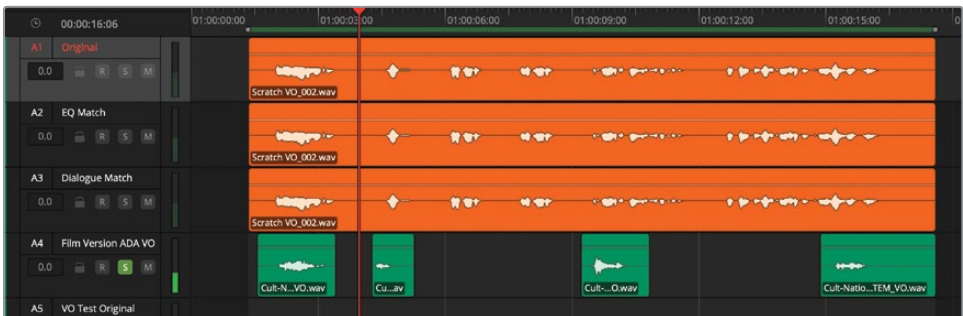
This is the final processed sound of the ADA voice in the film *Hyperlight*. For this exercise, you'll test the EQ Match and Dialogue Match AI processes in DaVinci Resolve Studio to match the EQ and overall sound in a recording of a different person with a different microphone from the final version of this computer VO character.

7 Solo and play the beginning of the clip in the A1 Original track to hear the clean (unprocessed) recording of this author saying, "Emiliana Newton. Yes."
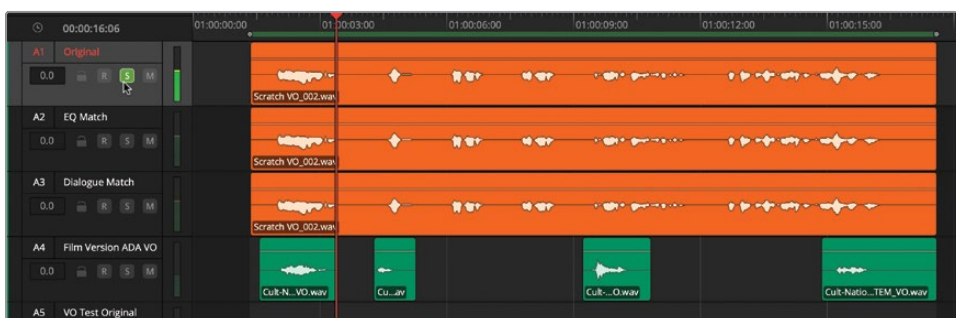
Your goal is to process the sound of this author's recording so that it sounds as though the microphone and effects processing are the same as the finished source sound in the A4 track. Let's start with the EQ Match processing. First, you'll need to make an EQ profile of the clip or clips that you want to match.

8 Solo the A4 track. Select the first green clip in the A4 track. Right-click the selected clip and choose Clip Operations > EQ Matcher > Capture EQ Profile.
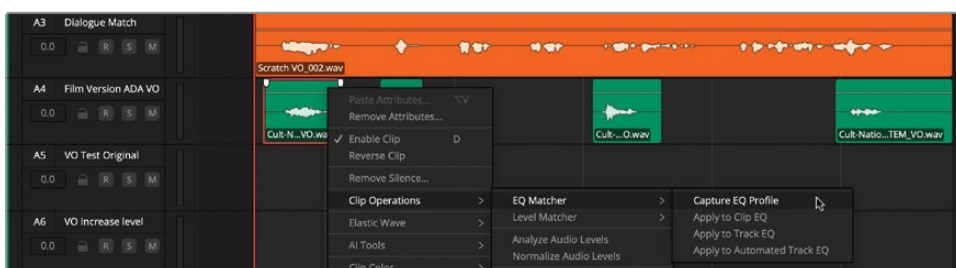
Once the EQ Profile has been captured, you can apply it to any selected Clip EQ, Track EQ, or Automated Track EQ for changes over time. Let's try the EQ Profile on the clip in the A2 Dialogue Match track.

9 Right-click the clip in the A2 EQ Match track and choose Clip Operations > EQ Matcher > Apply Clip EQ.

10 Show the Inspector and select the clip in the A2 track, if necessary, to see the EQ applied to the clip.
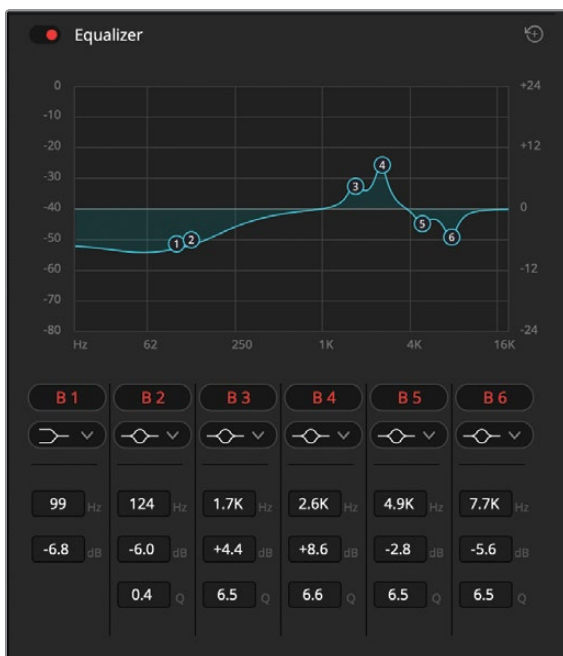
11 Solo the A2 track and play the clip to hear the difference. Feel free to click the Solo buttons between the A1 track and the A2 track to hear the before and after versions of the clip with and without the new EQ profile applied. When you are finished, stop playback.

If you thought that was impressive, wait until you try the AI Dialogue Match process! Best of all, you'll follow the same simple steps. Let's try it!

12 Solo the A4 track. Right-click the first clip and choose AI Tools > Dialogue Matcher > Capture Dialogue Profile.
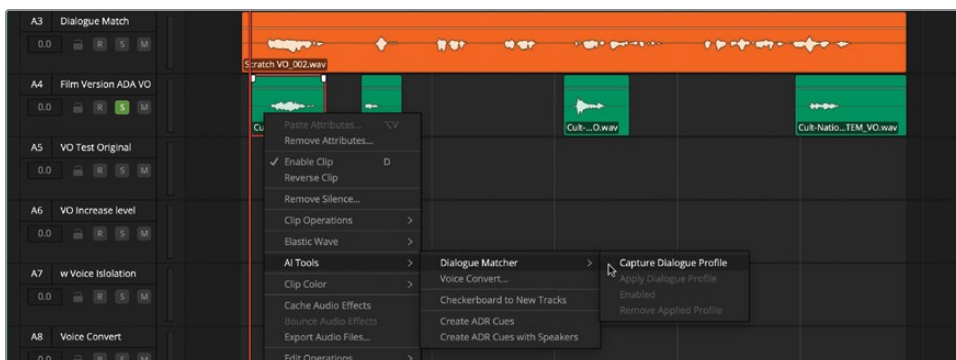
13 Right-click the clip in the A3 Dialogue Match track and choose Apply Dialogue Profile.

14 Solo the A3 track and listen to it. During playback, solo the A1 and A3 tracks one at a time to hear the before and after versions of the voiceover.

Mind blown! The mic tone, room reverberation, and effects used to create the "computer voice" sound were all applied to the unprocessed clip on track A3. The only difference between the original and processed versions is the voice itself—in this case, the author's voice. Tools like EQ Matcher, Level Matcher, and Dialogue Matcher can save you significant time and effort when replicating a specific sound. These AI-driven processes are especially useful when working with the same talent across multiple episodes in a consistent location, where you need to match the sound to a previous episode.

Convert One Voice to Another Without ADR, Dubbing, or Additional Recording

AI Voice Convert in DaVinci Resolve 20 Studio lets you take the sound of one person's voice and apply it to another speaker's recording. For example, if a line of dialogue was replaced by someone else during ADR or a scratch track, you can make it sound like the original actor's voice using AI. The tool creates a voice profile from a reference clip and then transforms the target voice to match the tone, pitch, and overall vocal identity of that person. This helps keep voice continuity in your project, even when using different speakers, without re-recording. It's especially useful for fixing mismatched dialogue or creating placeholder lines that sound like the real actor.

In this exercise, you'll experiment with the four different voice models that come with DaVinci Resolve 20 Studio. If you have been following the lessons in this book, you'll be familiar with the clips that you'll work with in the A5–A8 tracks.

1 In the **9 Studio Additional Tools** timeline, scroll the timeline toward the right so the stack of green clips on A5–A8 is closer to the track headers.
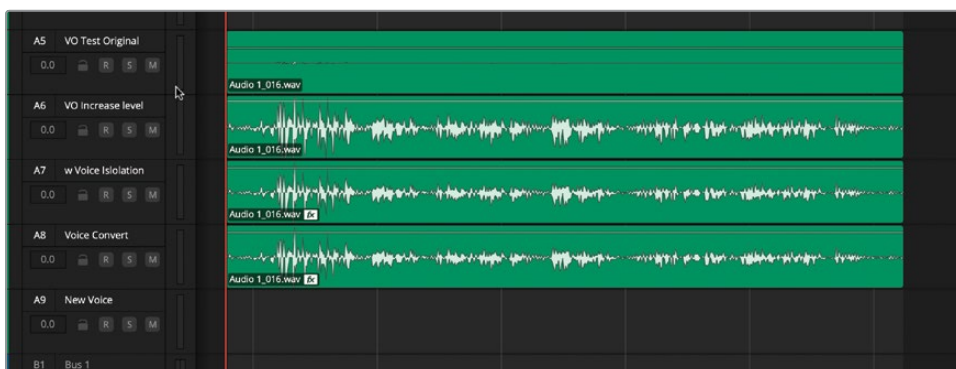
2 Set a play range around the green clip in the A5 VO Test Original track.

3 Solo and play the green clip in each of the tracks from A5–A7, one at a time, to hear the progression of the same poorly recorded clip from low and noisy, to louder and noisier, to cleaned up with the Voice Isolation Track FX.

Next, you'll convert the voice in the clip on the A8 track to one of the four voice profiles.

4 Solo the A8 Voice Convert track.

5 Right-click the clip in the A8 track and choose AI Tools > Voice Convert.

The AI Voice Convert window opens with a simple set of controls. Here, you'll use the default settings with a few minor adjustments.
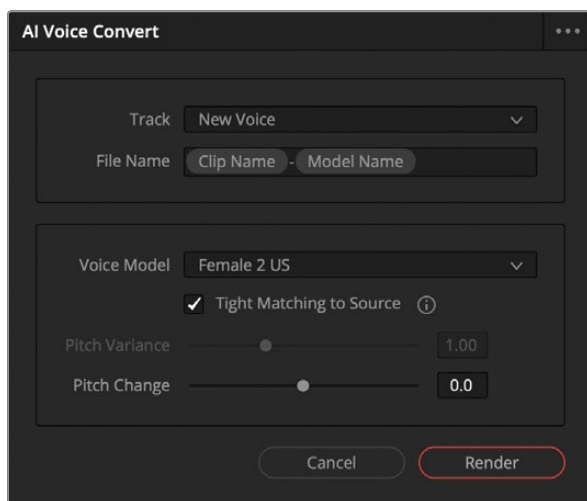
6 In the AI Voice Convert window, set the controls as shown:

— Track: New Voice.

— File Name: Clip Name-Model Name.

— Voice Model: Female 2 US

— Check the Tight Matching to Source option (this is important for lip sync if there is video plus audio)

— Pitch Change: 0.0

7   Click Render.

A progress dialog shows the voice analysis for the conversion. When the analysis is finished, the original clip is disabled, and the newly rendered clip with the Female 2 US voice model is in the A9 New Voice track.
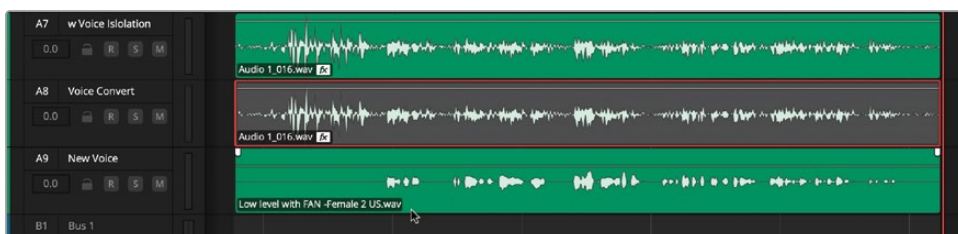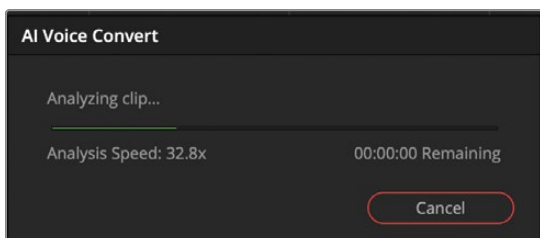
8   Solo the A9 New Voice track and play the clip.

Amazing! Same words and timing, but with a different voice. Let's do it again, this time, with the Male 1 voice.

9   Solo the A8 track. Select the clip in the A8 track and press D to enable the clip.

10   Right-click the clip in the A8 track and choose AI Tools > Voice Convert.

11   In the AI Voice Convert window, make the following changes:

— Set the Track dropdown menu to New Track.

— Set the Voice Model dropdown menu to Male 1 US.
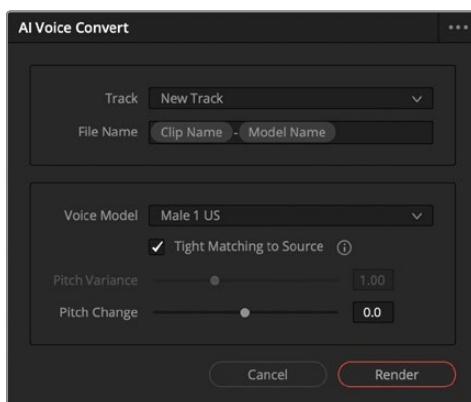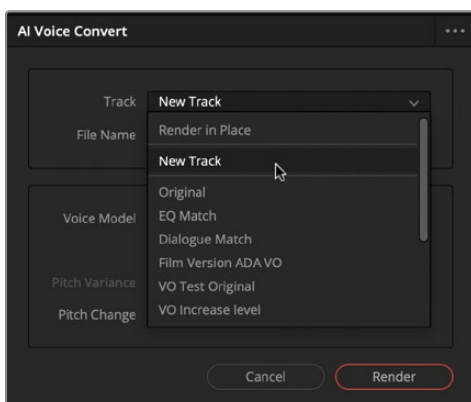
12 Click Render.

Once again, the clip in A8 is disabled. However, the newly rendered clip with the Male 1 US voice model is in a new track at the bottom of the timeline.
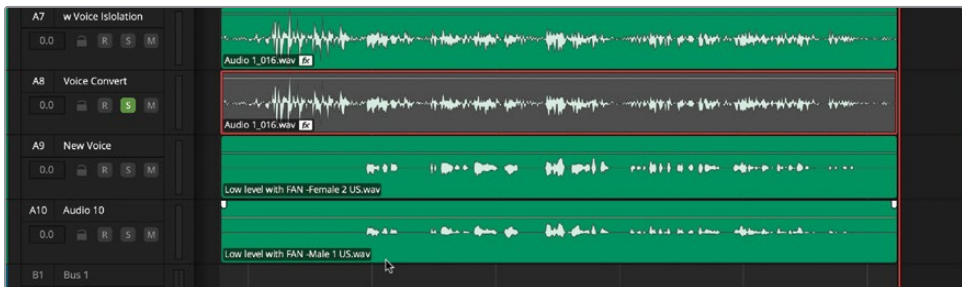
13 Solo the A10 track and play the results.

Impressive! Now let's try the same thing on a clip with synced picture and sound.

14 Solo the A8 track.

15 Mark a new play range around the Navy clip in the A8 track. Zoom the track as needed to clearly see the Navy clip.

16 Undock the viewer from the monitoring panel and move the floating viewer to the timeline area above the Navy clip.
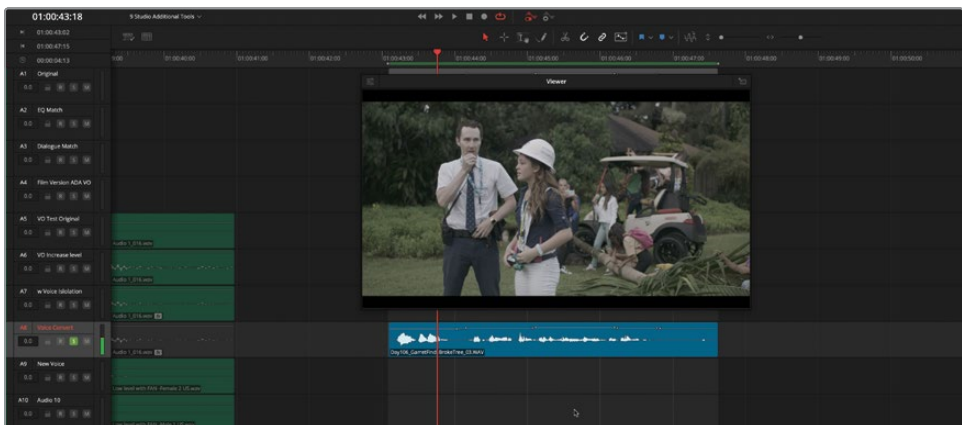
17 Right-click the Navy clip in the A8 track and choose AI Tools > Voice Convert.

18 In the AI Voice Convert window, set Track to the New Voice and choose one of the Male voice models. Click Render. Listen to the results.

19 When you are finished, close the viewer.

As you can see, and hear, the newly converted voice is in perfect sync with the video. Feel free to try a different voice model before moving on to the next section.

> **NOTE** If you want to try creating a voice profile from a source clip or clips in the media pool, you simply right-click the clips and choose AI Tools > DaVinci AI Voice Training and follow the self-explanatory steps. You can find more detailed information about AI Voice Training and working with DaVinci Resolve AI tools in the *DaVinci Resolve Reference Manual* available via the Help menu.

Mixing a Soundtrack with the AI Audio Assistant

Throughout this book, you've learned how to record, edit, clean up, enhance, sound design, and mix your soundtrack. Along the way, you've worked with various tools, techniques, and plug-ins across different types of projects. Now, you're ready to apply those skills to your own work. But if you're new to audio, or if you're a video editor or content creator with basic audio tracks and aren't quite sure how to balance or mix them, DaVinci Resolve 20 Studio has you covered with the new AI Audio Assistant.

This powerful tool analyzes the audio in your timeline and creates a professional-sounding mix for you. From the Timeline menu, simply go to AI Tools and choose Audio Assistant. You'll be guided through the process: the assistant organizes your tracks, evens out dialogue levels, balances sound effects and music under the dialogue, and delivers a final mastered mix, all automatically. It's the perfect solution for editors who want a faster, easier way to polish their audio and feel confident about the results.

In this exercise, you'll open a timeline with unbalanced sound and use the AI Audio Assistant to organize and mix the soundtrack.

1 Open the timeline **9 Studio – AI Audio Assistant**.

2 Show the monitoring panel and mixer, if necessary.
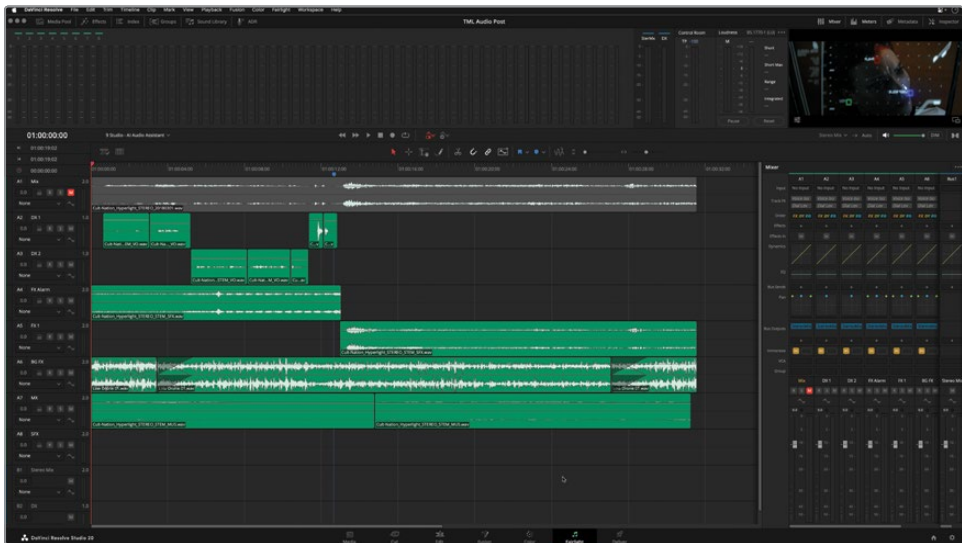
This timeline is a scene from the film *Hyperlight*.

> **NOTE** This example has a limited number of tracks with clips that are intentionally unbalanced so you can see and hear a noticeable difference with the AI Audio Assistant's results.
>
> WARNING You may wish to lower the monitoring level on your system before playing the timeline, as parts of it may be too loud.

3 Play the timeline once to hear the unmixed part of the scene.

Your trained ears are likely on high alert. No worries. You can stop cringing and get busy fixing this timeline. No doubt you recognized that the dialogue levels are low, the music is inaudible, and the drone and alarm sound effects overpower everything. Your instincts are probably driving you to start manually balancing the clips in the tracks and then tackle the mix. If you have been following along with this book, this author is confident you could clean up this unmixed audio chaos in minutes. Instead, let's see what the DaVinci Resolve Studio AI Audio Assistant can do with it.

4 Choose Timeline > AI Tools > Audio Assistant.

The default Delivery Standard is YouTube.
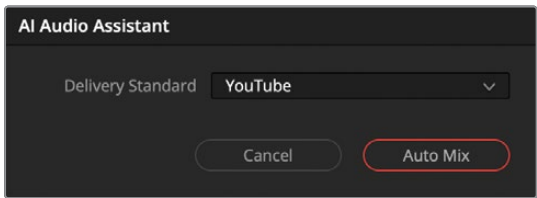
5 In the AI Audio Assistant dialog, choose Netflix as the Delivery Standard. Then click Auto Mix.
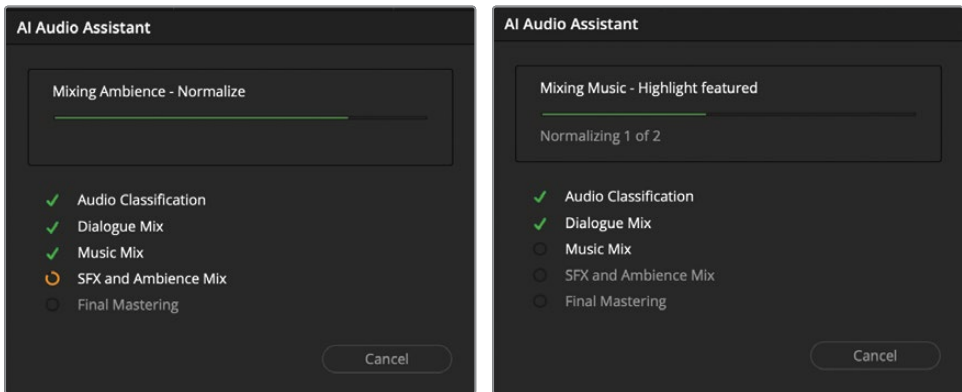
The audio assistant will follow as a series of processes, with a dialog to indicate each step along the way to the finished mix.
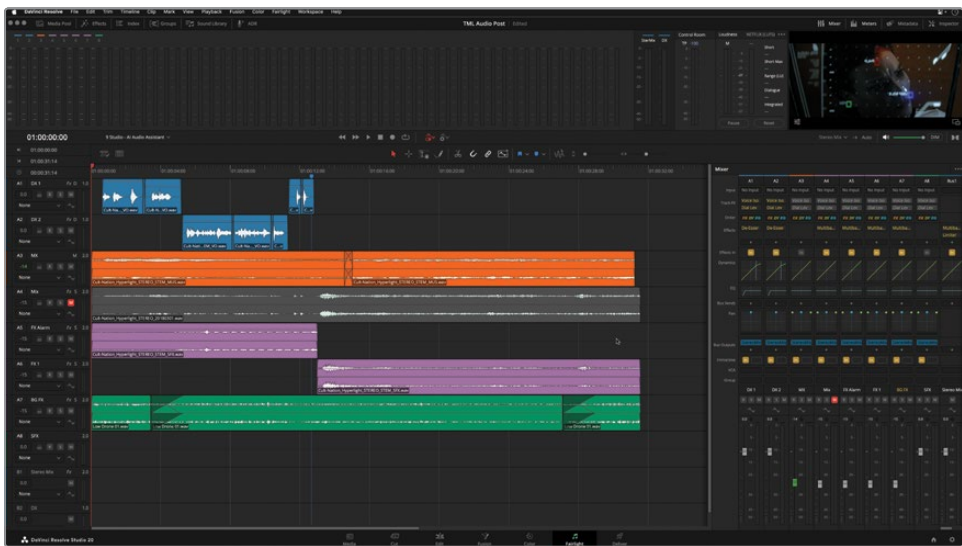
The finished timeline includes organized tracks that are color-coded for dialogue, music, FX, and BG FX. The clip levels are balanced, and the tracks are sweetened and mixed as needed.

6 Return the monitoring level on your system to your preferred setting.

7 Play the timeline from the beginning.

Well done, AI Audio Assistant! The dialogue is clear, the music is audible, and the background sounds are where they should be—in the background. Keep in mind, this is a starting point. From here, you could still adjust clip or track levels to your own liking.

If you were impressed with the AI Audio Assistant and are now worried about your job security in professional audio, relax! The AI Audio Assistant is doing some basic mixing to produce a predictable result. The reason the example didn't involve the surf scene from *Too Much Life* or your exciting Post Park Normal podcast intro is that the Audio Assistant isn't creative. Both of these projects that you have been working on throughout this book include creative sound design that goes beyond basic mixing rules. The exaggerated sound FX levels in the podcast intro are part of the storytelling and audience experience, just like the louder-than-normal music in the cartoonish "Learn to Surf" scene in *Too Much Life*. Sure, all these AI tools are impressive and helpful. They can absolutely be used with confidence as needed, along with all your own skills, creativity, intuition, and uniquely human storytelling with sound abilities.

Congratulations! You have finished this mixing and sweetening lesson and are ready for bouncing and delivering your soundtracks!

Lesson Review

1 True or False? You should balance the volume levels of individual clips in the timeline before adjusting track levels in the mixer.

2 Where do you set and balance overall track levels?

   a) Mixer

   b) Track Level window

   c) Monitoring panel

   d) Control room

   e) Loudness control

3   What is a common reason for applying a compressor to a dialogue track?

   a)   To make noise sound like a computer warble

   b)   To reduce the dynamic range between the loudest and quietest peaks in the track

   c)   To make the sound seem like it is coming from a small space

   d)   To create the aural illusion of a physical barrier

4   What is the difference between the Ducker Track FX and side chain compression in the mixer?

   a)   The Ducker is only for music tracks, while side chain compression works with any track.

   b)   The Ducker can only have one source track, while side chain compression works with multiple tracks.

   c)   The Ducker works on tracks only, while side chain compression works with tracks and busses.

   d)   The Ducker has a waveform graph and no user controls, while side chain compression has user controls and no waveform graph.

5   True or False? Applying EQ carving to a music track is the same as adding keyframes to the volume curve to dip the track's sound when there is spoken dialogue.

6   How many plug-ins can be added to the Chain FX plug-in?

   a)   2

   b)   3

   c)   4

   d)   5

   e)   6

7   Which controls enable you to automate faders, pan controls, and other parameters?

   a)   Automation

   b)   Animation

   c)   Auxiliary

   d)   Agnostic

Answers

1 True

2 a

3 b

4 c

5 False. EQ Carving reduces some frequencies shared by the dialogue to improve dialogue clarity.

6 e

7 a

Finishing and Delivering Tracks

The final phase of audio post-production is finishing and delivery. This process includes ensuring that your final soundtrack meets delivery standards and that the files are rendered in the correct format.

In this lesson, you'll explore DaVinci Resolve's built-in loudness metering, normalization, and offline loudness analysis to ensure the final elements meet delivery loudness requirements. Then, you'll return to the partial scene that you mixed in Lesson 9 to bounce variations of the mix, including dialogue only, music and effects, and the full stereo mix.

Finally, you'll render stereo and 5.1 surround sound versions of the Post Park Normal podcast intro in the deliver page.

Time

This lesson takes approximately 35 minutes to complete.

Goals

Preparing the Project

Let's start by opening the TML project, where you will work with the loudness metering and bounce versions of the "Learn to Surf" scene. First, let's create a bin for bounced files in the media pool.

1   Open DaVinci Resolve if necessary.

2   Open your TML Audio Post project.

3   In the Fairlight page, open the **10 Full Surf Scene** timeline.

4   In the media pool, right-click the Master bin and choose New Bin.
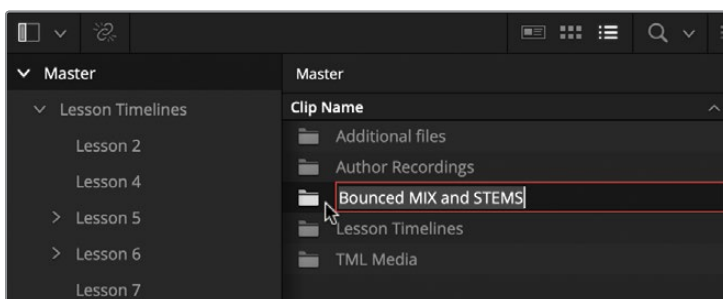
5   Name the new bin **Bounced MIX and STEMS**.

6   Hide the media pool.

Monitoring and Analyzing Loudness in Your Mix

Now that you're ready for the final output, you need to monitor and analyze the output levels. In the past, broadcast standards were based on the highest peak level in a soundtrack. As long as audio content did not exceed that level, it would pass quality control. That led to commercials that applied heavy audio compression to narrow their dynamic range and sustain all voiceovers at the maximum allowable (and overbearing) level. For a brief time, there was a loudness war. Really!

The television loudness war was that awkward era when commercials felt like they were yelling at you during a quiet movie night. Thankfully, the CALM Act (Commercial Advertisement Loudness Mitigation Act) stepped in like a good roommate, telling them to turn it down and play nice with the rest of the show.

To even the acoustic playing field, new loudness standards were introduced that apply to all broadcast programs (television and radio), regardless of the length or type of program. In North America and parts of Asia, an integrated target of -24 LUFS (Loudness Units Full Scale) is the norm for broadcast content, whereas in Europe the target is -23 LUFS. (Theatrical films, trailers, and streaming videos have different standards.)

DaVinci Resolve includes three types of monitoring panel meters to measure such standards. Peak meters are traditional Root Mean Square (RMS) meters available for every track and bus that uses a decibel scale, True Peak (TP) meters in the Control Room measure the sum of all audio channels routed to the current bus selected in the monitoring dropdown menu, and Loudness meters measure the loudness in your program based on the loudness unit scale (LUFS). Presets available in the Loudness options menu (...) allow you to choose the most current loudness metering, ITU BS.1770-1 and ITU BS.1770-4, as well as international Loudness standards for the meters.

The Fairlight page Loudness meters include a numeric display that outputs various useful loudness measurements, the most important of which is the Integrated level.
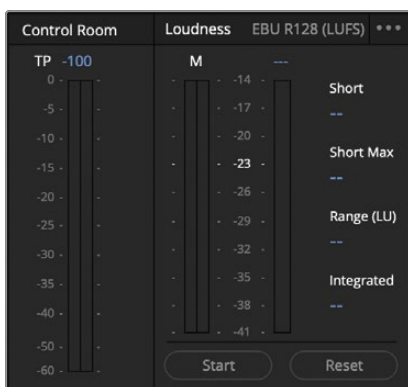
— **M** displays the momentary loudness unit at the playhead location.
— The **Loudness** meter displays the sum of all channels for the playback duration.
— The numeric value at the top is the max **LUFS** value over that range.
— **Short** displays loudness over a 30-second range.
— **Short Max** displays the played range's maximum true peak level.
— **Range** displays the dynamic range of loudness in the entire program.
— **Integrated** displays the average loudness for the entire played range. This value targets either -23 LUFS or -24 LUFS, as required by broadcasters and configured in your Project Settings.
— **True Peak (TP)** meters show the highest program peak.

You can monitor loudness levels for an unrendered mix in real time during playback in the monitoring panel Loudness meters and in the timeline Loudness graph. Additionally, you can quickly perform an offline loudness analysis, which is much faster than playback, to assess the levels of your rendered mix. In the next series of exercises, you'll explore both methods for measuring loudness in DaVinci Resolve.

Analyzing and Normalizing Levels

If you are working with rendered mixes, it's a good idea to check their loudness levels to see if they meet delivery standards. In this exercise, you'll use Fairlight's offline Loudness Analyzer to check the loudness levels based on a specific loudness measurement preset. This is a great way to quickly measure loudness in imported audio files or bounced mixes. If the levels are too loud, you can normalize the clip to the same loudness preset and then rerun the analysis. For this example, you'll analyze the Surf Scene Reference stereo clip with the international standard ITU-R BS.1770-4 loudness measurement preset.

1   Open the **10 Full Surf Scene** timeline, if necessary.

    You may have noticed that the audio waveform in the clip is quite pronounced, indicating that it has likely been rendered at louder levels than necessary.

2   In the timeline, right-click the audio clip in the A1 track and choose Clip Operations > Analyze Audio Levels to open that dialog.
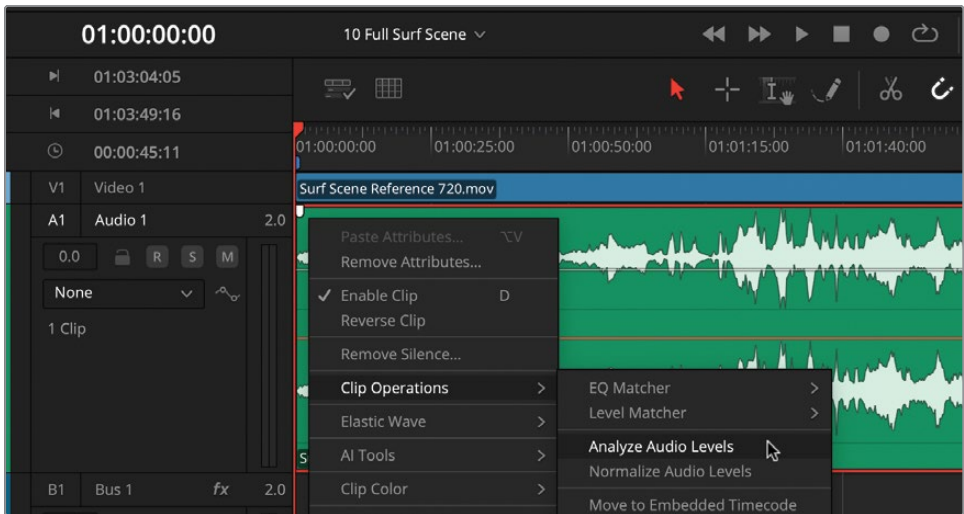
3 In the Analyze Audio Levels dialog, choose ITU-R BS.1770-4. Click Analyze.
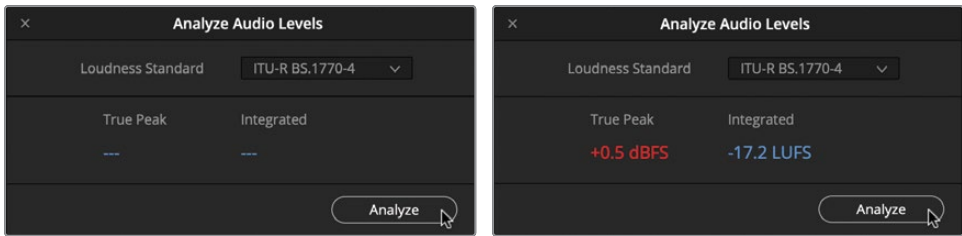
When using the ITU-R BS.1770-1 and ITU-R BS.1770-4 loudness presets, you will always see accurate True Peak and Loudness measurements in blue. The other loudness standards presets use red or yellow to show that the levels are too loud or within tolerance, respectively. In this case, a True Peak level of +0.5 dBFS and Loudness measurement of -17.2 LUFS is too loud for any broadcast delivery standards. Luckily, you can normalize the clip to whichever loudness requirements you need.

4 Right-click the audio clip in the A1 track and choose Normalize Audio Levels.

Your goal is a maximum Target Level of -2.0 dBTP and Target Loudness of -23 LKFS. Setting the Normalization dialog to the ITU-R BS.1770-4 mode will reduce the clip's relative loudness as much as necessary until it is below or within tolerance of both loudness targets.

> **NOTE** Keep in mind that the True Peak is a ceiling, not a desired target. In fact, ideally, in an entire show the levels should almost never reach the True Peak maximum level. This includes action, sci-fi, and war films. In a typical dialogue film with dynamic levels, the True Peak is somewhere between -6 dBTP and -3 dBTP.
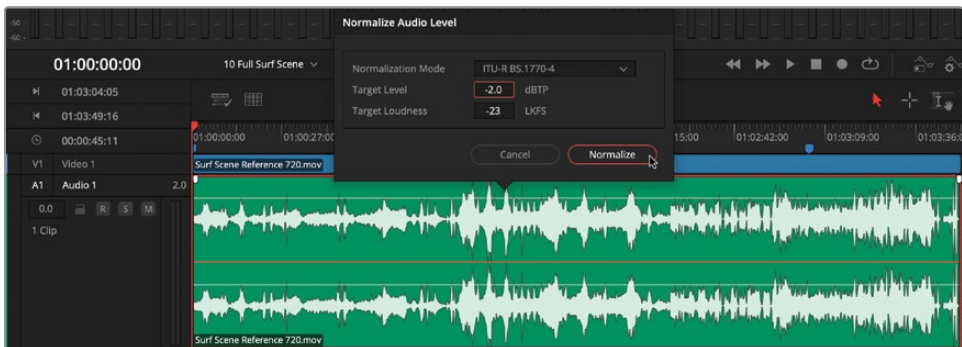
5 In the Normalize Audio Level dialog, set the Normalization Mode to ITU-R BS.1770-4. Click Normalize. Once the normalization is complete, the waveform changes to indicate the reduced clip level. Select the audio clip and analyze the audio levels for ITU-R BS.1770-4 again.
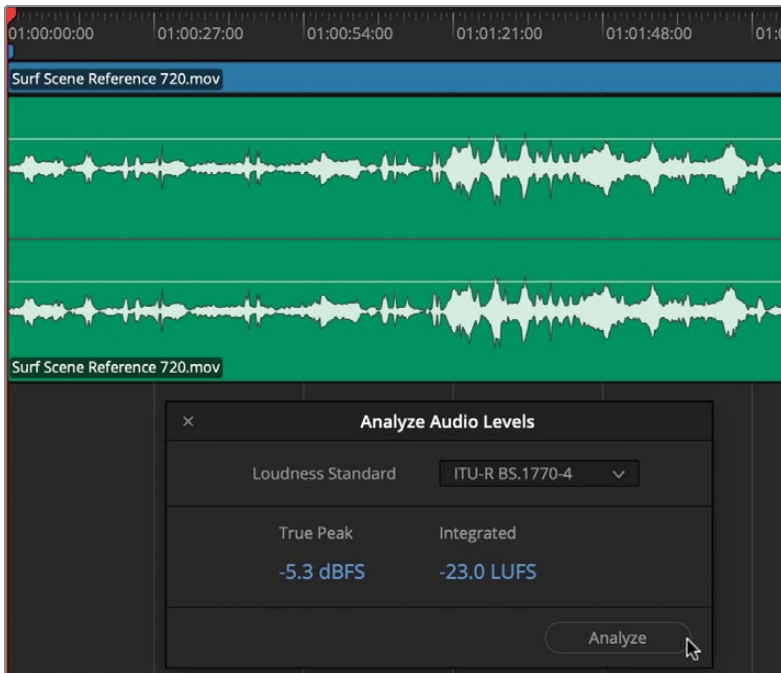
6 Close the Analyze Audio Levels window.

Mission accomplished! The levels of the Surf Scene clip meet the loudness standard and are ready for delivery.

Showing the Loudness History Curves in the Timeline

If you're working with DaVinci Resolve, you can show loudness curves in the Bus 1 track so that you can easily see loudness levels in context over time and spot exactly where loudness issues occur and fix them. In this exercise, you'll show the Loudness History Curves in the timeline, then play through the timeline once to see the full loudness history and compare it to the loudness meters. Then, you'll reset the meters and play only the last part of the timeline to see the difference in loudness levels over a shorter, dynamic part of a scene versus the entire scene, reel, or show.

1 Move the playhead to the first frame of the **10 Full Surf Scene** timeline. Then, click the Toggle Automation button to turn automation on and enable visibility for the bus tracks in the timeline.

2 In the timeline, increase the height of the B1 Bus 1 track until you see the Loudness History controls in the track header.

3 Switch on the Loudness History controls to see the Loudness history graph in the timeline. Then check the Integrated, Momentary, and Short Term options to see all three loudness metering graphs.
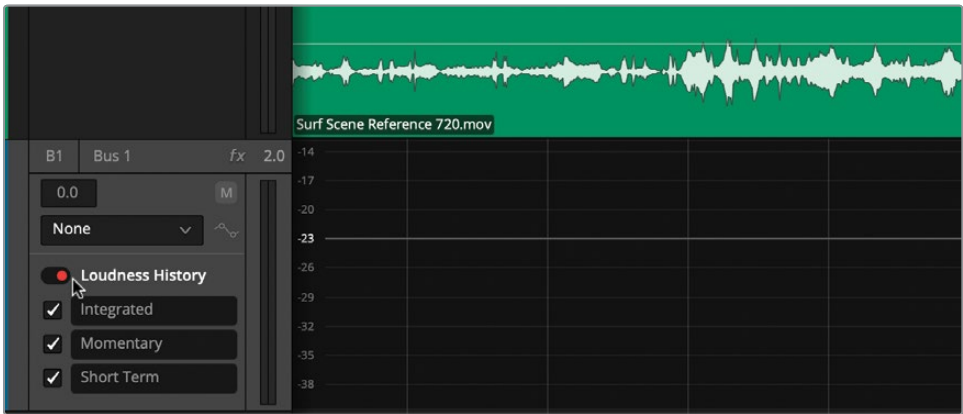
To see the Loudness history in the graph, you must start the Loudness meters.

4 In the monitoring panel, click the Loudness meters Options menu (...) and choose BS.1770-4. Also, make sure the "Lock Metering to transport" and Absolute Scale options are checked.
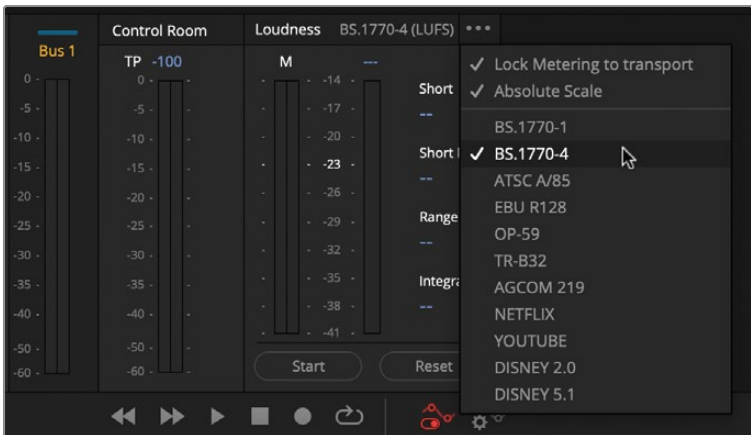
5 On the Loudness meters, click Reset and Start.

6 Start playback. The loudness metering colors and values are drawn in the graph as you play. Feel free to mute or dim playback if you don't want to listen to the entire scene. The important thing is that you play through the entire scene. When you get to the end of the clip, stop playback.
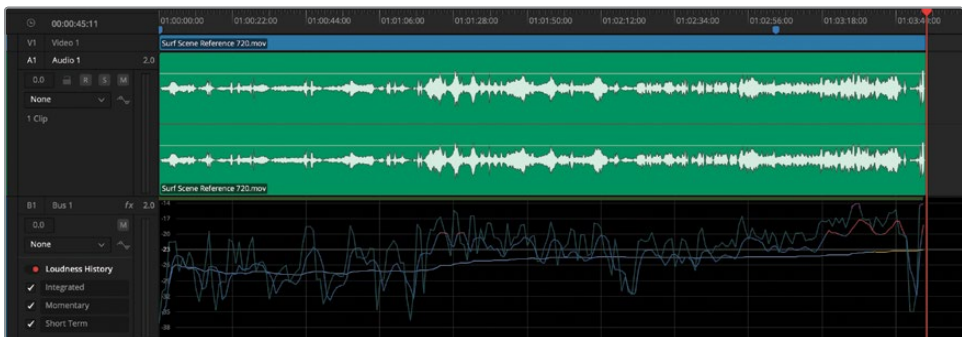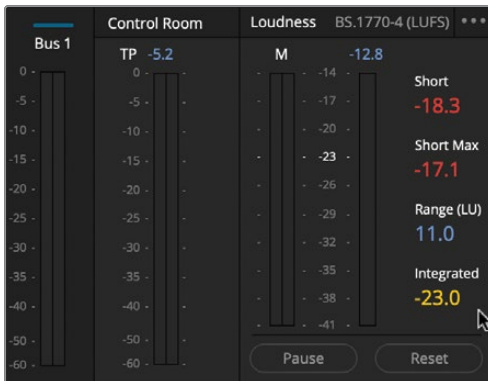
The Loudness meter shows the same numbers as the offline loudness analysis, with a True Peak of -5.2 and an Integrated level of -23.0 LKFS. If the loudness levels are within tolerance (+/- 2 dBFS), the graph and the meters will display yellow.

These three Loudness curves follow the same color indicators as the loudness meters. If the program level exceeds the -23 LKFS loudness standard, that part of the graph is shown in red along with the meters. A little red or yellow in the graph is fine as long as the loudness measurement at the end of the reel (for theatrical films) or full show (for streaming services like Netflix) meets the loudness requirements.

> **NOTE** The Loudness History graph shows the visual history of the program loudness in the timeline. You cannot edit the loudness history curves. If there is an issue with the loudness levels, you must fix the volume levels in the tracks and busses using standard mixing and automation workflows.

Remember, loudness measurements are for the cumulative sound of a show or reel. In any given soundtrack, there will be sections that are quieter and other sections that get much louder. They should be balanced over time so the audience isn't bombarded with nonstop loud music and sound effects for the entire show. Hence, the loudness requirements.

Let's run the loudness meter and graph again, this time starting at the blue marker, which only includes the last part of the scene that you were mixing in the previous lesson.

7   In the timeline, move the playhead to the blue marker at 01:03:04:05.

8   On the Loudness meter, click Reset and Start.

9   Start playback from the blue marker. When you get to the end of the clip, stop playback and look at the graph and Loudness meters.
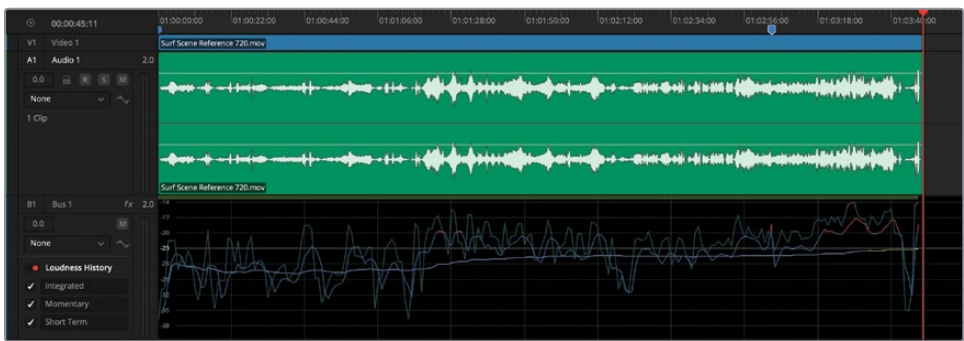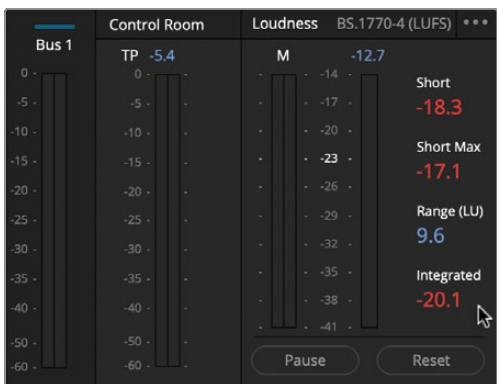
As expected, the True Peak is the same as before because that wouldn't have changed. However, the Integrated loudness level is -20.1, which is too high when measured without the rest of the scene.

Now you know how to read the Loudness meter, analyze and normalize a rendered audio mix, and show the loudness graph in the timeline. Next, you'll open a version of the scene that you mixed in the previous lesson and learn how to bounce the finished mix.

Bouncing Mixes in the Fairlight Page

Assuming your soundtrack is mixed and clients are happy with the soundtrack levels and overall sound, it's time to *bounce* or *render* your mix into a finished file that can be moved, shared, duplicated, and played outside of DaVinci Resolve.

In this exercise, you'll bounce stems including dialogue (DX), music and effects (M&E), and the stereo mix for the "Learn to Surf" scene that you mixed in the previous lesson.

This can be accomplished by muting and soloing specific tracks or simply bouncing the different busses to new tracks in the timeline.

There are four things you'll need to do prior to bouncing tracks or busses:

— Select a destination for the bounced files in the media pool. If you don't have a bin, make one.

— Make sure automation is toggled on so that all automation levels and changes will be included.

— Set a range that includes the portion of the timeline that you want to render.

— Determine which bus or busses you want to bounce and the format you want to bounce to.

You've already created a bin, so all you need to do is select it. Then, check that automation is toggled on, set a range, and let the bouncing begin!

1 Open the **10 Surf Scene to Bounce** timeline.

2 In the media pool, select the newly created Bounced MIX and STEMS bin. Then hide the media pool.

3 If necessary, toggle automation on.

4 Move the playhead to the first blue marker and press I to mark an In point.

5 Extend the mixer. Zoom the timeline as needed to see all the clips, tracks, and busses.
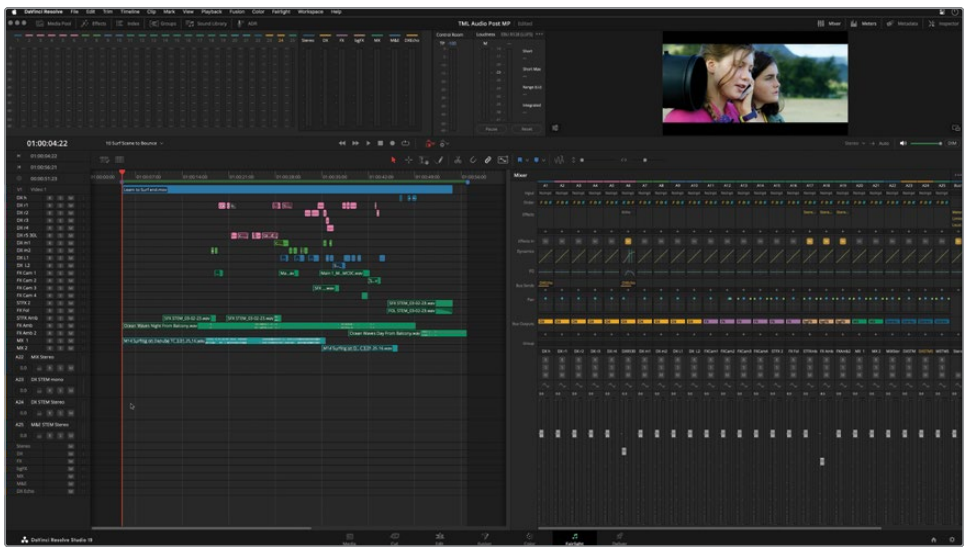
6 In the timeline, locate tracks A22–A25.

These tracks were created for the bounced files you will create shortly. The track heights were locked (via the right-click menu) to make them easy to spot and maintain their uniform height regardless of your screen size or resolution.

For this exercise, you will bounce four versions of the mix, including Stereo Mix, DX Stem mono, DX Stem stereo, and M&E Stem stereo. Three of these will be straightforward bounces that can be rendered straight from the associated busses. Let's start by bouncing a stereo version of the dialogue. In this case, there is no stereo dialogue bus, so instead, you'll mute all other busses and render the remaining stereo sound.

7 In the timeline, mute the FX, bgFX, MX, and M&E busses.

This leaves the Stereo, DX, and DX Echo busses unmuted. The DX and DX Echo busses are assigned to the Stereo bus, so when you bounce the Stereo bus, the results will be dialogue plus echo. Let's try it.

> **NOTE** When bouncing a mix to an existing track, the bus format and track must match. For example, you can bounce a stereo bus to a stereo track. If you don't have a pre-existing track to bounce to that is the correct format, you can choose New Track in the Destination Track dropdown menu, and a new track will be created for the bounced file.

8 In the Timeline menu, choose Audio > Bounce Mix to Track.

9 In the Bounce Mix to Track dialog, set the Bus 1, Stereo Destination Track to DX STEM Stereo.
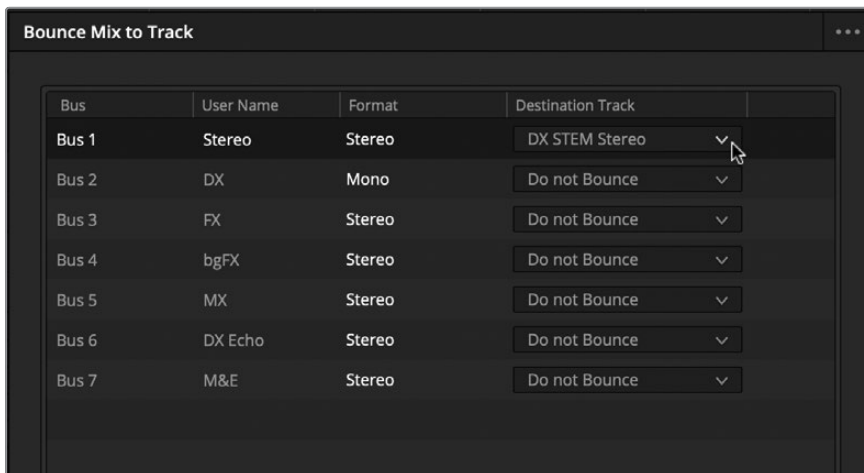
10 Click OK.
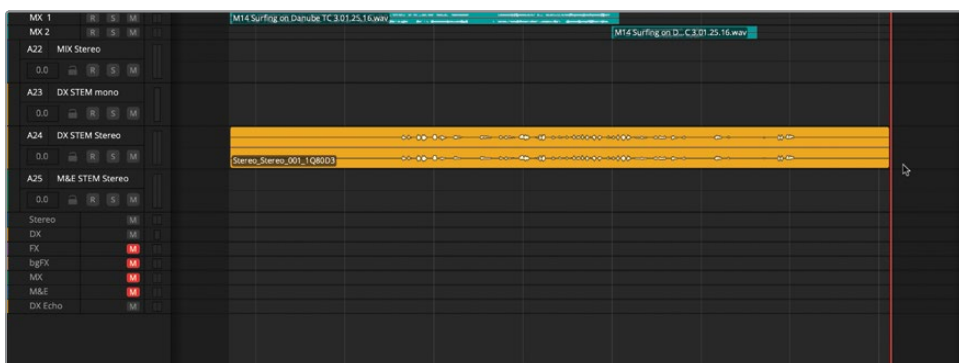
The bounced file appears in the A24 DX STEM Stereo track. The bounced dialogue clip is yellow based on the track color. Let's see how it sounds.

11 Unmute all the busses.

12 Solo the A24 track. Play a few seconds of the track starting at the visible waveform to hear the dialogue-only clip that includes the echo effect.

Voilà! Stereo dialogue with echo. One bounce down, three to go!

Bouncing Busses to Create Stems

In addition to using submixes for simplified mixing, another option is to bounce the stereo bus as a full mix, the mono DX submix bus as a *stem*, or the M&E bus to create a music and effects-only version of the mix. Not only can you create all of these using the Bounce Mix to Track dialogue, but you can also bounce them all at the same time. Seeing is believing.

In this exercise, you'll bounce three busses simultaneously to render three different versions of the mix.

1 Unsolo the A24 track. Then mute the A24 track so it is not included in the bounced mixes.

2 In the Timeline menu, choose Audio > Bounce Mix to Track.

3 In the Bounce Mix to Track dialog, assign the Destination Track dropdown menus as follows:

Bus	User Name	Format	Destination Track
Bus 1	Stereo	Stereo	MIX Stereo
Bus 2	DX	Mono	DX STEM mono
Bus 3	FX	Stereo	Do not Bounce
Bus 4	bgFX	Stereo	Do not Bounce
Bus 5	MX	Stereo	Do not Bounce
Bus 6	DX Echo	Stereo	Do not Bounce
Bus 7	**M&E**	**Stereo**	M&E STEM Stereo
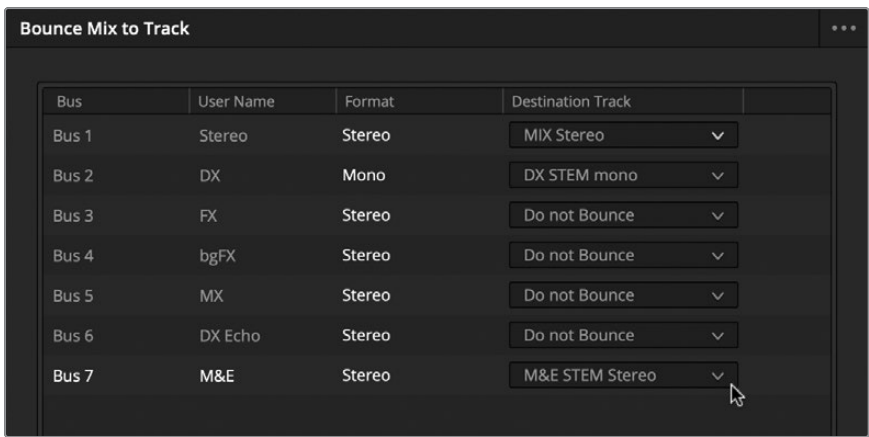
— Bus 1 Stereo bus to the MIX Stereo Destination Track.

— Bus 2 DX Mono bus to the DX STEM mono Destination Track.

— Bus 7 M&E bus to the M&E STEM Stereo Destination Track.

4 Click OK.

The new bounced files are in their premade tracks and ready to play.

5 Unmute the A24 track.

Before moving on to the Deliver page, this is a good opportunity to locate the rendered files in the media pool and give them clip names if necessary.

Renaming and Exporting Stems as Multichannel Files

Bounced files are named after their source, which makes it easy to identify them in the media pool. In this exercise, you'll rename and export your new rendered files to a folder on the Desktop.

1 Show the media pool. Select the Bounced MIX and STEMS bin to see the contents in the media pool library.

2 Select each of the rendered files one at a time to see how many channels show in the Preview Player. Move the playhead in the Preview Player to the middle of the clip for a better view of the bounced waveform.
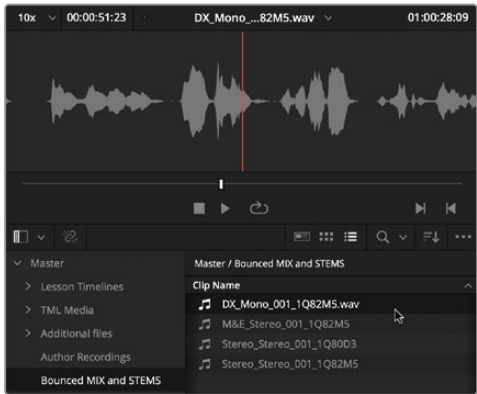
Single-channel, mono bounced file
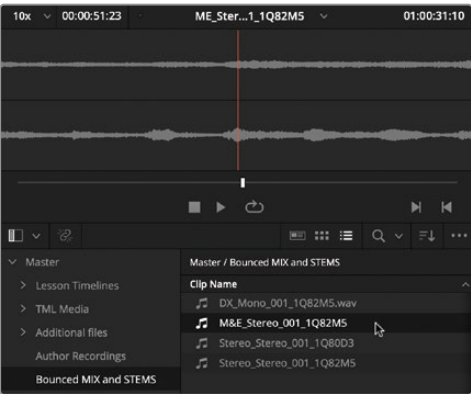
Two-channel, stereo bounced file
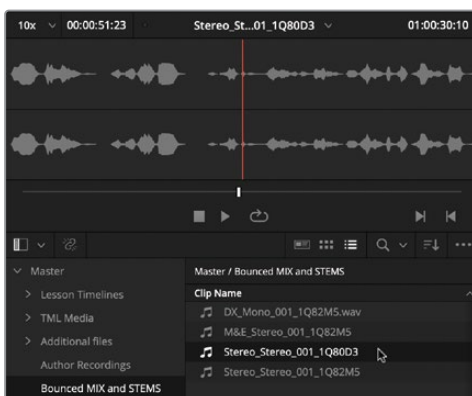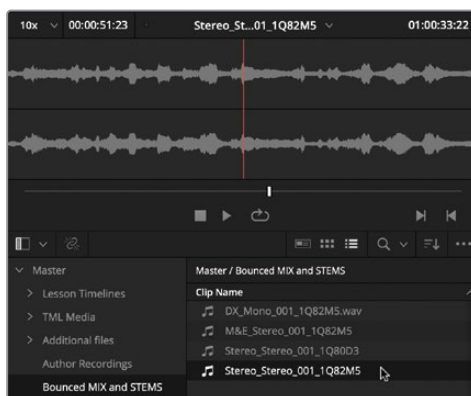
Two-channel, stereo bounced file   Two-channel, stereo bounced file

3   In the media pool, play a bit of each clip to confirm the contents, and then change the clip name for each file to match the associated track name and channel configuration as follows:

— DX_Mono

— M&E_Stereo

— DX_Stereo

— MIX_Stereo
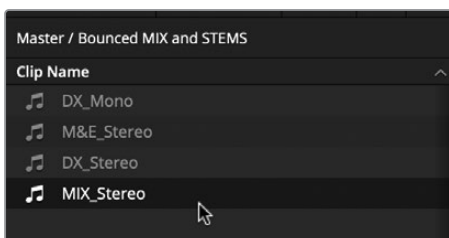
Now that you've given the bounced clips new names, you can show them in the timeline. If your timeline already shows the clip names, feel free to jump ahead to the next section. If the timeline still shows the original filenames, you can update the display in step 4.

4   Choose Fairlight > View Clip Info Display. Set the Name option to Clip Name. Click OK.
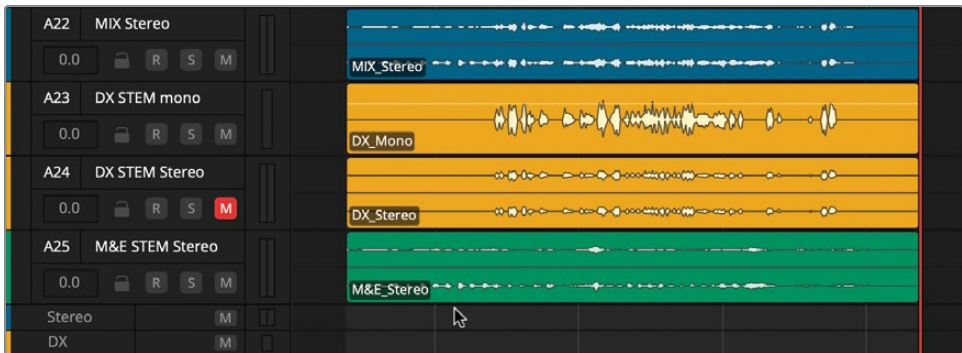
The new clip names appear in the bounced files in the timeline as well.

Preview the Bounced Files

Now that you've bounced and named four different variations of the mix, it's time to test-drive the clips to make sure they are in sync and the levels are good.

Take a moment to listen to and verify each of the bounced files in the timeline. Use the Solo and Mute buttons to play back only the bounced mixes. You can combine the M&E with either of the DX files to hear them together. This is a self-guided exercise, so you can take as long as you want. At the minimum, solo each file one at a time and play a few seconds of it while looking at the video and meters to verify it is in sync and the levels still sound good. There should be no difference in sound or levels between playing the mix or bus and playing the associated bounced file.

When you are finished, proceed to the next section, where you will export the files to a new folder on your system.

> **NOTE** If you have not completed the previous exercises, open the timeline **10 Surf Scene to Export** to catch up.

Exporting Files from the Timeline

The last step for your bounced mixes is to export them from DaVinci Resolve so they can be shared with others as needed. The Fairlight page includes a handy Export Audio Files dialog that offers all the settings you need to export your files.

In this exercise, you'll export all four of the bounced audio files to a new folder on the Desktop and add a tag representing the movie at the beginning of each filename.

To bounce the timeline clips as new multichannel files, you'll use the Export Audio Files option available in the contextual right-click menu. Also, to keep things organized, you'll create a new folder called **TML Deliverables** on your Desktop as a location for the exported files.

1   Hide the media pool.

2   With the Pointer mode Arrow tool, select the A22–A25 tracks.

3   Right-click anywhere in the timeline and choose Export Audio Files from the contextual menu.
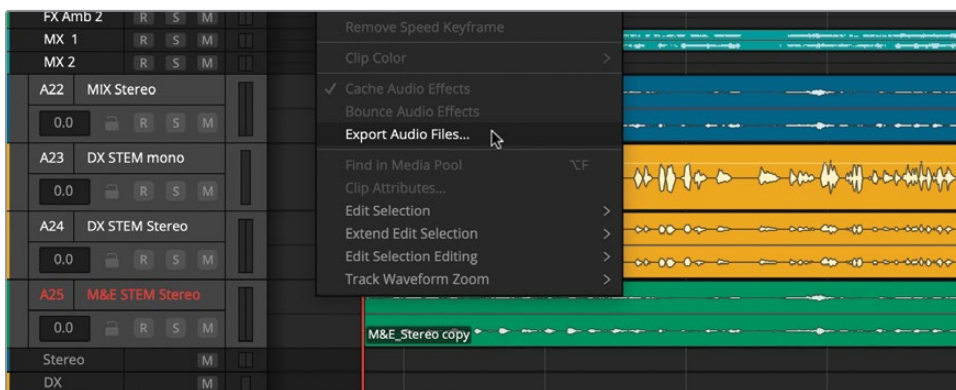
The Export Audio Files dialog opens. The options are self-explanatory. Let's start at the top and make the necessary adjustments to export all four bounced files simultaneously.

4   In the top section of the Export Audio Files dialog, do the following:
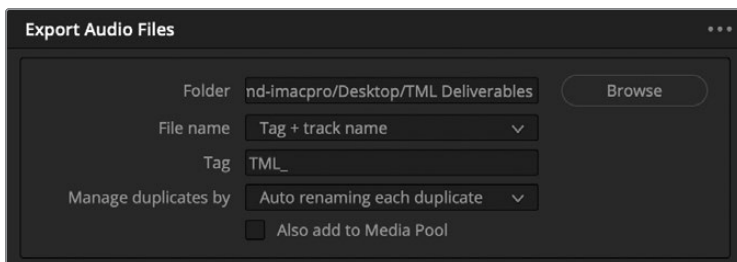
— Click Browse, create a new folder on the Desktop (or other preferred location), and name the folder **TML Deliverables**.

— In the File Name dropdown menu, choose "Tag + track name."

— In the Tag field, type **TML_** (with an underscore).

— It's important to add the underscore to separate the tag from the rest of the filename.

— Uncheck the option to "Also add to Media Pool" unless you are working collaboratively with others in a shared project. Keep in mind that these files are already in the media pool, ever since you bounced them.

5 In the next section, choose the following options:
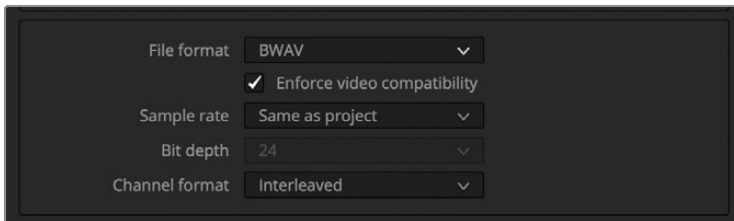
— File format: BWAV

— Check the option to "Enforce video compatibility."

— Sample rate: Same as project

— Channel format: Interleaved. This means it will be a multichannel file, such as stereo, with panned left and right channels.

In the middle section, you'll use the default settings. You'll only need to specify which clips or tracks will be exported.

6 In the middle section, use the default settings as shown. Check the option to "Only use selected tracks."
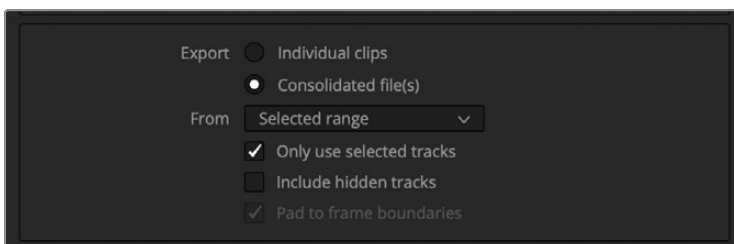
The last two sections provide options to Export with clip information such as Clip level, fades, EQ and FX, and iXML information. Below that, you'll see the option to Normalize the clips as you export them. Assuming the levels are already good to go, there is no need to normalize the clips at this time.
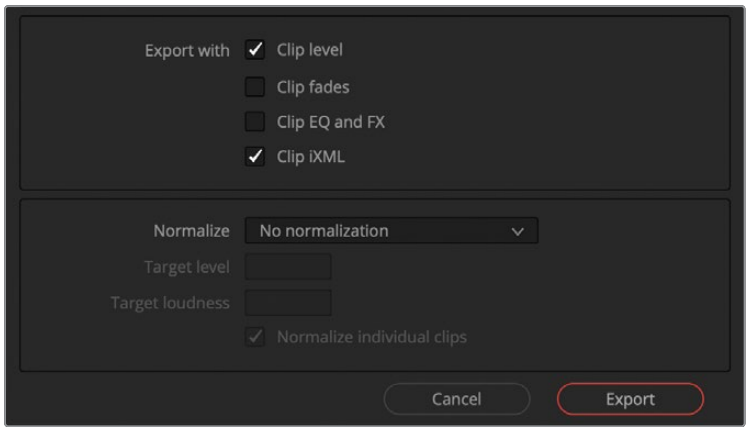
7 Check the Export with Clip level option if necessary. Leave the Normalize dropdown set to No normalization.

8 Click Export. When the export is complete, check the TML Deliverables folder on the Desktop for your exported files.
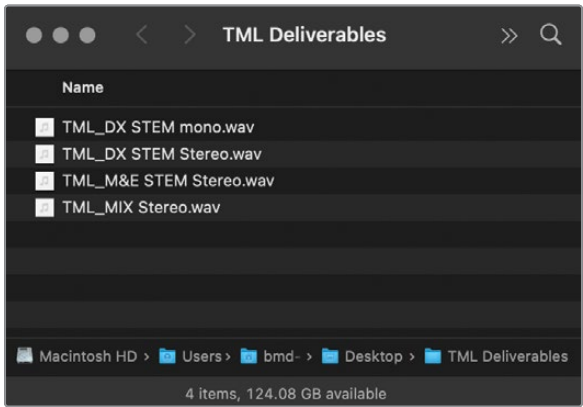
Congratulations! Not only did you edit the dialogue tracks, but you also sweetened, mixed, bounced, and exported versions of the mix. Now that you've stepped through the process, you can apply these tools and techniques to your own projects. Next, you'll open a different project and render stereo and 5.1 mixes in the deliver page.

Preparing the Project

1   Open your Podcast Intro Combo project.

2   Open the timeline **10 Deliver Stereo and 5.1**.
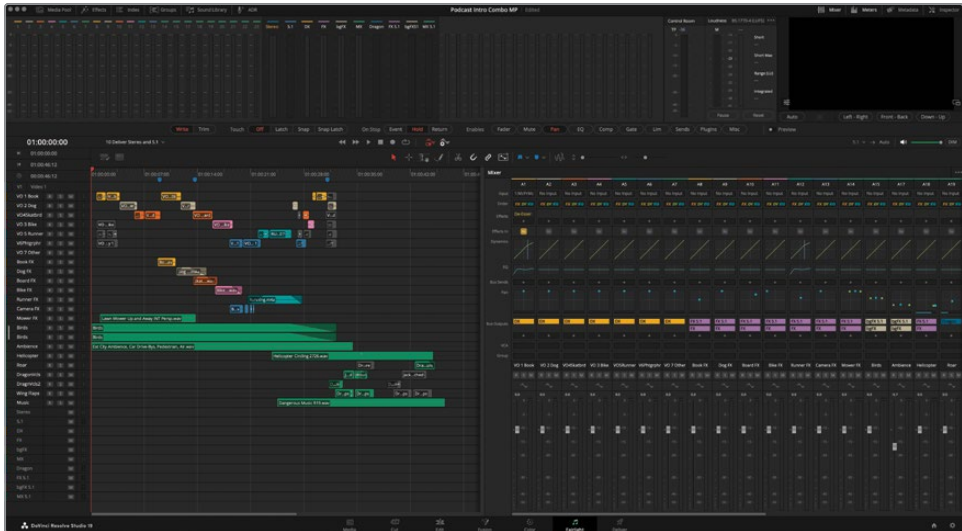
The timeline includes 23 tracks and 10 busses. Let's monitor a few seconds of the 5.1 and Stereo busses.

3   In the monitoring controls above the mixer, click the monitoring dropdown menu to see all the different busses that you can monitor during playback.
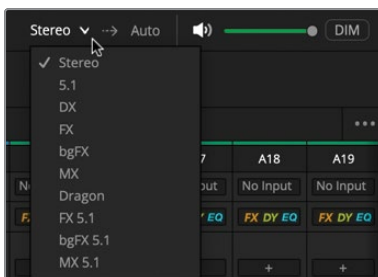
4   Set the monitoring menu to Stereo so you can monitor the Stereo bus.

5   Start playback from the beginning of the timeline and listen to some of the stereo mix. Continue playback and change the monitoring menu to the 5.1 bus. Feel free to listen to any of the busses during playback. When finished, stop playback.

6   Set the monitoring menu back to the Stereo bus.

If you are listening with headphones, did you notice that when monitoring stereo busses the sound was focused in the front left, right, and center? However, when monitoring the

5.1 busses, the sound effects and music sound as if they are coming from the front, side, and behind you. Hence the name 5.1 surround sound.

Rendering Stereo and 5.1 Mixes in the Deliver Page

It's time to deliver your podcast intro mix. Whether it is your final mix, stems, or just an intermediate timeline such as your sound effects, whatever type of deliverable you need to output, the deliver page of DaVinci Resolve is where you can do it.

In this exercise, you'll go to the deliver page to render loudness-compliant stereo and 5.1 mixes to a folder on the Desktop. Once you've completed rendering the mixes, you'll be invited to return to the Fairlight page timeline to explore the final mix, automation, tracks, busses, and panning.

1   Mark an In point at the beginning of the timeline.

2   Make sure the Toggle Automation button is on (red).

3   In this timeline, all busses and tracks should be unsoloed and unmuted.

4   Click the Deliver button to open the deliver page.

The toolbar buttons switch between file rendering and tape output.

The viewer shows images from the selected timeline.

The Render Queue contains all the jobs waiting to render.

The Render Settings configure the output format.

The timeline displays a graphical representation of the timeline you are outputting.
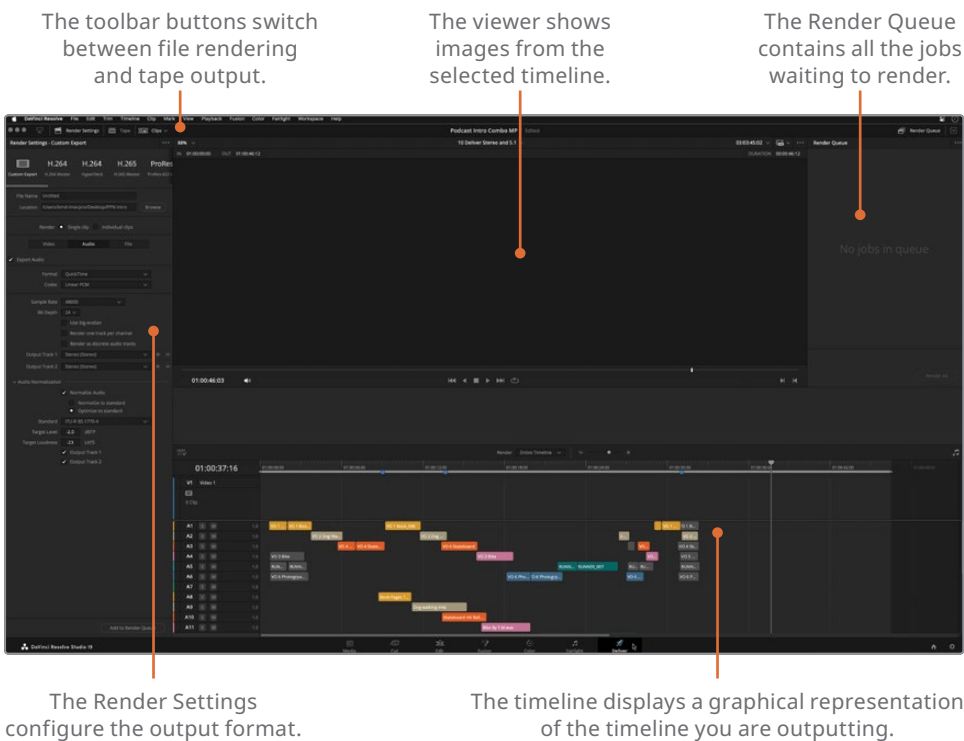
5 In the upper left, in the Render Settings, click Audio Only. Also, choose Single Clip if necessary.
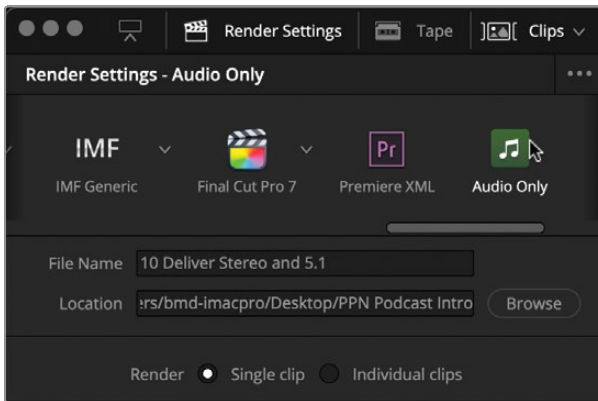
6 In the Export Audio tab, in the Format menu, choose Wave.

You can choose whatever format you need for your projects, but you'll export this one in a standard Wave format.

7 In the Codec menu, choose Linear PCM, if necessary.
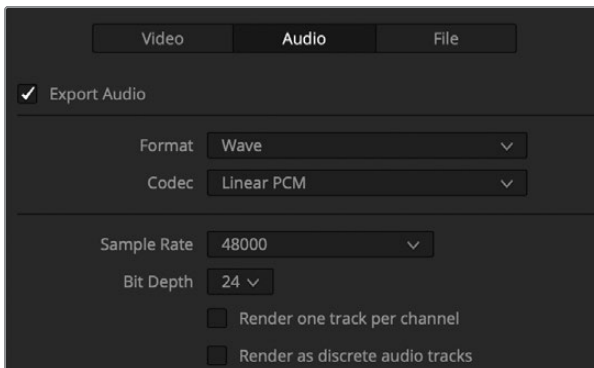
The current Bit Depth is 24, which is fine for this lesson. You can change it to 16- or 32-bit audio files at any time, depending on your delivery requirements.

Below the Bit Depth are two very important checkboxes that determine whether your mix will be rendered as a multichannel file, separate mono files for each channel, or a clip with discrete audio tracks.

For this example, you'll leave both boxes unchecked so that you render one multichannel stereo clip and one multichannel 5.1 clip.

8 Deselect the "Render one track per channel" and "Render as discrete audio tracks" options, if necessary.

9 Click the Output Track dropdown menu to see the multiple available options.
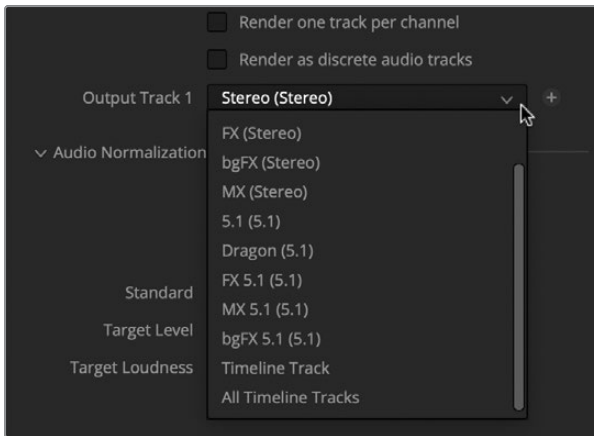
Here you can select any busses, a timeline track, or all timeline tracks. With the All Timeline Tracks option, the channel mapping of the rendered clip will match the entire timeline, all in one clip.

10 In the Output Track 1 menu, choose Stereo (Stereo).

> **NOTE** For educational purposes, the main output busses in this project were named after their format: Stereo and 5.1. Newer versions of DaVinci Resolve include the bus format in parentheses after the bus name, so you'll know the format of the bus. If the stereo bus was named Mix, you would see Mix (Stereo) in the Output Track dropdown menu.

To simultaneously output additional busses or tracks, click the Add (+) button to the right of the Output Track 1 menu to add another output track.

11 Click the Add (+) button to the right of the Output Track dropdown menu. Set the Output Track 2 dropdown to 5.1 (5.1).
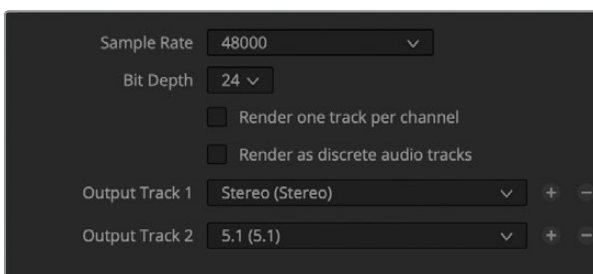
Next, set the Audio Normalization for the rendered files. Rather than simply Normalize to loudness standard as you can in the Fairlight page, you'll normalize with the Optimize to standard option.

> **NOTE** The Optimize to standard option is unique to the deliver page and first plays through and measures the true peak and loudness. Then, based on the true peak, it looks at the loudness you have and the loudness you should have and adjusts the level accordingly, with an internal limiter on the input level to prevent exceeding the true peak.

12 In the Audio Normalization controls, check the Normalize Audio option. Then enable "Optimize to standard." In the Standard dropdown menu, choose ITU-R BS. 1770-4. Also, below the Target levels, check the boxes for Output Track 1 and Output Track 2 to ensure that the "Optimize to standard" normalization is applied to both output tracks.
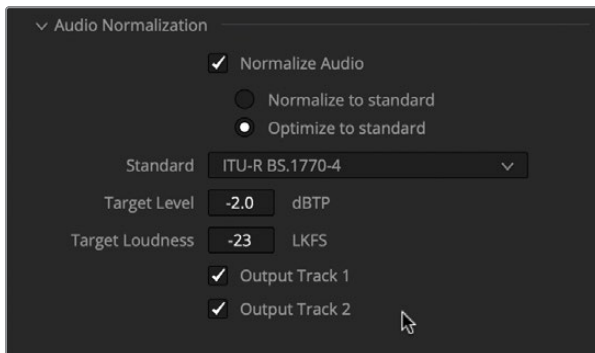
13 Click the File tab and add a custom name as you would for any other output. In this case, let's name the file **PPN_Podcast_Intro_mix**.

Finally, you need to select a destination for the mixed file.

14 Click the Browse button to change the location of your mixed file to the Desktop folder. Create a new folder on the Desktop called **PPN Podcast Intro**. Click Save.

15 When you're done selecting your drive destination, click Add to Render Queue.
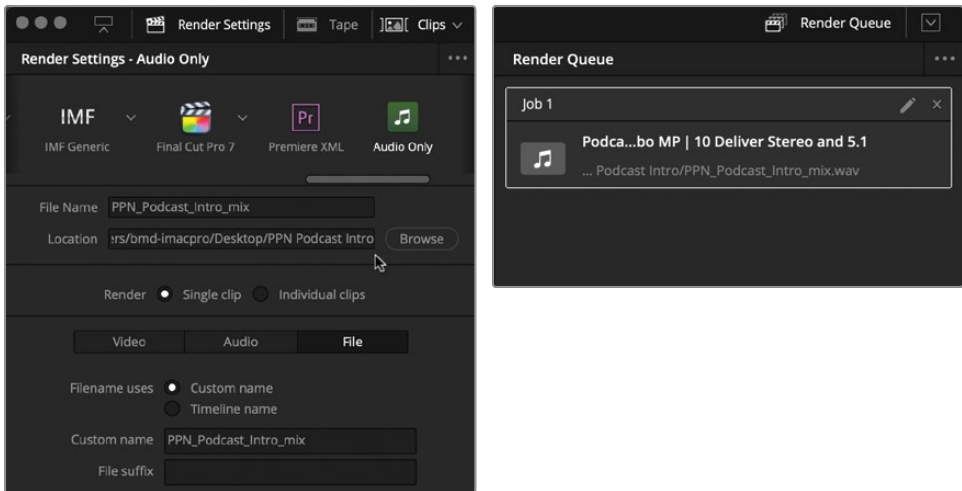
16 In the lower-right corner of the Render Queue, click Render All.

17 When your file is finished rendering, head to your Desktop to locate and audition your finished stereo and 5.1 mixes named PPN_Podcast_Intro_mix_A01 and PPN_Podcast_Intro_mix_A02. Change the A01 in the first clip's filename to **Stereo** and the A02 in the second clip's name to **5.1**.
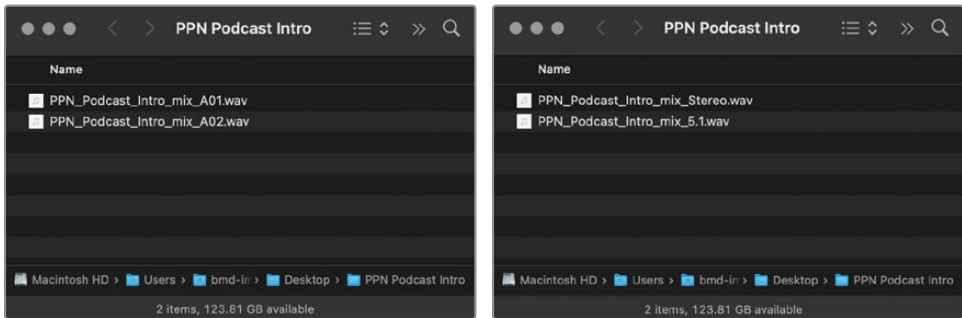
Congratulations! You've bounced and delivered a variety of mixes from two different projects.

Explore the Mixes!

Before moving on to the last lesson, this is a great time to go back to the Fairlight page and explore the timeline, panning, automation, levels, busses, effects, and processing. Have fun and take a moment to look back at all your work throughout this book to record, edit, balance, enhance, and mix the podcast intro and the TML surf scene. Well done! Imagine what you'll be able to do with your own projects!

Lesson Review

1   Which meter is used to measure loudness during playback?

   a)   Bus meter

   b)   Loudness meter

   c)   Track meter

   d)   Delivery compliance meter

2   True or False? It is possible to analyze the True Peak and Loudness measurement of a clip in the Fairlight timeline without playing the clip.

3   Which steps are necessary to show the Loudness History graph in the timeline (choose all that apply)?

   a)   Toggle on Automation

   b)   Right-click the bus track header and choose Show Loudness History from the context menu

   c)   Choose Show Loudness History in the Loudness meter options menu

   d)   Enable the Loudness History graph option in User Preferences

4   What factor determines the channel configuration of a bounced mix?

   a)   Selected tracks

   b)   The type of track that is bounced

   c)   Bouncing matches the channel mapping of the A1 track

   d)   The channel format of the bus that is bounced

5 In the Fairlight page, where will you find the Export audio files option?

    a) Fairlight menu

    b) Right-click context menu in the timeline

    c) Timeline menu

    d) Inspector

    e) All of the above

6 Where can you apply Normalization (choose all that apply)?

    a) In the Fairlight page timeline right-click context menu

    b) In the File tab of the Fairlight page Inspector

    c) In the media pool

    d) In the Export Audio Files dialog

    e) In the deliver page

Answers

1 b

2 True. You can use the Analyze Audio Levels dialog to analyze levels without playback.

3 a

4 d. A bounced mix follows the channel format of the bus selected in the Bounce Mix to Track window.

5 b

6 a, d, e. Normalization can be applied in the timeline right-click menu, the Export Audio Files dialog, and the deliver page.

Exploring Immersive Audio Integration

Fairlight's immersive audio tools and workflows for immersive formats, including Ambisonics and Dolby Atmos, require DaVinci Resolve Studio. If you're working with DaVinci Resolve, you can read through the steps to understand how the immersive tools work in the Fairlight page. You can also import and listen to binaural, stereo, and surround sound versions of the projects.

NOTE DaVinci Resolve 20.1 Studio includes improvements to the Immersive toolsets and the addition of the Apple Spatial Audio Format (ASAF). You'll find more information on the 20.1 update and the new ASAF workflows in the *DaVinci Resolve Reference Manual* available in the Help menu.

Time

This lesson takes approximately 75 minutes to complete.

Goals

DaVinci Resolve Studio offers fully integrated support for ground-up creation of immersive audio projects in a variety of formats, including MPEG-H, Auro 3D, Sony 360 RA, Ambisonics, and Dolby Atmos production, and playback, mixing, and rendering with bed tracks, busses, and monitoring. In this lesson, you'll explore integrated Ambisonics and Dolby Atmos tools while you work with the Podcast Intro, Fusion VFX, and a professionally produced Dolby Atmos demo project to explore at a high level the workflows and integration built right into the Fairlight page. Then, you'll import the same master file through the Fairlight Immersive tools to re-create the entire Dolby Atmos immersive mix, where you can visualize the panning automation for the flying objects and export a new master file right in the timeline.

> **NOTE** If you need to download the media for this lesson, go back to the "Getting Started" section at the beginning of this book and use the R20 Fairlight Part 4 link to download the Lesson 11 media. You can also download the Part 4 link via the Training page available in the DaVinci Resolve Help menu.

Enabling Immersive Toolsets

The Fairlight page in DaVinci Resolve Studio includes all the tools you need for creating, mixing, and delivering original immersive audio content. You can start with a standard 5.1 or 7.1 surround sound mix and add an immersive format bus or busses to use the immersive tools to enhance the soundtrack to an immersive format such as Dolby Atmos. You can also start your mix with an immersive format bus, mix the entire show that way, and create standard stereo and surround sound downmixes from the immersive mix. Whichever method you use, the first step in working with the integrated immersive audio tools in DaVinci Resolve is to enable the project for an immersive format.

To enable a project for an immersive audio format, go to the System Preferences > Video and Audio I/O > Immersive Audio settings. Then, you can create immersive busses and tracks as needed. From there, you can add content or split multichannel tracks into mono tracks so they can be panned as individual objects. Use your imagination and the 3D space view to pan objects in any way you choose.

For this exercise, you'll enable the Ambisonics and Dolby Atmos options on your system so you can work with those immersive formats.

1   Open DaVinci Resolve if necessary.

2   Open your Podcast Intro Combo project.

3   Choose DaVinci Resolve > Preferences to open the System Preferences window.

4   Click Video and Audio I/O in the sidebar, if necessary, to show the Immersive
Audio options.

At the bottom of the Video and Audio I/O settings, you'll see the Immersive Audio
formats that you can enable and work with in DaVinci Resolve Studio. You can enable
as many formats as you choose.

5   Check the Enable Ambisonics and Enable Dolby Atmos options, if necessary.
Then click Save.
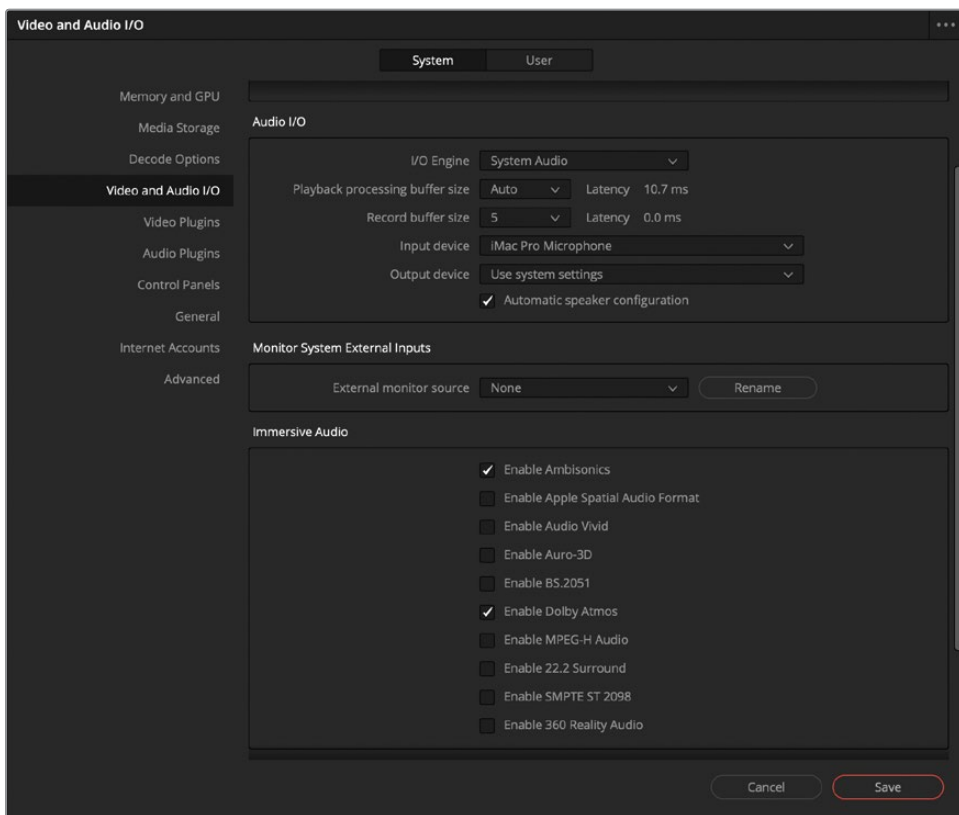
Once you have enabled an immersive format, you can create busses and tracks to support
that format. You can also access the immersive toolset in the Fairlight page.

Adding Ambisonics to a Stereo Timeline

For narrative scripted podcasts, First-Order Ambisonics (FOA) is the most common format used. It captures 3D sound using just four channels (W, X, Y, Z), making it lightweight and easy to record, edit, and stream—ideal for podcast listeners using regular headphones. FOA is also widely supported by spatial audio tools and binaural renderers, making production simpler. While higher-order formats offer more detail, FOA provides enough immersion without the extra complexity, making it the go-to choice for creating spatial audio in podcasts.

It's one thing to read about Ambisonics; it's another to experience it. In this exercise, you'll work with a simple mono sound effect of a clip panned from right to left over time. You'll start by listening to playback in stereo, and then add a first-order ambisonics bus and compare the immersive binaural output to the stereo output. You'll learn more about binaural sound shortly. For now, let's open the timeline and play the mono clip.

One more thing before you start: grab some headphones and put them on so you can experience the immersive sound along the way!

1   Open the **11 Ambisonics Start** timeline.

The timeline opens with one mono sound effect clip, Dog walking, in the A1 Dog Walking track.

2   If necessary, ensure that automation is toggled on and that you can see the L/R pan curve in the track.

3   Open the Audio Pan window and place it below the track. Click the 3D button to see the Left/Right panning view.

4   In the viewer, enable Show Tracker Controls. Select the A1 track header.
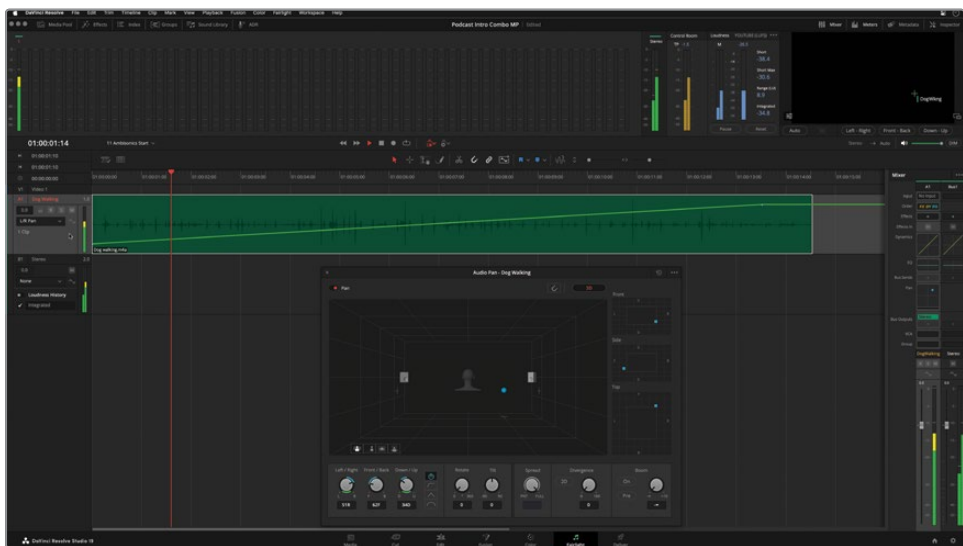
5   Play the timeline from the beginning and listen to the sound in stereo as you watch the panner and Dog Walking pan tracker move across the viewer.

As expected, the track sounds like someone walking a dog from right to left. Next, you'll add an ambisonics bus, assign the track to the bus, and listen to the binaural output during playback.

6   Choose Fairlight > Bus Format.

7   In the Bus Format dialog, click Add Bus.

8   In the Format dropdown menu, choose "Ambisonics 1st order."

What Is the Difference Between First-Order Ambisonics and Higher-Order Ambisonics?

First-order ambisonics (FOA) and higher-order ambisonics (HOA) are both methods of capturing and reproducing 3D sound, but they differ in detail and precision. FOA uses just four channels to represent sound coming from all directions, which gives a basic but useful sense of space—good enough for ambient sounds or simpler audio environments. HOA builds on this by using more channels (such as 9, 16, or more), allowing for much finer detail in the way sound moves and where it comes from. This makes HOA much better for situations where precise 3D sound is important, such as in virtual reality or immersive film sound design. In audio post-production, FOA might be chosen for simplicity and lighter processing, while HOA is used when realism and accurate spatial audio are key. DaVinci Resolve 20 Studio offers up to 5th-order ambisonics, which includes 36 channels for precision audio placement.

9 Name the new bus **Ambi 1OA** (Ambisonics 1st Order).
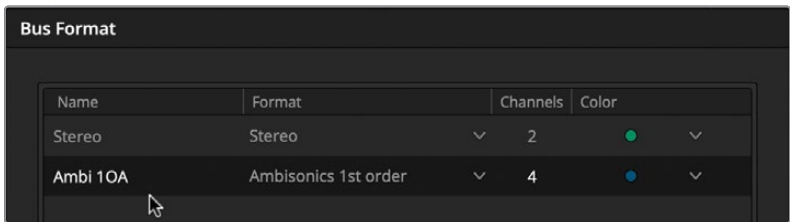
10 Click OK.

Now that you've added the ambisonics bus, you'll need to assign the track to that bus.

11 Expand the mixer to see the track and two busses.

12 In the A1 channel strip Bus Outputs controls, click the Add button (+) and add the Ambi 1OA bus.
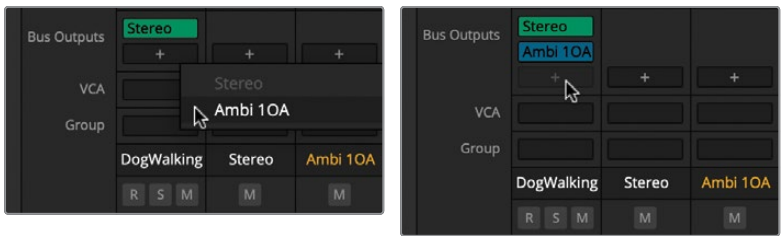
You've added an ambisonics bus and assigned it to the track. Next, you'll monitor the ambisonics bus and listen to the difference during playback.

> ### What Is Binaural Sound?
>
> Binaural sound simulates 3D audio through regular headphones by mimicking how our ears naturally hear sounds in the real world. In audio post-production for ambisonics, binaural rendering is used to "decode" the ambisonic sound field into a format that makes it sound like it's coming from all around you—left, right, above, behind—when you're listening with headphones. This is incredibly useful for monitoring ambisonics, especially in VR, immersive video headsets, or 360° video work, because it gives the sound designer a realistic preview of how the spatial audio will feel to the end listener, without needing a complex multi-speaker setup.

Changing the Monitoring Format

When working with immersive audio formats, Fairlight Monitoring controls offer additional format controls to change the format anytime, even during playback. This flexible format monitoring makes it possible to listen to playback in different standard speaker configurations in your studio as well as binaural sound via headphones. Let's try it. First, you'll change the Control Room monitoring to the Ambi 1OA output bus.

1   In the Fairlight Monitoring controls, click the Control Room monitoring dropdown menu and choose the Ambi 1OA bus. When the secondary Format Monitoring control appears to the right of the Control Room monitoring menu, click the Format Monitoring menu arrow and choose Binaural.
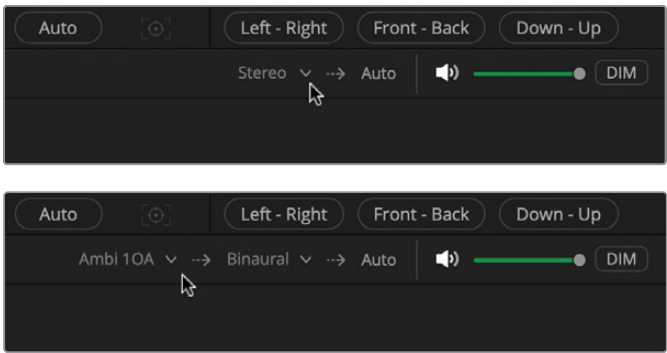
2   Start playback and listen to a few seconds of the ambisonics binaural sound.

This time, the sound feels more realistic, as though you are in the same location as the dog walking. Don't worry if you aren't sure whether you hear the difference; with the Format Monitoring dropdown menu, you can switch between binaural and stereo during playback.

3   Start playback from the beginning of the clip and monitor the binaural sound. After a few seconds, change the Format Monitoring to 2.0 (stereo) and continue listening. Switch back and forth between 2.0 and Binaural as often as needed to hear the difference. When you're finished comparing the two formats, set the format to Binaural.

Wow! What a difference ambisonic sound can make in transforming a simple mono recording from sounding two-dimensional and flat to realistic, 3D, and immersive. If you still aren't convinced, that's fine. Just wait until you hear the next example.

> **NOTE** DaVinci Resolve includes 3D Cartesian and Spherical versions of the panner, which lets you do the spatial audio positioning when working in immersive audio formats. With DaVinci Resolve 20.1, if you wish to switch the panner format, you will be prompted to clear the track's pan automation first.

Using the Spherical Panner

Ambisonics uses a spherical panner because it places sounds around the listener in full 3D space—not just left and right, but also above, below, and behind. This helps create a realistic, immersive audio experience by accurately controlling the direction of each sound. One advantage of ambisonics is the use of elevation to place the sound above or below the listener. The example of the dog walking needs an elevation lower than the listener's torso to more accurately place the dog and the dog walker's footfalls on the sidewalk as they walk past the listener. The second example you'll work with is the stereo sound of a helicopter circling, which has been panned to an elevation higher than the listener's torso, as it would be if it were flying overhead. In this exercise, you'll use the 3D Spherical view in the Audio Pan window as you play the two example timelines.

1   Open the Audio Pan window.

2 Click the Spherical button to the left of the 3D button. Click Yes in the Change Coordinate System dialog.
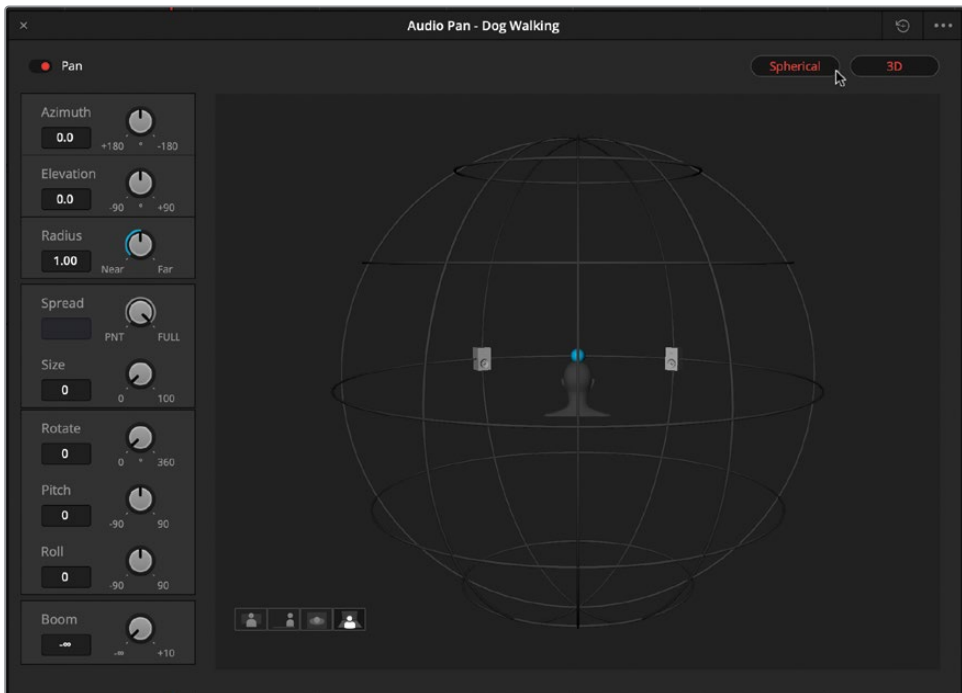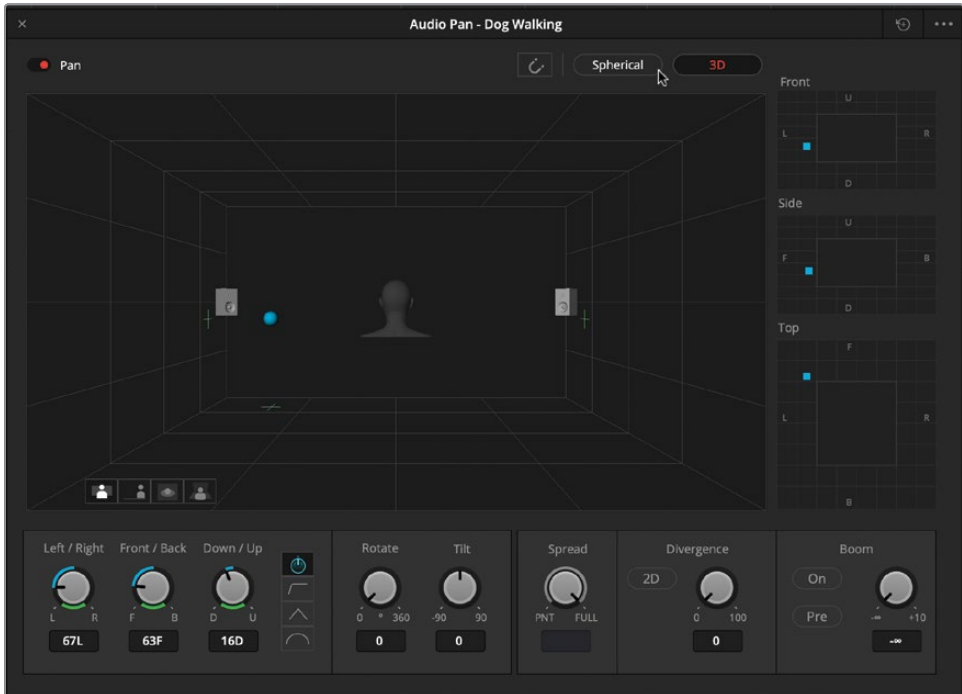
The Audio Pan changes to Spherical view. In Spherical view, the coordinate controls change accordingly from Left/Right, Front/Back and Up/Down to Azimuth, Elevation, and Distance. The 3D Spherical view includes a torso in the center to represent the listener.

3   Set the Elevation to -20.0. Play the clip and drag the Azimuth control back and forth while listening to the Spherical panning. Feel free to try a different perspective view to see the panner's location in relation to the listener within the sphere.

4   When finished, close the Audio Pan window.

Now that you've listened to the first example, let's move on to a more interesting stereo clip.

5   Open the **11a Ambi Helicopter** timeline.

6   Open the Audio Pan window to see the 3D Spherical view of the Helicopter track. If necessary, click the first perspective button to show the back of the listener's torso and the panner near the top of the sphere above the listener.
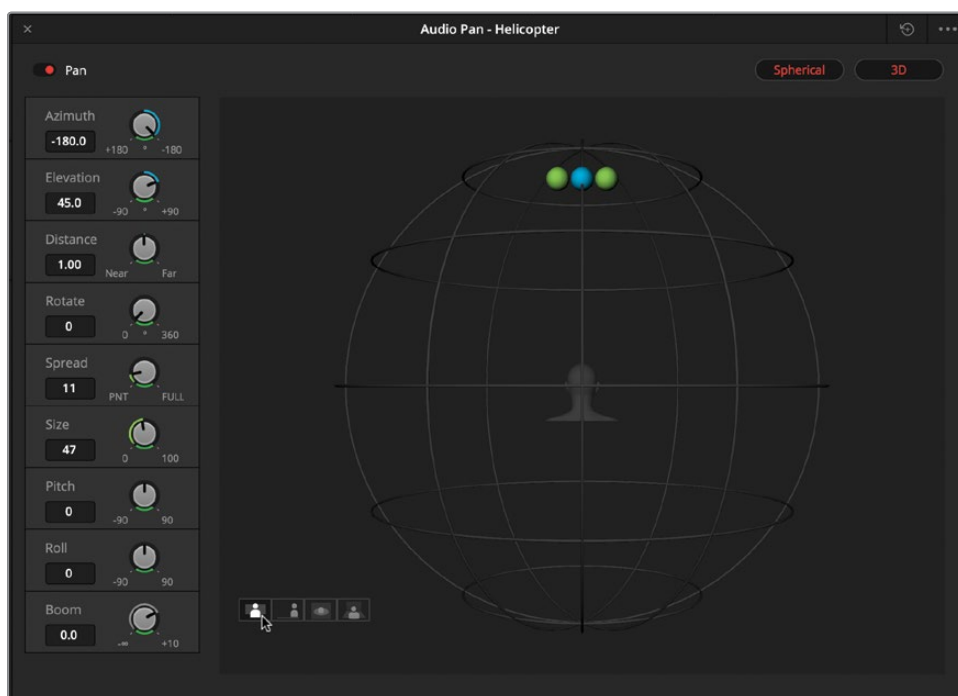
This timeline includes the Helicopter Circling clip in a stereo track. An Ambisonics 1st-order bus named AMBI AO1 has already been added to the timeline. You'll also see the Azimuth pan curve showing in the A1 Helicopter track.

In the Audio Pan window, you can clearly see that the helicopter sound is panned above the listener; however, from this perspective, you can't tell whether the sound is in front of or behind the listener.

7   Move the playhead to the first frame if needed.

8   Click the third perspective button to see the overhead view of the 3D sphere.
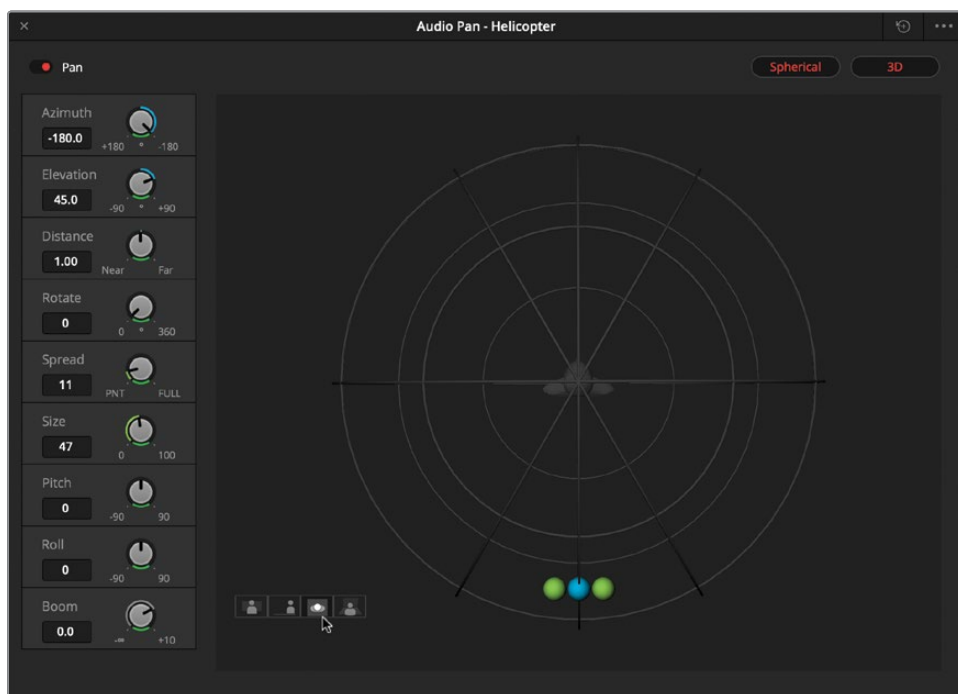
From this perspective, you can see that the panners are centered behind the listener, and the Azimuth amount is -180 degrees. As a quick pan-geometry refresher, within the 360-degree sphere, the center in front of the listener is 0, and the exact opposite is -180. For this example, the helicopter sound starts at -180 and does a complete circle around the listener.

9   Set the monitoring to AMBI A01, 2.0 (stereo). Play the clip once to see and hear the helicopter circling in stereo as you watch the panner circle the torso in the Audio Pan window.

Let's play it again. This time, you'll monitor the binaural sound and show the tracker and coordinates in the viewer when the sound is within the visible frame area of the 360-degree view.

10 Select the A1 Helicopter track. In the viewer, set the viewer to Show Tracker Controls and Show Tracker Coordinates. Then, set the monitoring to AMBI A01, Binaural.
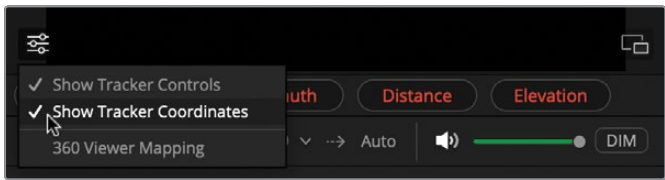
11 Play the clip once from the beginning to see and hear the helicopter circling as you watch the Audio Pan window and the viewer to see the tracker and coordinates.
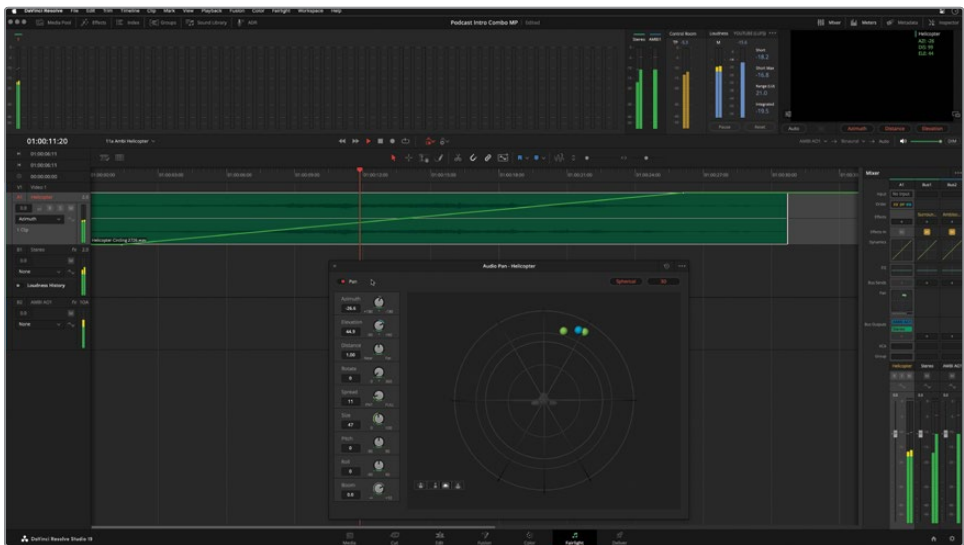
The difference between stereo and binaural monitoring of the same timeline is remarkable. The stereo monitoring sounds okay and gives the impression of a helicopter sound moving from right to left. The Binaural monitoring, on the other hand, is far more immersive, as if the listener is standing outside as a helicopter circles overhead. You get the sense of space, height, and movement from the sound in a much more natural, realistic way.

> **NOTE** This helicopter sound is a simple smartphone home recording of a helicopter in the neighborhood, complete with the trickling sound of the pool water moving in the foreground because the pump was on at the time. Think of the possibilities of professional high-quality recordings, or better yet, ambisonic recordings that capture the full spherical sound without the need for panning.

Working with Ambisonics Meters

The Spherical pan view offers visual feedback of where the sound is panned during playback. DaVinci Resolve also offers two ambisonics meters: Sonar and Power Map. Sonar meters show where sounds are coming from in all directions, like a 3D radar, while power map meters show how much sound energy is coming from different directions, highlighting the loudest spots. These meters are available as an overlay in the viewer or as a Fairlight FX plug-in and are useful for visualizing the audio and aligning the immersive sound with the picture.

In this exercise, you'll turn on the ambisonics meter in the viewer and see the difference between the Sonar and Power Map meters for yourself. To use the ambisonics meters in the viewer, you first need to enable 360-degree viewer mapping in the Video Viewer tools menu. In DaVinci Resolve 20.1, the 360 Viewer Mapping option has been changed to Immersive.

1   In the Video Viewer tools menu, enable 360 Viewer Mapping. Then, in the Ambisonics Meter submenu, click On, and select the Sonar option.
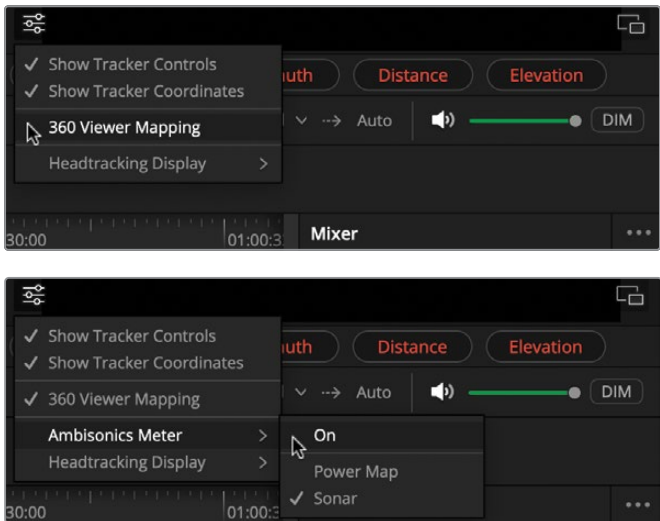
When the viewer is set to 360 mapping, 0 degrees is straight ahead in the center, while 180 and -180 degrees are the far left and far right edges, respectively, wrapping around like a full circle.

2   Resize the viewer in the monitoring panel to make it larger, and move the audio pan window to the left of the viewer for side-by-side comparison.

3 Move the playhead to the beginning of the timeline. Then select the A1 Helicopter track header.
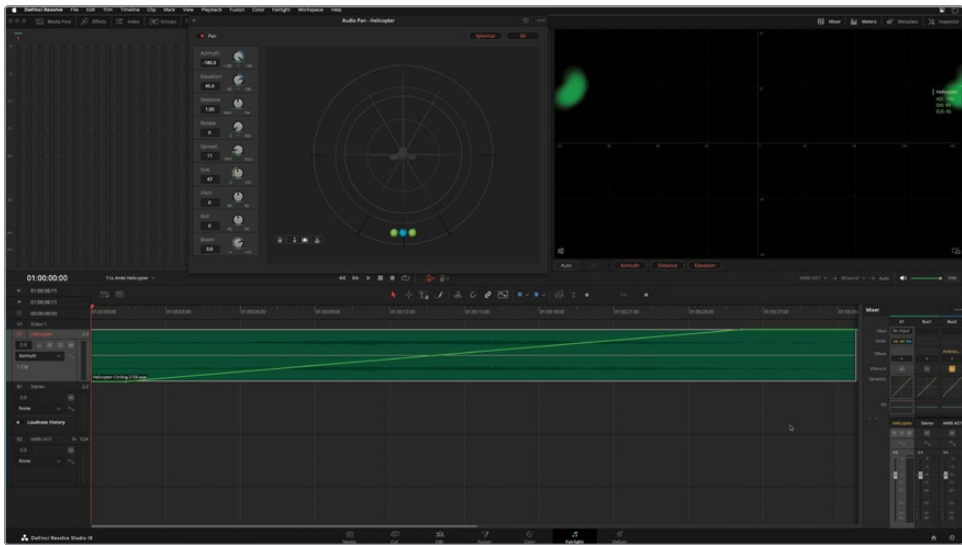
The Audio Pan window shows the sound currently panned to the back center of the sphere at -180 degrees.
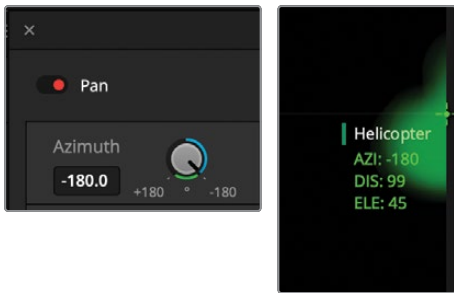
The pan tracker coordinates are on the right edge of the viewer at -180 degrees.

4 Start playback to see the movement of the green sonar meter overlay and tracker.
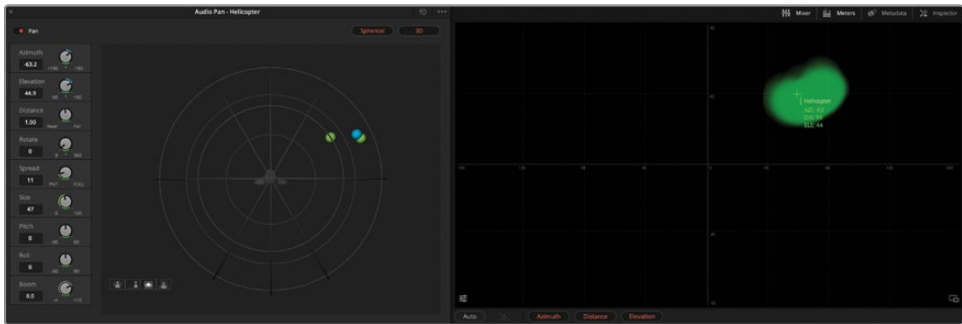
The tracker indicates panning, while the sonar meter indicates the actual location of the sound within the 360-degree view. Now, let's take a look at the power map meter.

5 In the Video Viewer tools Ambisonics meter submenu, choose Power Map.

6 Play the clip once from the beginning.
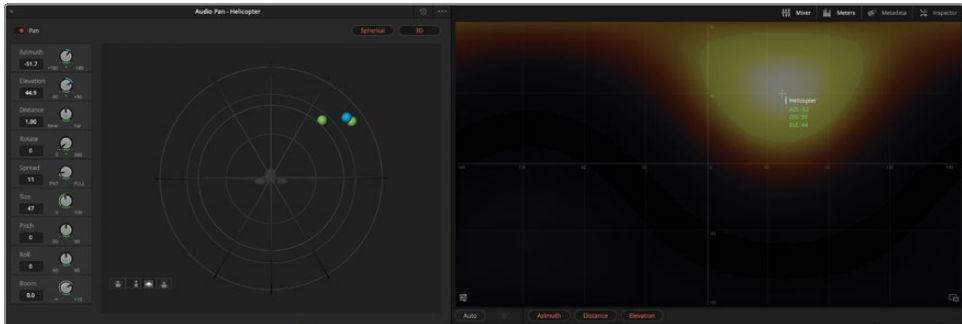
The power map meter overlay clearly shows the sound energy and the hot spots where the sound is loudest. Now, let's see how the meters work with a more complex ambisonics clip.

7 Open the timeline **11b Park FX Example**.
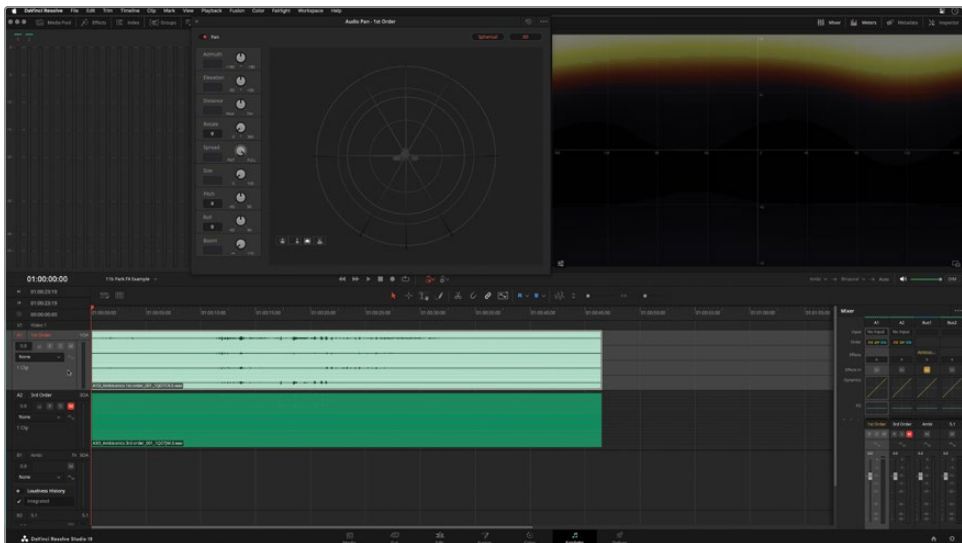
This timeline includes two ambisonics clips created from the park sound effects in the Post Park Normal podcast intro. As the track names suggest, the A1 1st-Order track contains a 1st-order ambisonics clip, while the A2 3rd-Order track contains a 3rd-order ambisonics clip.

> **NOTE** Ambisonics clips—whether recorded with an ambisonics microphone or created by bouncing panned tracks through an ambisonics bus—already contain all the spatial sound information, so no additional panning is needed. The only adjustments you might make in the Audio Pan window are Rotate, Pitch, or Roll, to align the sound with 180° or 360° video.

You won't need the audio pan window or a larger viewer for this exercise. Let's reset the UI Layout to tidy things up, and then open the Ambisonics meter plug-in on the Bus1 channel strip so you can view both sonar and power map meters while listening to the ambisonics clips.

8   Choose Workspace > Reset UI Layout.

9   In the mixer, Bus1 channel strip, click the controls icon on the Ambisonics meter plug-in to open the meter. Then move the meter to the left of the viewer to see them side by side.

10 In the Ambisonics meter options menu (...), set the meter to Sonar if necessary.

11 Play the clip in the A1 track and listen to the familiar park soundscape while watching the sonar and power map meters.
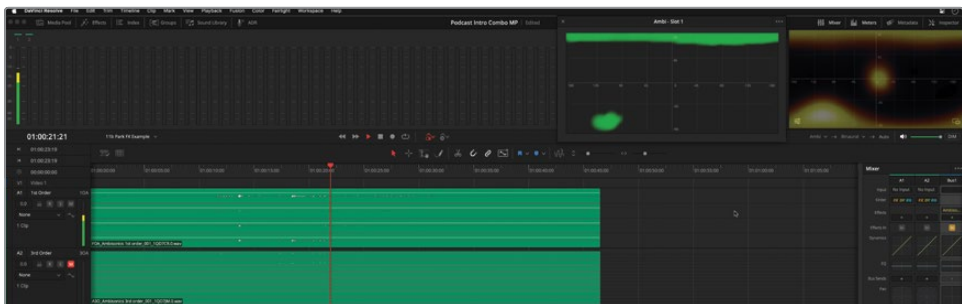
Both meters tell the same story with different visuals and emphasis. Now let's play the 3rd-order ambisonics clip. This is a higher-order clip rendered from the exact same timeline. The difference is that the ambisonics bus was set to 3rd-order ambisonics, so the clip was rendered with more information.

12 Mute the A1 track and unmute the A2 track. Play the 3rd-order ambisonics clip and watch the ambisonics meters.
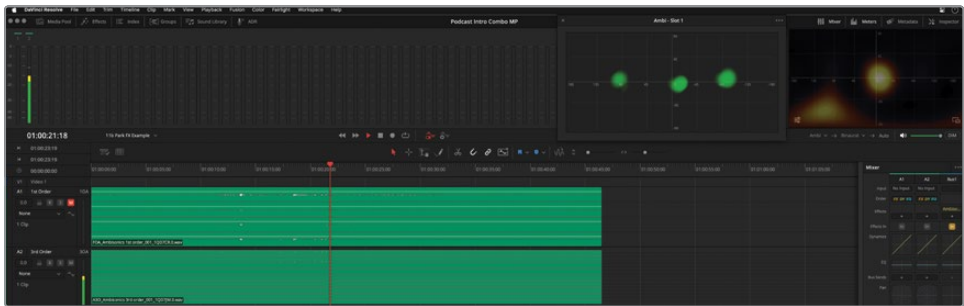
This time, the meters show more specific locations for the sounds.

13 Close the ambisonics meter window.

Speaking of meters, let's look at the ambisonics track and bus meters in the mixer and monitoring panel. The A1 track includes four audio channels, while the A2 track includes 16 audio channels. How many channels do you expect to see in the mixer and monitoring panel for the ambisonics tracks and bus?

14 Start playback from the beginning of the timeline and look at the track meters, monitoring panel, and mixer.

How many channels were displayed for each ambisonics track? One. That's right, only one channel is shown in the meters. Why? Ambisonics metering usually shows just one summed meter because ambisonics encodes sound as a whole sound field, not as

separate channels like stereo or surround. The summed meter reflects the total energy in the sound field rather than the levels of individual directions or speakers.

> **NOTE** To see individual channel levels for ambisonics tracks or busses, choose Fairlight > Immersive Audio > Ambisonics Channel Metering.

Now that you've seen the ambisonics meters in action and listened to the binaural sound of mono, stereo, and ambisonics clips, let's look at the individual sounds that make up the ambisonics clip and how they interact with each other.

Visualizing Moving Sounds with the Fairlight Space View

The Immersive Audio toolset in the Fairlight menu includes the Space View. This unique audio scope offers a spatial representation of the flying objects (sounds assigned to an immersive bus) and bed sounds (sounds assigned to channel-based busses). You can use the Space View to visualize the relationship between channel-based tracks, immersive tracks with panned objects, and the overall space where the audience will experience the immersive sound. In this exercise, you'll open the Space View to see an overhead view of all the sounds in context during playback.

1   Open the timeline **11c Ambi Park FX**. If necessary, set the monitoring controls to monitor the AMBI Bus in the Binaural Format.
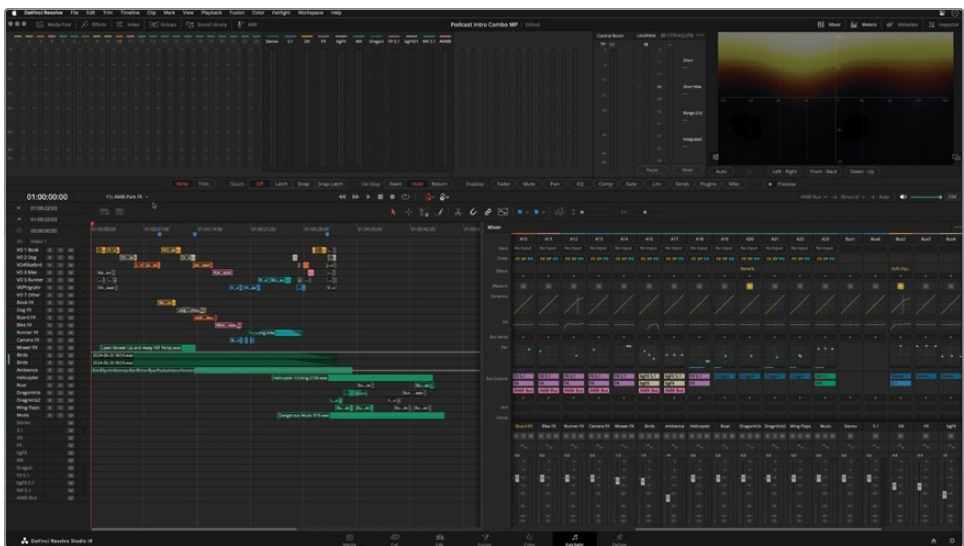
This is the same podcast intro you worked on in previous lessons. The only difference is that a 1st-order ambisonics bus was added, and some sound effects tracks have been assigned to it. These tracks include: A9–A13, A15, and A16.

2   Play the timeline once and listen to the tracks assigned to the Bus 11 AMBI Bus. Feel free to use the sonar or power map meter overlay in the viewer.

Some tracks assigned to the Ambi Bus have pan automation; others are static but are placed strategically in the panoramic, or ambisonic, spherical space. For example, the Birds track has been panned with the birds placed high in the front left and back right of the spherical panner. The active sounds, such as the dog walking, skateboard, and bike, have all been panned lower than the viewer's torso and are moving in different directions in front of or behind the listener.

To visualize the placement of all the different sounds, you can use the Space View and adjust the perspective view just like the Audio Pan window.

3   Choose Fairlight > Immersive Audio > Space View.
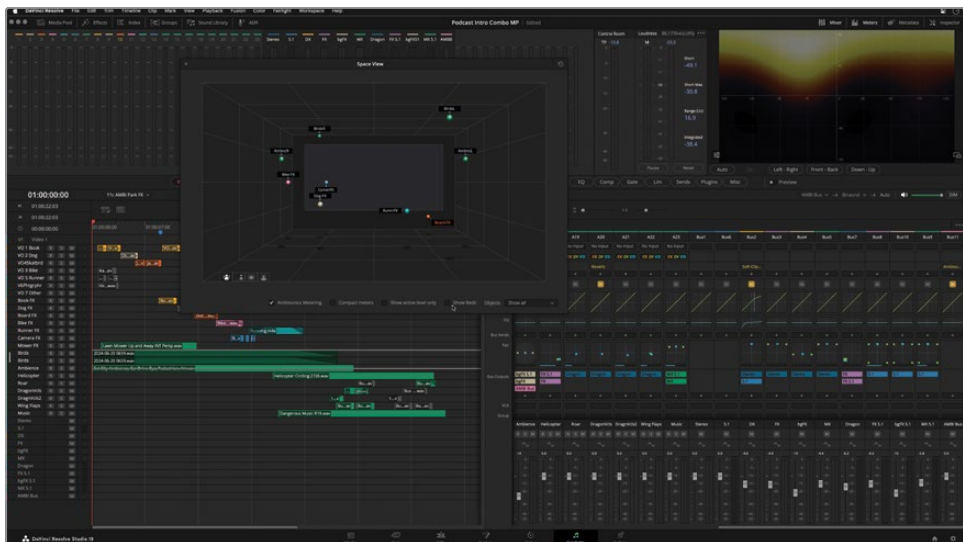
At the bottom of the Space View window, check the options for Ambisonics Metering and Show Beds, and in the Objects menu, choose Show all. Here, you can see colored spheres that represent each track. Mono tracks have one sphere. Channel-based tracks have one sphere for each channel. For example, the stereo Ambience track has two spheres showing near the center left and center right positions. The color of the spheres in the Space View is based on their track color. The "Show active level only" checkbox lets you choose to show all the track objects (unchecked) or only the tracks with active levels (checked).

4   If necessary, uncheck the Show Beds option to remove the spheres for the tracks assigned only to channel-based busses.
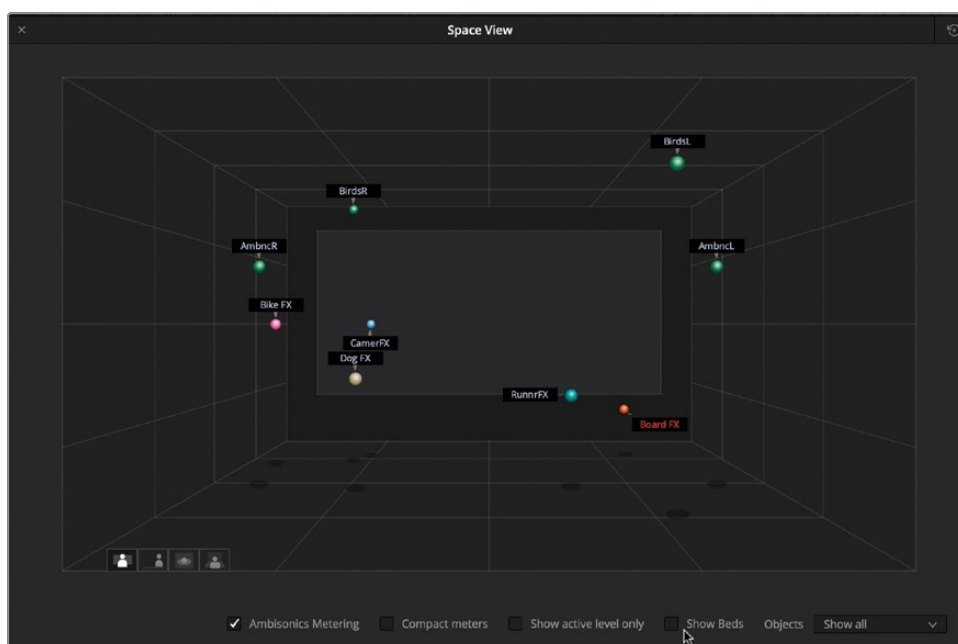
NOTE   If working in DaVinci Resolve 20.1, you'll see a few new controls at the bottom of the Space View including a new Scene Mode menu. Set the Scene Mode to Room, if needed, so you can follow along with the steps and screenshots.

5 Click the third perspective view button to change the Space View to overhead view. Start playback from the beginning of the clips. During playback, watch the objects in the Space View.
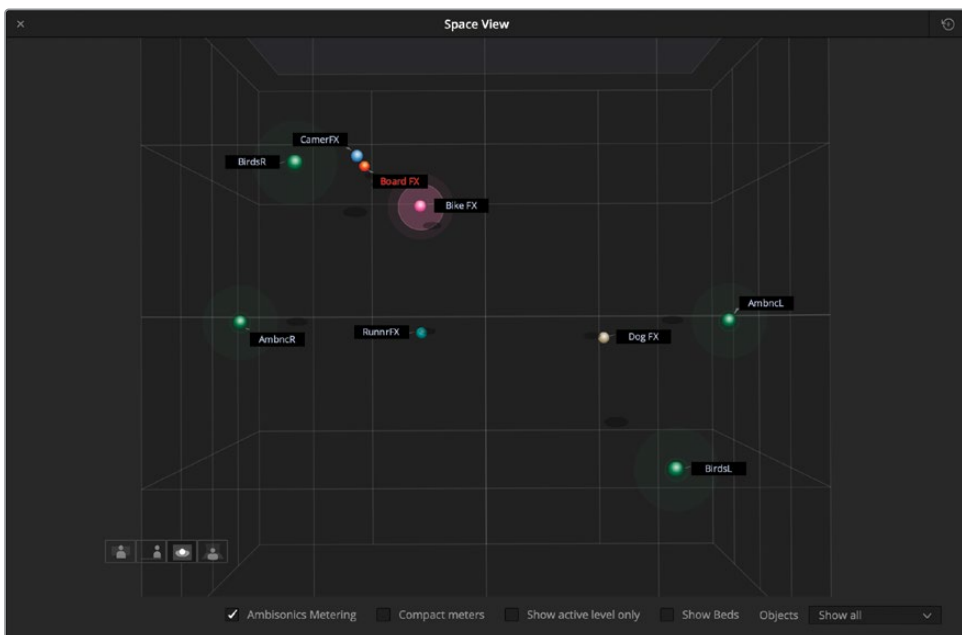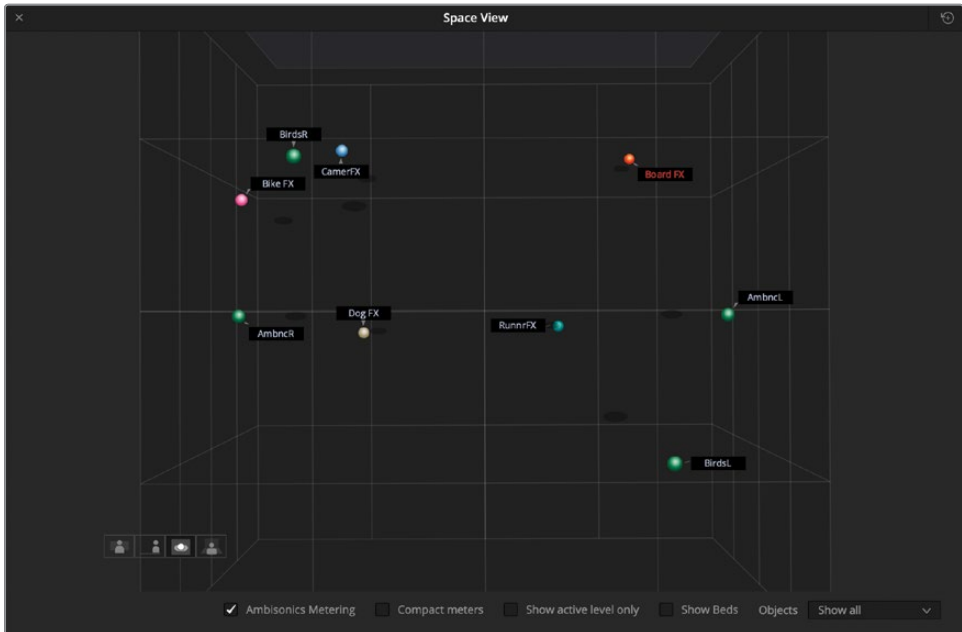
6 When finished, stop playback and close the Space View.

Next, you'll bounce the sound from the AMBI bus to a new track.

> ### What Is the Difference Between A-Format and B-Format Ambisonics Clips?
>
> A-format ambisonics is the raw audio captured from a specific ambisonics microphone's capsules. B-format is the processed version that separates the sound into channels (such as W, X, Y, Z) representing different directions, making it ready for spatial mixing and playback. Most ambisonics microphones include plug-ins or software to convert A-format ambisonics recordings into B-format processed clips. Third-party plug-ins are available online, including free plug-ins that can be used with DaVinci Resolve to convert A-format to B-format right in the timeline.

Bouncing an Ambisonics Mix in the Timeline

To bounce an ambisonics mix to a track in the Fairlight page, you need an ambisonics bus to which you can then assign any tracks you want included in the ambisonics file. The tracks assigned to the ambisonics bus can be mono, stereo, or an ambisonics track containing B-format ambisonics clips. In this exercise, the tracks have already been assigned to the ambisonics bus. All you need to do is bounce the mix of that bus to a new track, just as you would with any bus. The track format and ambisonics order will match the current format of the ambisonics bus.

Before bouncing the ambisonics bus to a new track, let's take a moment to adjust the levels of the A9-A13, A15 and A17 tracks to taste.

1 Play the timeline and adjust the levels of the tracks if needed. Consider reducing the level of the A17 Ambience track. It seems a little heavy (dominant) for this park scene. You may also want to slightly reduce the sound of the birds.

2 Move the playhead to the first frame of the timeline and press I to mark an In point.

3 Choose Timeline > Audio > Bounce Mix to Track.

4 In the Bounce Mix to Track dialog, set the Bus 11 AMBI Bus Destination Track to New Track.

Bus	User Name	Format	Destination Track
Bus 1	Stereo	Stereo	Do not Bounce
Bus 2	DX	Mono	Do not Bounce
Bus 3	FX	Stereo	Do not Bounce
Bus 4	bgFX	Stereo	Do not Bounce
Bus 5	MX	Stereo	Do not Bounce
Bus 6	5.1	5.1	Do not Bounce
Bus 7	Dragon	5.1	Do not Bounce
Bus 8	FX 5.1	5.1	Do not Bounce
Bus 9	MX 5.1	5.1	Do not Bounce
Bus 10	bgFX 5.1	5.1	Do not Bounce
Bus 11	**AMBI Bus**	Ambisonics 1st order	New Track

Bounce Mix to Track

Cancel   OK
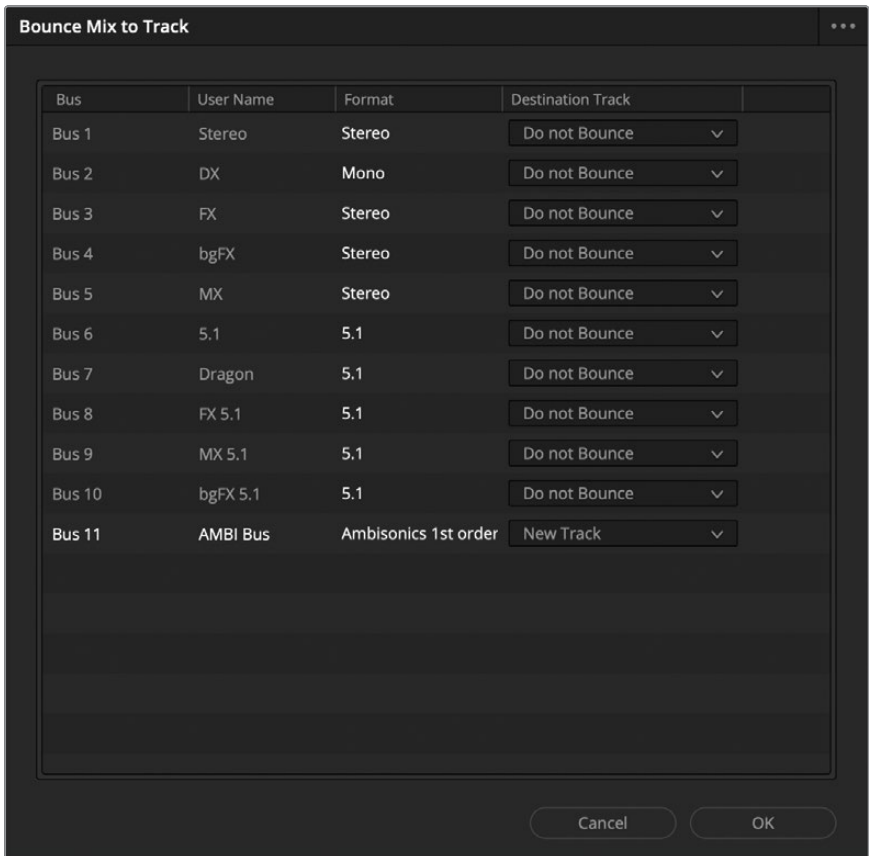
5 Click OK.

A new track appears beneath the Music track with the bounced 1st-order ambisonics clip in the track. Let's change the ambisonics bus to a higher order and bounce the bus again.

6 Choose Fairlight > Bus Format.

7 In the Bus Format dialog, change the AMBI Bus Format to Ambisonics 3rd order. Click OK.
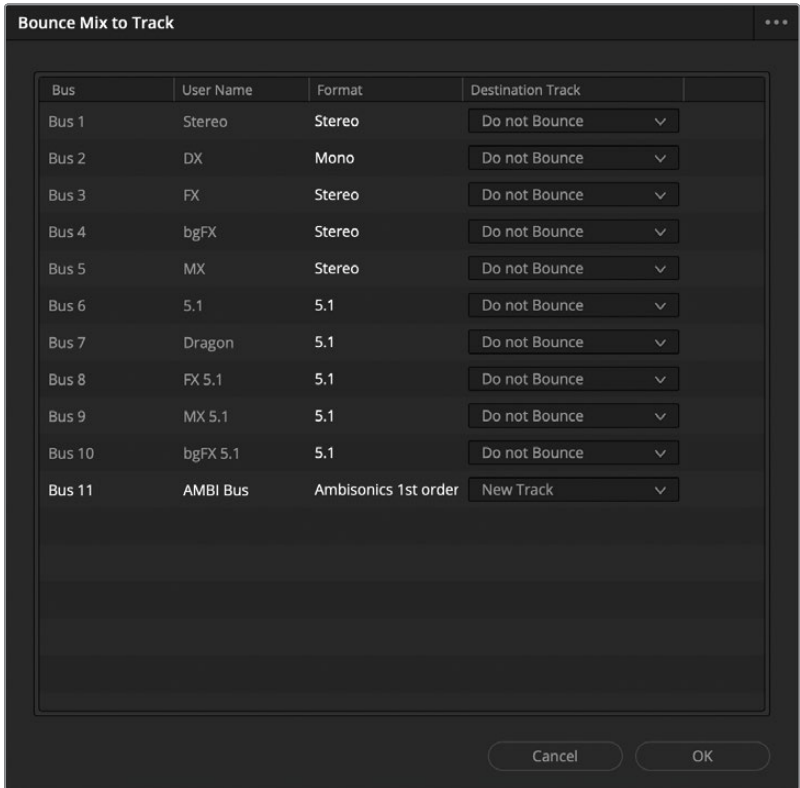
8 Choose Timeline > Audio > Bounce Mix to Track.

9 In the Bounce Mix to Track dialog, change the Bus 11 AMBI Bus Destination Track to New Track. Click OK.

A new track appears below the previously bounced track.

10 Select the Audio 24 and Audio 25 tracks in the timeline and increase their height to see the format and ambisonics clips within.
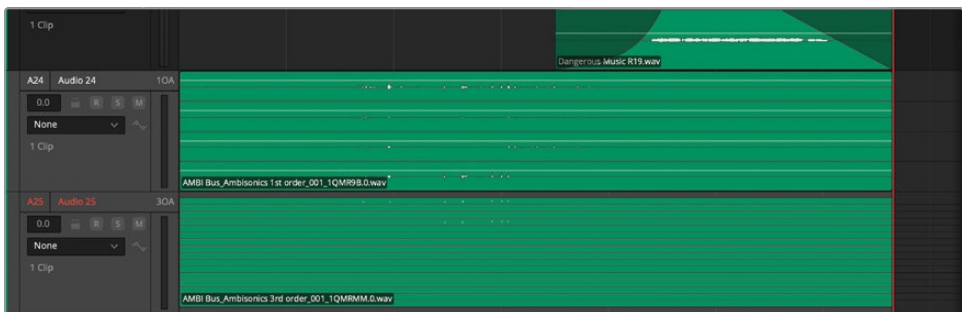
In the mixer, you'll see that the new tracks are assigned to the stereo bus. Why? Because all new tracks are automatically assigned to the first bus. In this case, the first bus is stereo.

> **NOTE** If you didn't complete the previous exercise and bounce the ambisonics mix to a track, feel free to open the timeline **11d AMBI Park FX Bounced**.

11 Change the Bus Output assignments in the mixer for the two new tracks to the AMBI bus.
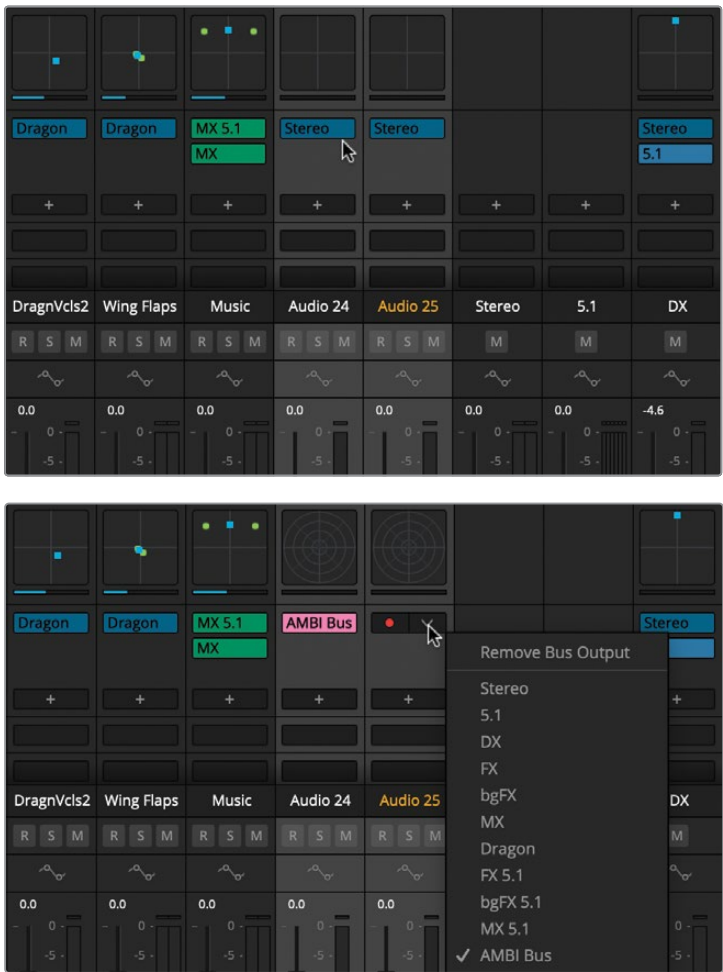
12 Solo one of the new ambisonics tracks containing the bounced ambisonics park fx, and listen to the results.

Well done! You have successfully followed the full workflow for creating an ambisonics file from separate clips and tracks to create an immersive soundscape.

> **NOTE** If you decide to go back and do more mixing with the effects and then bounce again, make sure you mute the new tracks so you don't accidentally double your sounds.

When you're ready to render a finished channel-based mix of the full soundtrack, change the AMBI bus monitoring from Binaural to a channel-based format that matches your final mix setup. When delivering your mix, either play the original sound effects assigned to the ambisonics bus or mute them and use the bounced versions of those sounds—just make sure they are properly assigned to the ambisonics bus. Then, route the ambisonics bus to your main surround sound FX Submix bus or the main mix bus. In this example, the sound effects routed to the ambisonics bus are also routed to the stereo and FX 5.1 submix bus. In this case, you would need to decide which you want to use. Disable any bus assignments on a track you don't want to include in the mix.

Rendering an Ambisonics Track in the Deliver Page

If you are using ambisonics for creative sound design and have rendered your mix to an ambisonics track, as you did in the previous exercise, you can then render that track in the deliver page as an ambisonics file. In this exercise, you'll go to the deliver page, choose both ambisonics tracks as the output source, and render them to a new folder on your system. For this exercise, you'll continue working with the same timeline.

1 If necessary, mark an In point at the beginning of the timeline.

2 Unsolo and unmute the Audio 24 and Audio 25 tracks.

3 Name the Audio 24 track **FOA Park**. Name the Audio 25 track **HOA Park**.

4 Click the Deliver button or press Shift-8 to go to the deliver page.

5 In the deliver page timeline area, scroll down until you see the A24 and A25 tracks.
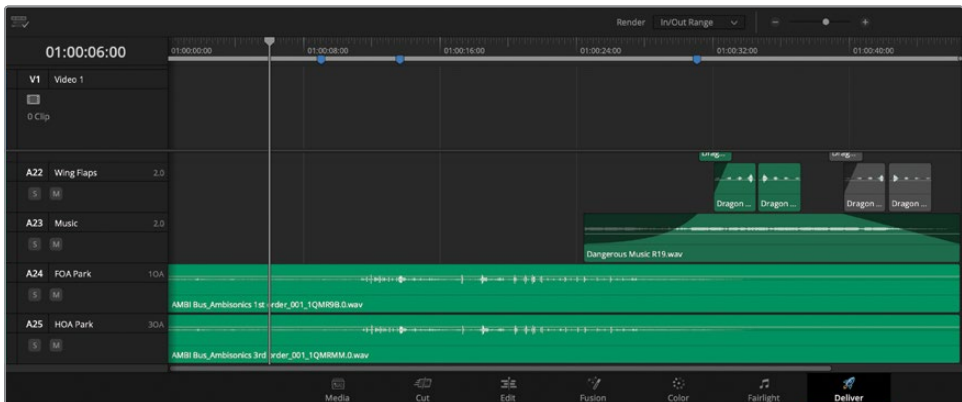
6 In the deliver page Render Settings, choose the Audio Only preset.

First, you'll set up the FOA (First Order Ambisonics) track and add it to the render queue. Then, you'll set up the HOA (Higher Order Ambisonics) track to render and add it to the queue.

7 In the File Name field, type **AMBI Park FX FOA**.

8 Set the Location to the PPN Podcast Intro folder on your Desktop that you created for deliverables in the previous lesson. If you didn't make a folder then, make one now.
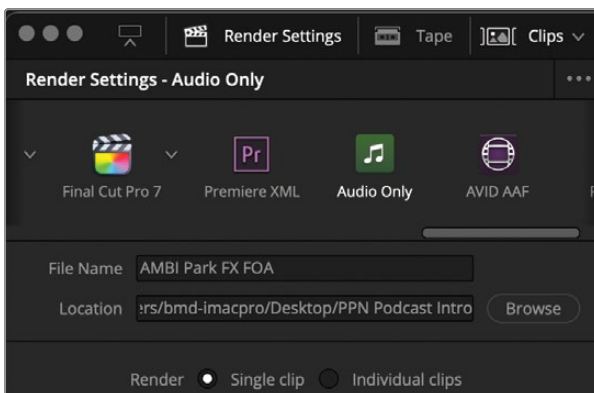
9   In the Audio tab, choose the settings as shown.
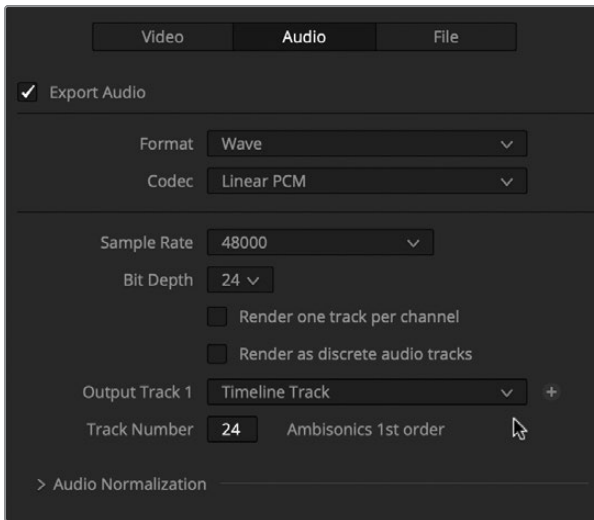
10   Set the Output Track menu to Timeline Track. Then set the Track Number field to 24, which is the Ambisonics 1st-order track.

11   Click Add to Render Queue.

12   In the Render Queue, click Render All.

13   Repeat the previous steps 7–12. This time, change the File Name to **AMBI Park FX HOA**, and in Step 10 set the Output Track number to 25, which is the Ambisonics 3rd-order track.

14   When you are finished, check the PPN Podcast Intro folder on your Desktop to see the rendered Ambisonics Park FX clips.
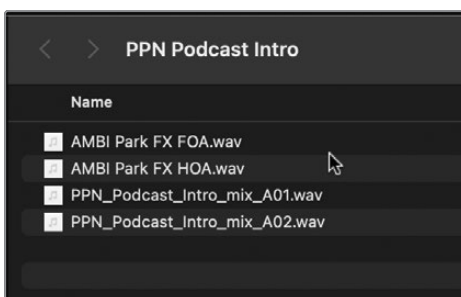
These clips are ready to use in another project or add to your immersive sound effects library. Next, you'll step away from ambisonics to explore some of the integrated Dolby Atmos toolset in the Fairlight page.

Working with Dolby Atmos in the Fairlight Page

Dolby Atmos mixing is a more advanced and flexible way of creating immersive audio compared to traditional surround sound mixing. In surround sound, audio is placed in specific channels—such as front left, front right, or rear speakers—so sounds are tied to certain speaker positions. Dolby Atmos, on the other hand, allows sound to be treated as "objects" that can move freely in a 3D space, including above the listener. This means mixers can place and move sounds anywhere around the audience for a more immersive experience. While surround sound is limited to a fixed number of speakers, Dolby Atmos can adapt to many different setups, from home theaters to headphones.

Any type of project—from a podcast or music mix to a feature film—can be mixed and exported as a Dolby Atmos master file. These master files can then be imported, played back, and re-rendered into various standard delivery formats. In this set of exercises, you'll explore some of the Dolby Atmos tools and features available in the Fairlight page of DaVinci Resolve Studio. You'll begin by opening a 7.1 surround sound version of the Fusion VFX timeline. Then, you'll assign tracks to a Dolby Atmos Master bus as objects or to the 7.1 surround sound bus as part of a 7.1 bed.

In Dolby Atmos, busses are called *beds* or *bed busses* once they're routed to the Dolby Atmos Master bus. Next, you'll import a completed Dolby Atmos master file to see and hear a professionally produced example. Finally, you'll open a Dolby Atmos version of the Podcast Intro Combo timeline to examine how it was created, modify the settings, and export a new Dolby Atmos master file yourself.

> **NOTE** To simplify the mixer for screenshots, some mixer controls, including EQ, Dynamics, and Bus Sends, were hidden via the mixer options menu. Hiding mixer elements does not disable them and can help streamline the mixer controls so you can focus on the elements you need at any given time.

Converting a Surround Sound Channel–Based Mix to Dolby Atmos

When mixing Dolby Atmos in a DAW like DaVinci Resolve, you don't need to change your bed buses, such as 7.1, to 7.1.4. In fact, Atmos beds are limited to 7.1 channels—seven surround channels plus one LFE. The additional height channels (the ".4" in 7.1.4) are not part of the bed; instead, they come from audio objects, which can be placed anywhere in 3D space using object-based panning.

The first step to converting a standard channel-based mix to a Dolby Atmos mix is to add a Dolby Atmos Master bus. Once you've added the Dolby Atmos Master bus to the timeline, you can assign tracks to the channel-based bed bus or as objects to the Master bus. Channel-based busses are assigned to the Master bus and become a Bed bus.

In this exercise, you'll work with a 7.1 Surround Sound mix in progress of the Fusion VFX project. First, you'll look at the existing bussing with the 7.1 surround sound output. Then, you'll add a Dolby Master bus and assign the 7.1 mix bus to the master. Finally, you'll assign a group of guitar tracks with a lot of panning movement to the Dolby Master bus as objects that will be placed in 3D space using object-based panning. Let's get started!

1 Open your Fusion VFX v1 project. Then open the timeline
11 Circles Dolby Atmos Start.
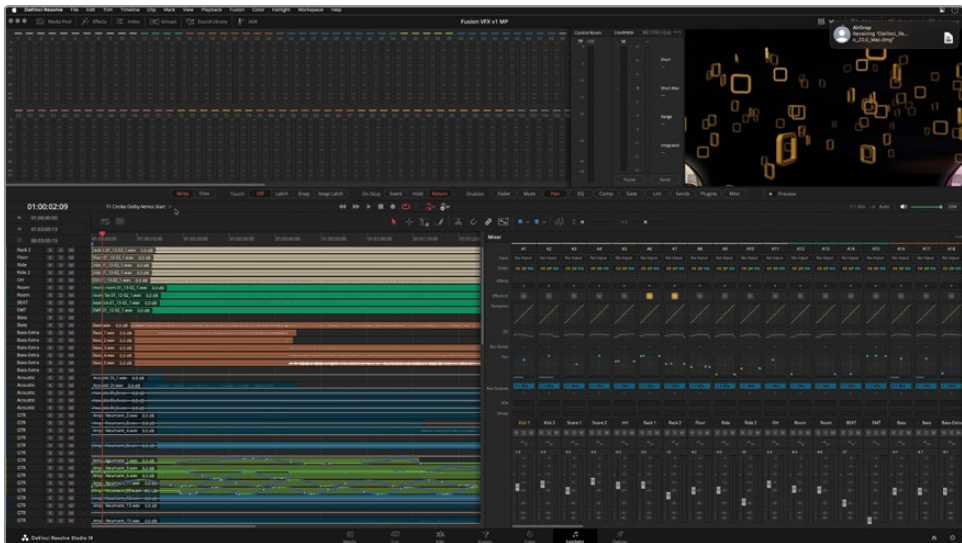
This timeline includes the instrumental bridge through to the outro to the song "Circles." Keep in mind, this is a mix in progress with track levels that need adjusting and balancing, along with other processing and sweetening. If you look at the mixer and monitoring panel, you'll see that there is only one bus named 7.1 Mix. You can also see that all the tracks are assigned to the 7.1 Mix bus. That means, at the moment, the only monitoring format available in the monitoring controls is 7.1.
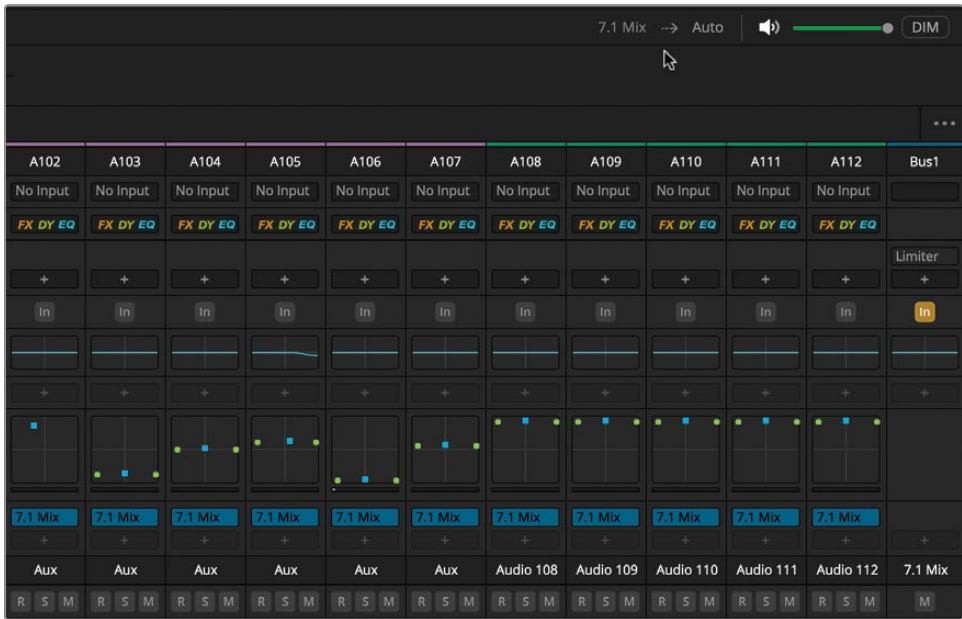
Let's add a Dolby Atmos Master bus. Then, you can monitor the project in other bus formats, including surround sound, Dolby Atmos, and binaural.

2   Choose Fairlight > Bus Format.

3   In the Bus Format window, click Add Bus.

4   Name the new bus **Master**.

5   In the Format menu, choose Dolby Atmos > Dolby Atmos Master. Then change the bus color to purple.
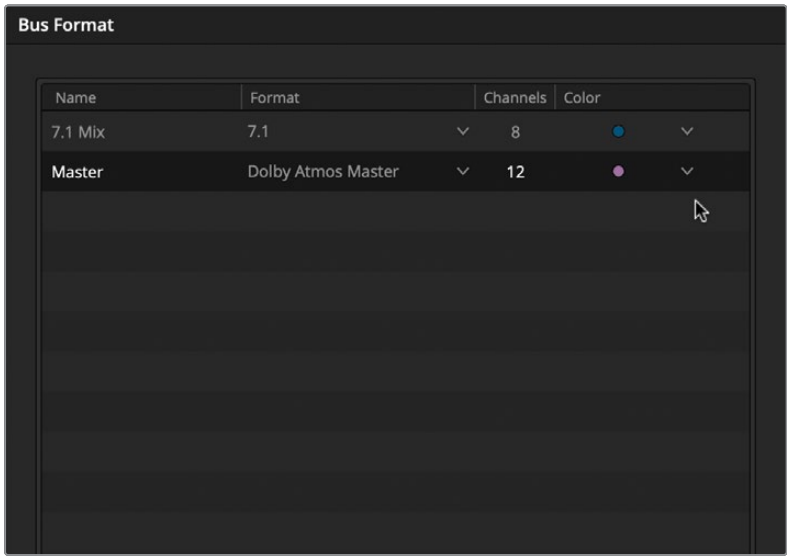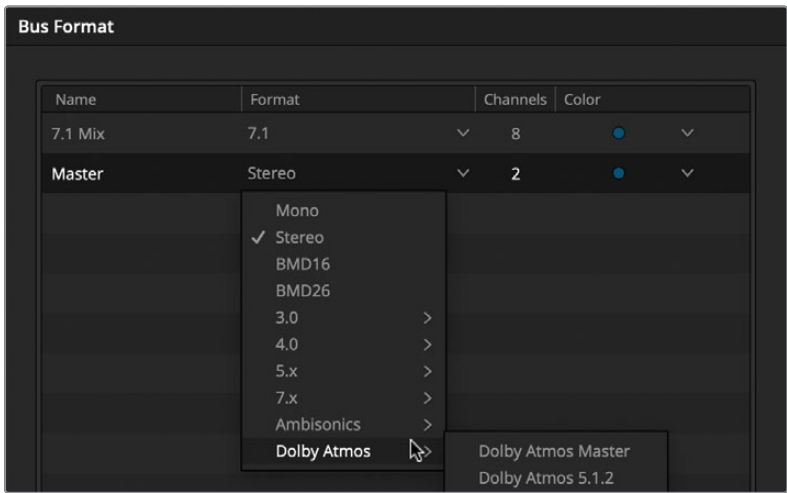
6   Click OK.

7   Scroll the mixer if needed to reveal the new Dolby Atmos Master bus to the right of the 7.1. Mix bus.
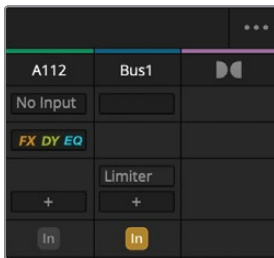
The Dolby Atmos Master bus is easy to recognize because it is the only bus with a Dolby badge at the top of the mixer. Next, you'll assign the 7.1 bus to the Master bus.

8   In the mixer Bus Outputs, assign the 7.1 Mix bus to the Master bus.

That's it! By simply adding a Dolby Atmos Master bus and assigning the main output bus to the Master bus, you can now start mixing and monitoring the project in Dolby Atmos. But wait… there's more. Let's start with monitoring.

> **NOTE** Whenever you add a Dolby Atmos Master bus to a DaVinci Resolve project, the default monitoring format is Dolby Atmos 7.1.4, which consists of 7 standard surround channels, 1 LFE (subwoofer) channel, and 4 overhead height channels. The overhead speakers are necessary for the immersive Dolby Atmos experience. You can change the monitoring format anytime via the Monitoring dropdown menu.

Changing the Monitoring Format

If the monitoring speakers connected to your DaVinci Resolve system aren't set up for Dolby Atmos 7.1.4 playback, you can change the monitoring channel format to match your system. In this exercise, you'll change the monitoring format of the Dolby Atmos Master bus to stereo and then binaural so that you can monitor it through your computer speakers or headphones.

In the monitoring controls above the mixer, you can now monitor playback in any standard channel format, as well as immersive Dolby formats with 2, 4, or even 6 overhead speakers for playing flying objects in 3D space.

Earlier in this lesson, you changed the playback format for an ambisonics bus using the Fairlight monitoring controls. Monitoring Dolby Atmos is similar to ambisonics in that the monitoring is flexible. When monitoring a Dolby Atmos Master bus through the Fairlight Immersive tools, the internal Dolby Atmos Renderer playback format options are also integrated right into the Fairlight monitoring controls. Here, you can change the monitoring format anytime, even during playback. Let's try it.

1   Start playback at the beginning of the timeline and look at the Control Room meters in the monitoring panel and bus meters in the mixer.

Here, you can see that both the Control Room meters and the Master bus meter in the mixer show 12 channels to represent the current 7.1.4 monitoring format.

2   Continue playback. In the Fairlight Monitoring controls, click the dropdown menu arrow to the right of the default monitoring format 7.1.4 to show the menu.
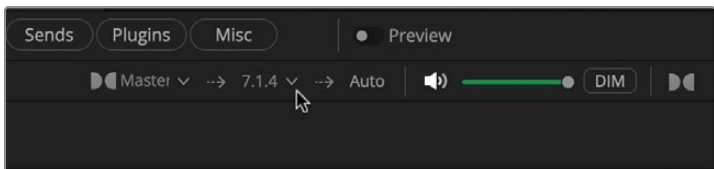
3   Choose 2.0 from the monitoring menu to change the playback format to stereo.
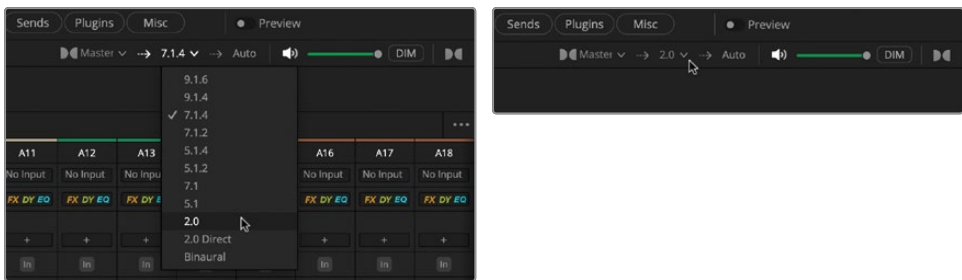
The Control Room meters and Master bus meter in the mixer show 2 channels to match the current 2.0 (stereo) monitoring format.

> **NOTE** The default Dolby Atmos Loudness metering is a 6-channel, 5.1 downmix from the internal Dolby Atmos Renderer. There are four Dolby Atmos Loudness formats available in the Loudness Meter options menu, including Follow C/R, 5.1 Downmix, Stereo Downmix, and Stereo Direct Downmix. The Follow C/R option matches the current monitoring format as shown in the Control Room meter and monitoring settings. You can learn more about these settings in the *DaVinci Resolve Reference Menu* available in the Help menu.

4   Choose Binaural from the monitoring menu to change the playback format. Play the timeline from the beginning to hear the binaural sound.

5   Toggle back and forth between 2.0 and Binaural monitoring in the monitoring dropdown menu during playback. When finished, leave the monitoring set to Binaural and stop playback.

Great. You now know how to change the monitoring. Next, you'll assign the flying guitars as objects to the Master bus. First, you'll need to locate the flying guitar tracks.

> **NOTE** Dolby Atmos master files can contain up to a maximum of 128 channels. The first 10 channels are reserved for the bed track. The bed track or tracks represent the standard channel-based mix, such as 5.1 (6 channels) or 7.1 (8 channels). Starting with 11, the remaining channels can be used for objects or additional beds.

Assigning and Viewing Tracks as Objects

In Dolby Atmos, *bed tracks* are audio channels (usually 7.1.2) that remain fixed in the speaker layout, and are used for elements such as music, ambience, or sounds that don't need to move. *Object tracks*, on the other hand, are individual sounds (up to 118) that can be precisely placed and moved in 3D space using pan metadata. Object tracks are ideal for sound effects or anything that needs dynamic positioning. When mixing, use bed tracks for static or background elements to save processing power, and use object tracks for sounds requiring spatial movement or exact placement.

Assigning a track as an object for monitoring in 3D space is as easy as assigning the track to the Dolby Atmos Master bus instead of the bed bus. Panning automation on the object tracks is then processed by the Dolby Atmos renderer and played through the overhead speakers. Binaural monitoring through the Dolby Atmos render offers a simulation through headphones to emulate a Dolby Atmos listening experience.

In this mix-in-progress timeline, there are only five tracks with pan automation. You will assign these tracks as objects for this exercise.

1   In the timeline, increase the track height for all tracks until you can clearly see the automation dropdown menu in the track headers.

2   In the mixer, select the A35–A39 channel strips. These are lime green GTR tracks amid the numerous navy colored GTR tracks.
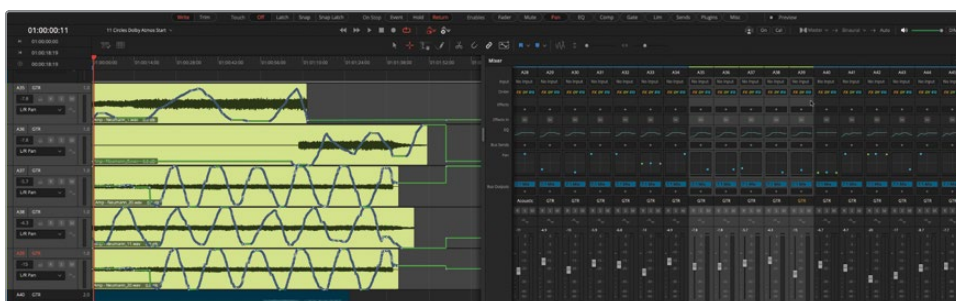
The A35–A39 channel strips brighten in the mixer, and tracks are visible and brighten in the timeline. You can also clearly see the lime green clips and L/R Pan curve on the selected tracks.

These selected tracks are all currently assigned to the 7.1 Mix bus. Let's change that assignment to the Master bus. For this maneuver, you can change all the selected tracks at once by using the handy Option/Alt modifier.

3 In the mixer, Option/Alt-click the 7.1 Mix Bus Outputs bus assignment for any of the selected channels and change it to Master.

Now that you've assigned the selected tracks as object tracks, let's see them in the Space View.

4 Choose Fairlight > Immersive Audio > Space View.

5 Start playback from the beginning to see the objects moving about the 3D space.
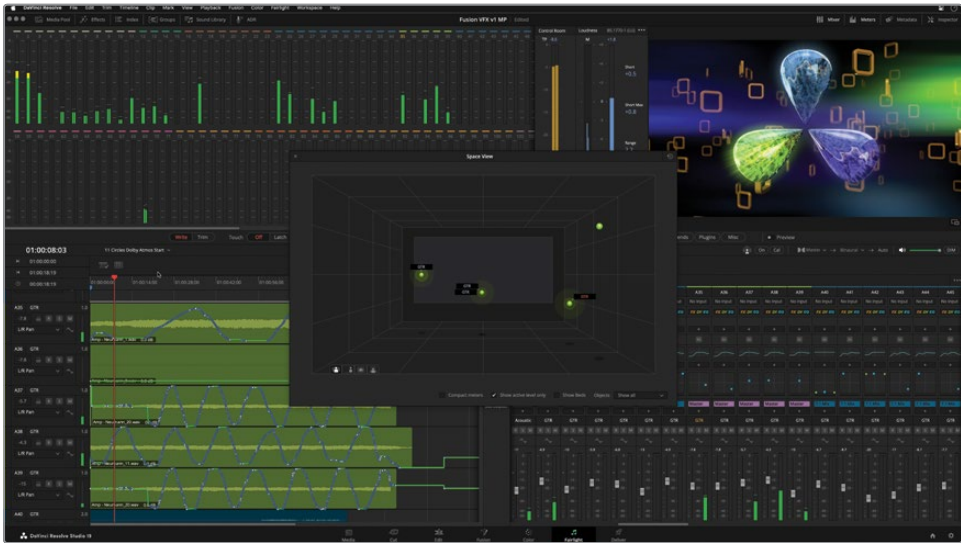
The lime green object spheres match the track color. You can also show the location of the tracks assigned to the bed busses by selecting Show Beds in Space View controls.

6 Continue playback. At the bottom of the Space View window, check the Show Beds option.
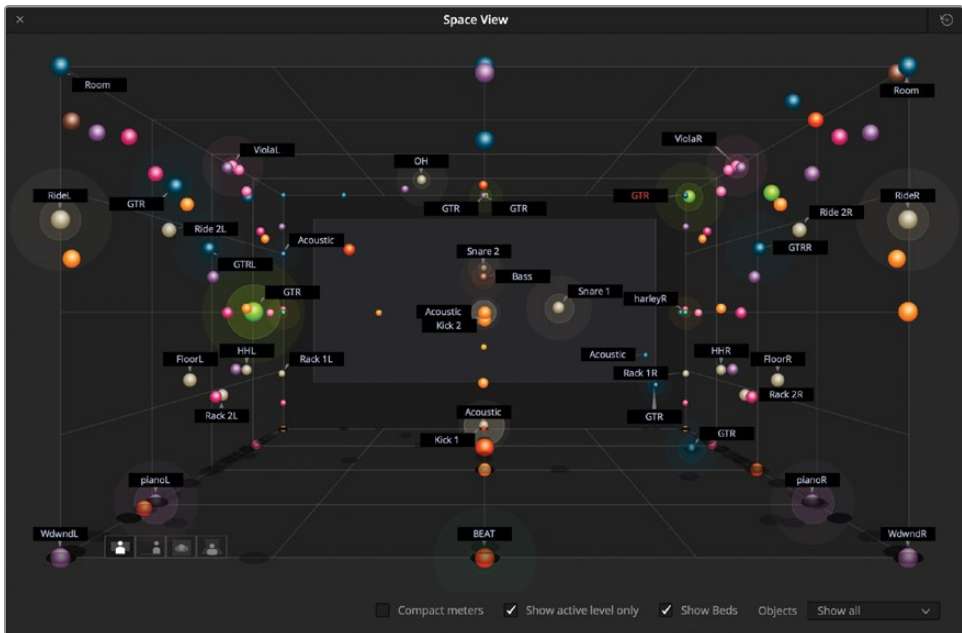
You can see colored spheres for all the tracks and where the corresponding sound has been panned within the 3D space.

7 Stop playback. Close the Space View window.

So far, you have added a Dolby Atmos Master bus and assigned the 7.1 Mix bus as a bed bus and 5 GTR tracks as objects. Next, you'll enable the Dolby Atmos Renderer in DaVinci Resolve preferences so you can show objects in the mixer and even export a Dolby Atmos master file from your mix in the timeline.

Enabling the Dolby Atmos Renderer in Preferences

At the beginning of this lesson, you enabled Ambisonics and Dolby Atmos in the Video and Audio I/O Immersive Audio preferences. To control Dolby Atmos objects in the mixer and output a Dolby Atmos master file in DaVinci Resolve, you'll also need to enable one more Video and Audio option.

1. Choose DaVinci Resolve > Preferences to open the System Preferences window.

2. Click Video and Audio I/O in the sidebar, if necessary, to show the Immersive Audio options.

   At the bottom of the Video and Audio I/O settings, you'll see the Dolby Atmos options. Here, you can enable the Dolby Atmos Renderer. This is a necessary step for generating original Dolby Atmos content and rendering a Dolby Atmos master file. Once enabled, you can have seamless workflows between working with the internal Dolby Atmos Renderer in DaVinci Resolve and an external Dolby Atmos Renderer, as either external hardware or software, as needed.

3. Check the Enable Dolby Atmos Renderer option. Then click Save. In the subsequent dialog, click OK.
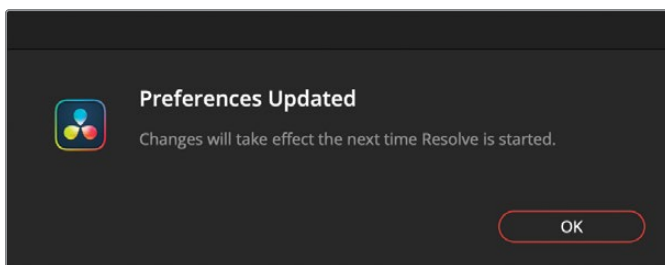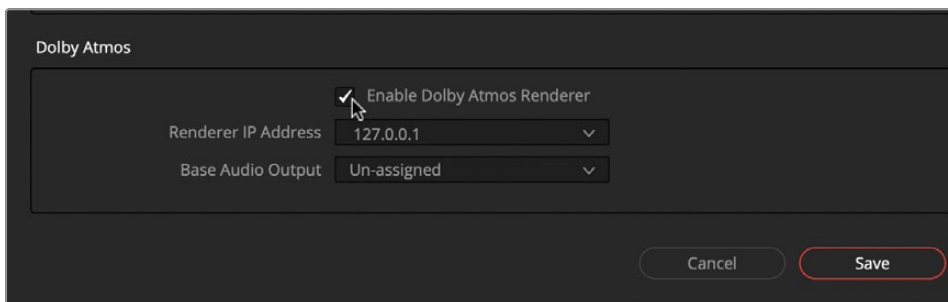
Since the dialog indicated that Preferences have been updated and changes will take effect the next time Resolve is started, this is a good time to save, close, and then reopen DaVinci Resolve. Although this step might not be necessary on all systems, quitting and restarting DaVinci Resolve will ensure that the newly enabled Dolby Atmos Renderer is ready to go on your timeline.

4   Choose File > Save Project.

5   Choose File > Close Project.

6   Choose File > Open Recent Project and choose your Fusion VFX v1 project.

7   Once the project is open, in the mixer options menu, enable the Immersive Objects option.

8   Expand the Mixer height as needed to see the Immersive controls. Locate tracks A35–A39 to see their active Immersive channel assignments.

The orange In button in the Immersive controls for each track indicates that all these tracks could be assigned as objects. However, only the lime green A35–A39 tracks have green Immersive channel assignments designating them as objects. Now that you've seen how to convert a 7.1 channel-based mix to Dolby Atmos with the addition of a Master bus and assign tracks as objects, let's look at a finished Dolby Atmos master file.

> **NOTE** If you have not already downloaded R20 Fairlight Part 4, please follow the instructions for downloading the lesson media in the "Getting Started" section of this book.

Adding a Dolby Atmos Master File to the Media Pool and Timeline

In this exercise, you'll create a new project where you'll explore the Dolby Atmos master file "Nature's Fury." First, you'll import the "Nature's Fury" video and audio files into the media pool and utilize some built-in Fairlight page features to quickly create a timeline from the video clip. Next, you'll add the "Natures Fury" Dolby Atmos audio clip to a new track and instantly transform the timeline stereo output bus to a Dolby Atmos 7.1.4 bus. Finally, you'll sync the video and stereo clips to the Dolby Atmos clip in the timeline. The media for this project is located in the R20 Fairlight Part 4 folder within your R20 Fairlight Book Media folder.

1   Open DaVinci Resolve if necessary. Choose File > New Project.

2   In the Create New Project dialog, name the project **Natures Fury** and choose a Media Location such as Documents, Desktop, or the root level of your system. Click Create.
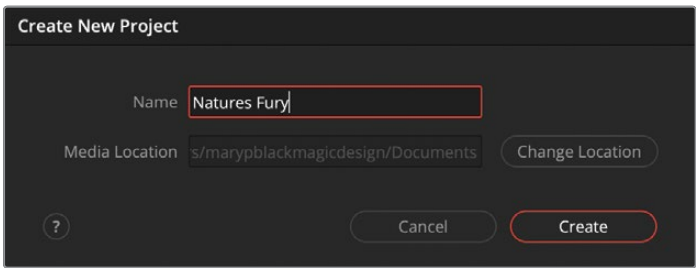
3   Show the media pool.

4   In the media pool options menu (…), select the Show All Clips option if necessary.
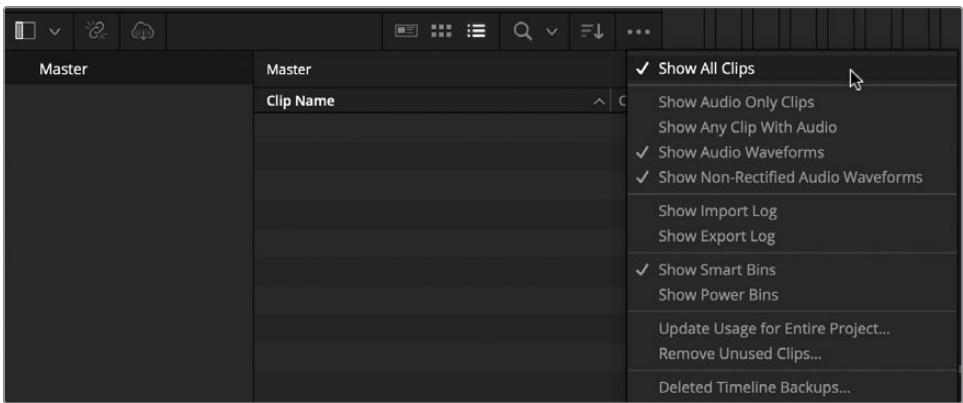
5   Press Command-I (macOS) or Ctrl-I (Windows) to open the Import Media dialog.

6   In the Import Media dialog, navigate to the R20 Fairlight Book Media > R20 Fairlight Part 4 > Lesson 11 Dolby Atmos folder. Select both of the media files: **NaturesFury.mp4** and **NaturesFury.wav**. Click Open.
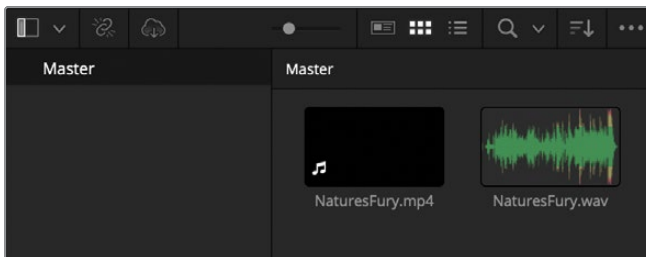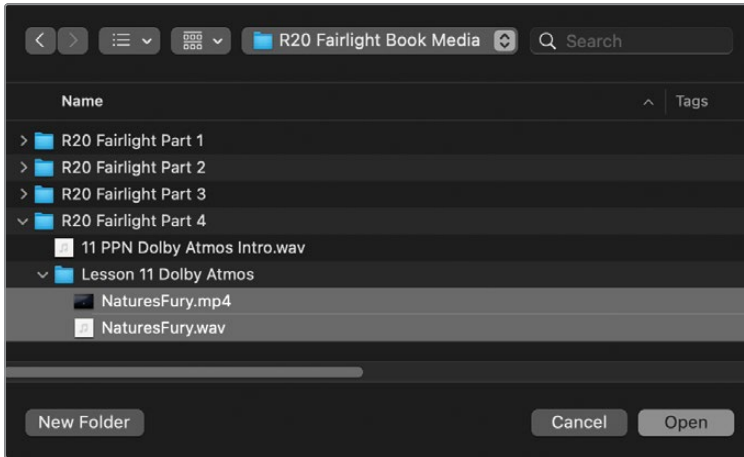
The media files appear in the media pool library. In DaVinci Resolve, you can instantly create the first timeline in a new project by simply dragging a clip from the media pool to the empty space in the timeline area. Let's try it.

> **NOTE** You can check the file format of a selected clip in the media pool or timeline via the File tab of the Inspector. A Dolby Atmos Master file, like NaturesFury.wav, will be identified as such in the Audio Codec and Audio Format fields.

7 Display video tracks in the Timeline View Options menu. Drag the **NaturesFury.mp4** video clip from the media pool to the empty timeline space.
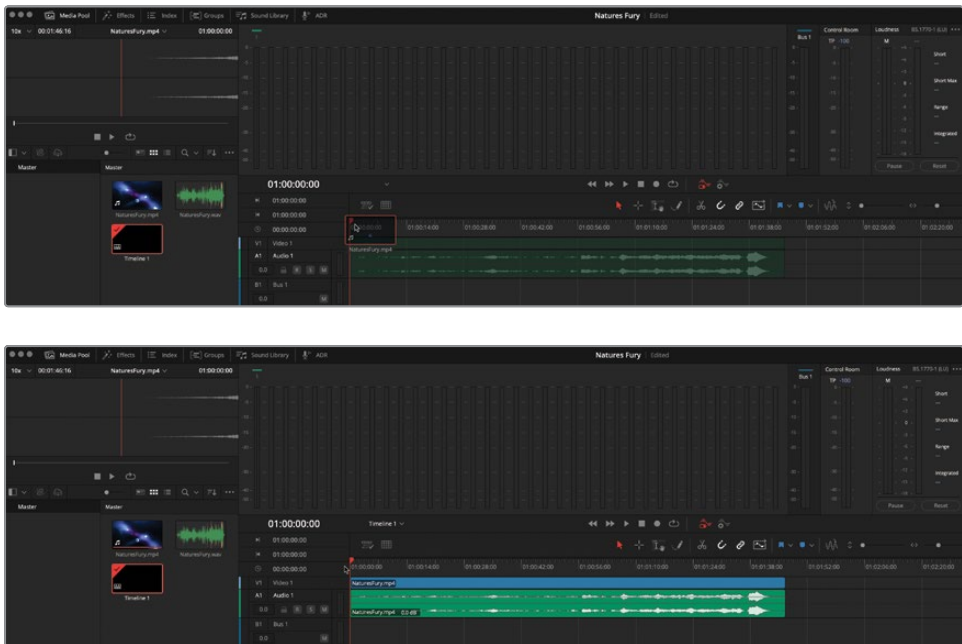
Since you made the timeline with a video clip, you'll see both the video and audio tracks in the timeline.

8 Press Shift-Z to fit the clip horizontally to the timeline window.

9 Zoom vertically until you can clearly see the waveform in the A1 track. Play the beginning of the clip.

Notice that the Bus1 output bus, Control Room, and Loudness meters are all stereo to match the channel format of the clip that you used to create the timeline.
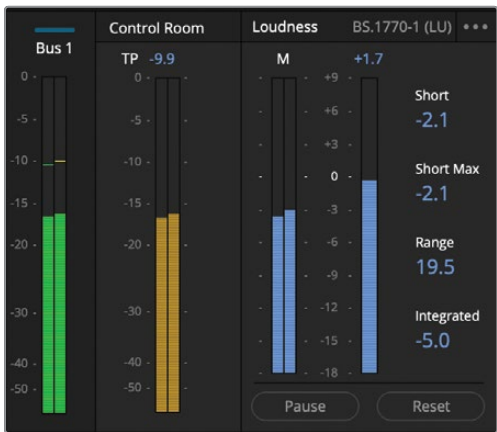
Normally, adding another audio clip to a new track will create a track that matches the channel format of the new clip. However, the Dolby Atmos integration in DaVinci Resolve goes one step further and also creates a Dolby Atmos output bus.

10 Drag the **NaturesFury.wav** audio clip from the media pool to the empty timeline space below the A1 track. Align the clip in the A2 track with the beginning of the timeline.

11 Solo the A2 track and start playback.

Notice that the Bus 1 output bus, Control Room, and Loudness meters are now 12 channels wide to accommodate the default 7.1.4 Dolby Atmos format.
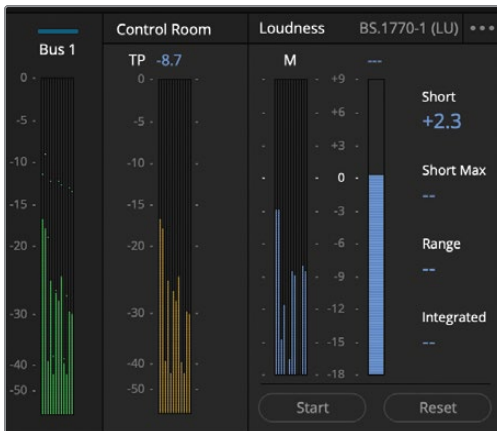
In this example, to sync the video and stereo clips in the V1 and A1 tracks to the Dolby Atmos clip in the A2 track, you simply drag them into position.

12 In the timeline, select the video clip in V1 and the audio clip in A1. Drag the selected clips to the right until they align with the end of the clip in the A2 track.
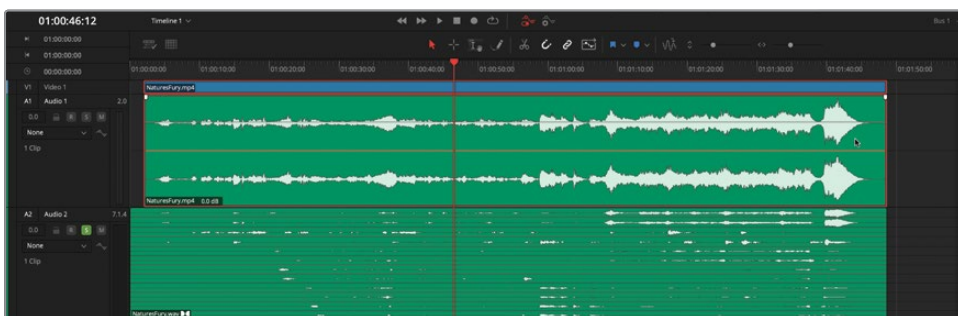
13 Solo the A2 track, if necessary, and play part of the timeline. Watch the viewer to see that the video and audio are in sync. Continue playback and unsolo A2. The audio tracks should be in sync with one another. Continue playback. Experiment with soloing or muting the tracks to hear one, the other, and then both. When you're satisfied that they are in sync, stop playback.

14 Hide the media pool. Mute the A1 track.

15 Drag the A2 track header downward to vertically zoom the track until you clearly see all of the channels in the Dolby Atmos master file.

The Dolby badge in the clip header indicates that the clip is a Dolby Atmos master file that is playing through the internal Dolby Atmos Renderer in DaVinci Resolve.

16 Show the Inspector and click the File tab to see the audio configuration of the 12 channels within the Dolby Atmos 7.1.4 master file.
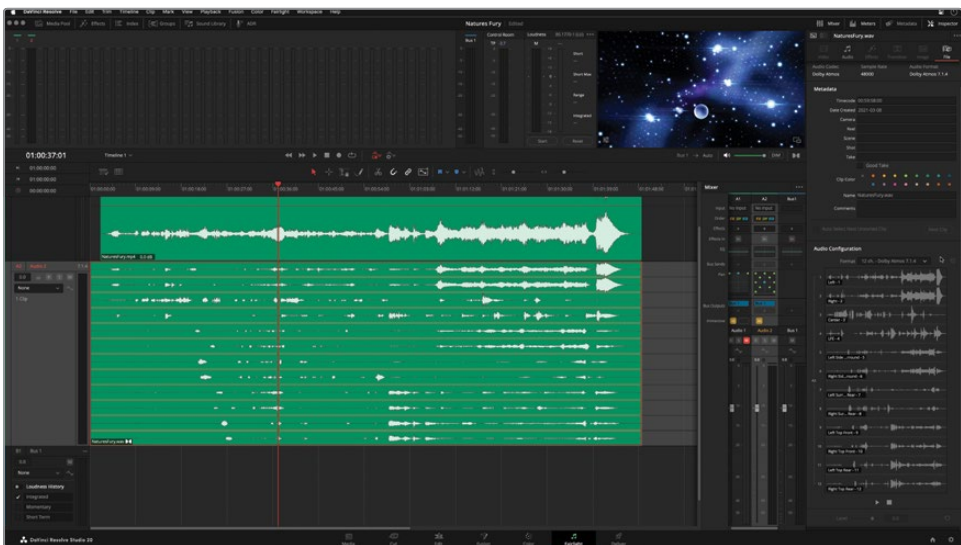
NOTE In DaVinci Resolve, you cannot edit the individual channels of a Dolby Atmos master file in the timeline. This is to maintain the integrity of the Dolby Atmos master. You can, however, sync, trim, or move the master file as needed within the timeline for packaging and delivery. You can also combine multiple master files in the same track and render a new master.

Changing the Playback Format

Whenever you add a Dolby Atmos master file to a DaVinci Resolve project, the default channel format is Dolby Atmos 7.1.4, which breaks down as 7 standard surround channels, 1 LFE (subwoofer) channel, and 4 overhead height channels. The overhead speakers are necessary for the immersive Dolby Atmos experience. If the monitoring speakers connected to your DaVinci Resolve system aren't set up for Dolby Atmos 7.1.4 playback, you can change the channel format to match your system. In this exercise, you'll change the channel format of the Dolby Atmos master file in the A2 track to Stereo so that you can monitor it through your computer speakers or headphones.

An advantage of working with a Dolby Atmos master file rather than a standard channel-based file is that the Dolby Atmos master files can be played in any standard format through the internal Dolby Atmos Renderer. Changing the channel format of a Dolby Atmos master file only changes how it will play back through the internal Dolby Atmos Renderer built into DaVinci Resolve. All the channels and embedded metadata are retained for packaging and delivery.

In this exercise, you'll change the format of the A2 clip from Dolby Atmos 7.1.4 to stereo using the Clip Attributes dialogue.

1   Double-click the Dolby Atmos master file in the A2 track to open the Clip Attributes for that clip. In the Clip Attributes dialog, click the Audio tab. Then set the Format to Stereo.
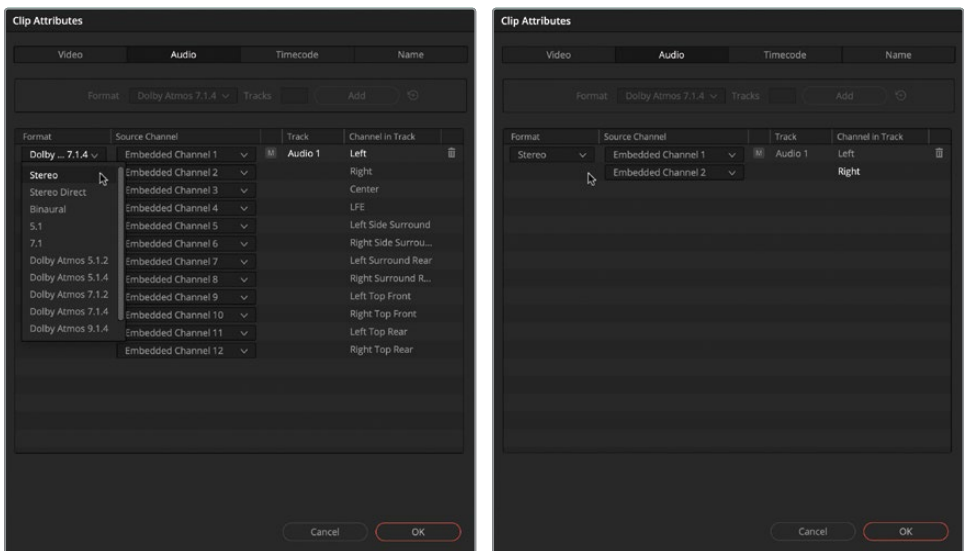
2 Click OK.

The A2 track now contains a two-channel stereo clip in a 12-channel 7.1.4 track.

The Audio Configuration in the Inspector also shows that the clip is 2-channel stereo.

3 Hide the Inspector.

4 Right-click the A2 track header and choose Change Track Type To > Stereo.

5 Adjust the vertical zoom to reduce the height of the A2 track to match the A1 track height. Notice that the stereo clip in the A2 track still has a Dolby badge indicating that it is a Dolby Atmos master file.

You can generate your own channel-based files right from the Dolby Atmos master file, so there is no need to keep the A1 stereo track showing in the timeline. In fact, you don't need to see the video track either.

6 In the Tracks Index Tracks list, hide the visibility (eye icon) for the V1 Video 1 track as well as the A1 Audio 1 track.

The Video 1 and Audio 1 tracks (V1 and A1) are no longer visible in the timeline. Keep in mind that hiding an audio or video track does not disable or mute it.

7 In the Tracks Index, mute the A1 Audio 1 track if necessary, and then hide the Index.

In the next exercise, you'll use the internal Dolby Atmos Renderer to generate a stereo and 5.1 downmix from the master file in the A2 track.

Bouncing Stereo and 5.1 Re-Renders

The internal Dolby Atmos Renderer in the Fairlight page not only lets you play a Dolby Atmos master file in any standard channel format, but also lets you generate different channel-based versions from an Atmos master. These newly generated files are called *re-renders* rather than downmixes because the Dolby Atmos renderer processes how object-based audio is folded down into traditional formats to intelligently create channel-based formats from the Atmos Master.

In this exercise, you'll use the power of the internal Dolby Atmos Renderer to generate a stereo and a 5.1 downmix file from the Dolby Atmos master file. The DaVinci Resolve immersive toolset makes it easy to render multiple downmixes simultaneously through the Bounce Mix to Track dialog. The internal Dolby Atmos render will do all the processing under the hood. First, you'll need to mark the clip.

1 Press R for the Range Selection tool. Click the master file in the A2 track to select the track and set a range for the entire clip.

2 Press A for the Standard Selection tool.

3 Choose Timeline > Audio > Bounce Mix to Track.
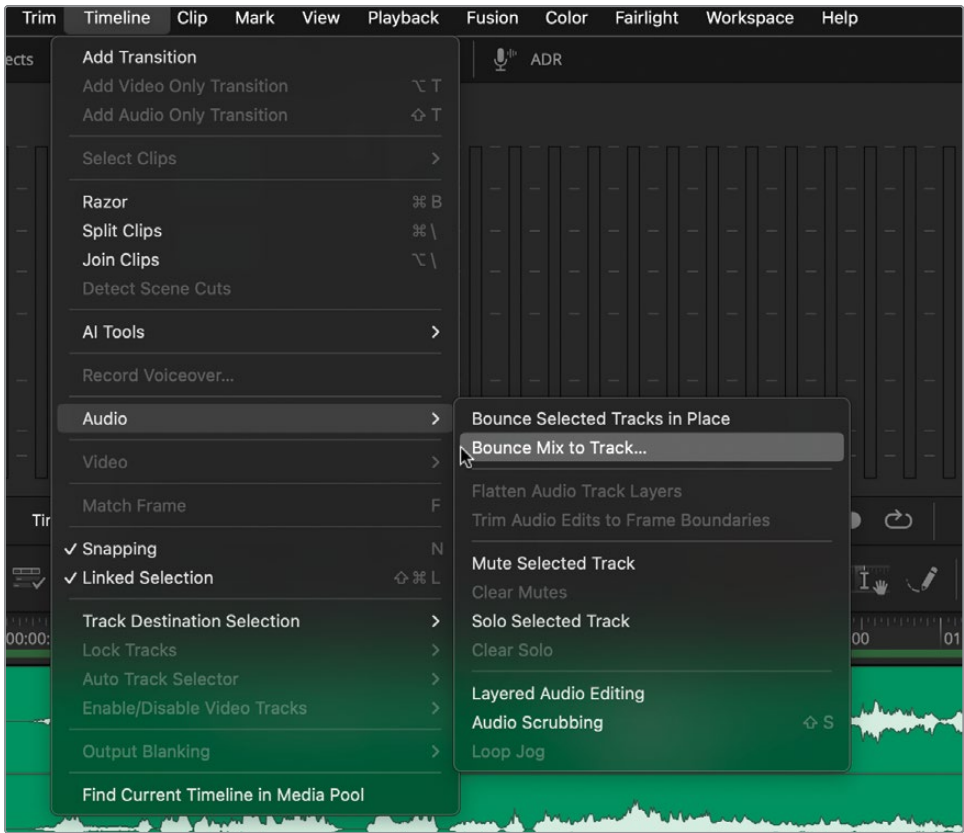
The Bounce Mix to Track dialog offers three default options for bouncing downmixes right to the timeline: Dolby Atmos Master, Stereo, and 5.1. You can also customize the settings to choose a different format to bounce.

4 In the Bounce Mix to Tack dialog, set the Destination track for the Atmos Render Stereo and Atmos Render 5.1 to New Track.
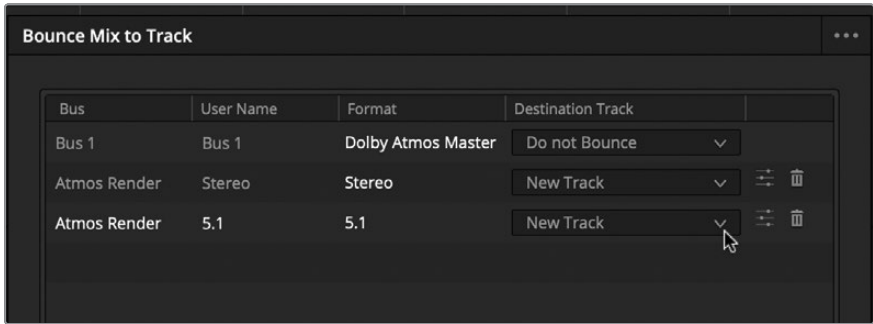
5 Click OK.
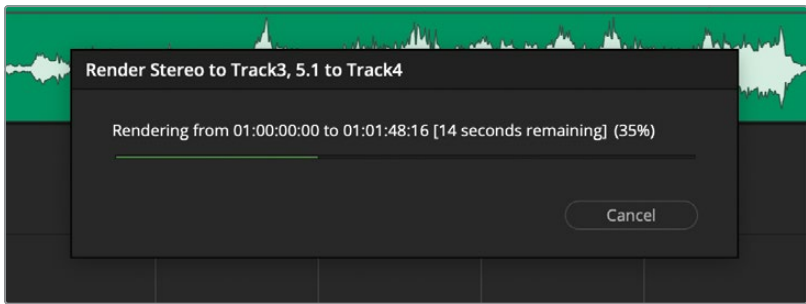
A progress dialog indicates the time remaining to render Stereo to Track 3, and 5.1 to Track 4. Once finished, you'll find the stereo and 5.1 re-renders in tracks 3 and 4, respectively.

6 Feel free to solo and listen to the re-renders in the A3 and A4 tracks.

Before moving on to delivery, let's change the A2 track and master file back to 7.1.4.

7 Right-click the A2 track header and choose Change Track Type to > Dolby Atmos > 7.1.4.

8 Double-click the clip in the A2 track. In the Clip Attributes Audio tab, change the Format to Dolby Atmos 7.1.4.

9 Click OK.

The Dolby Atmos master file and its track are now in their original format of 7.1.4.

Exploring Delivery Options

DaVinci Resolve offers two Dolby Atmos deliverable formats in the deliver page, including an audio-only ADM broadcast wave format (BWF) and an MXF IAB format for IMF video and audio packaging. When delivering either format from a Dolby Atmos master file, the delivery options and results will be based on the Render Settings on the deliver page. In this exercise, you'll render both options.

One thing to remember about the Dolby Atmos integration in DaVinci Resolve Studio is that a Dolby Atmos master file always retains the Bed and Object information to scale up or down to play in any standard Dolby Atmos or channel-based format.

In the next series of exercises, you'll render two Dolby Atmos master files from the Nature's Fury project.

1 In the timeline, mark an In point at 01:00:30:00 and an Out point at 01:01:00:00.

2 In the deliver page Render Settings panel, adjust the following settings as follows:

— Select the Audio Only render preset.

— In the File Name field, type **NF Dolby Atmos 30sec**.

— Location: Browse to the Desktop and create a new folder named **NF Dolby Atmos Deliverables**.

— Audio Format: Wave

— Codec: ADM BWF

— Sample Rate: Same as project (to match project)

— Bit Depth: 24

To render a Dolby Atmos master file, you'll need to be sure that the Output Track and Track Number are set to the timeline track containing the Dolby Atmos master file. In this example, the A2 track (currently 7.1.4 format) contains the Dolby Atmos master file.

— Output Track 1: Timeline Track

— Track Number: 2

When you change the Track Number to 2, the FFOA timecode at 01:00:00:00 becomes active and checked automatically. You can use the FFOA to set the start of actual audio in the ADM master file. Preparing a project for ADM delivery usually includes adding a 2-pop (1-frame 1 kHz tone) 2 seconds before the first frame of action for sync to picture.
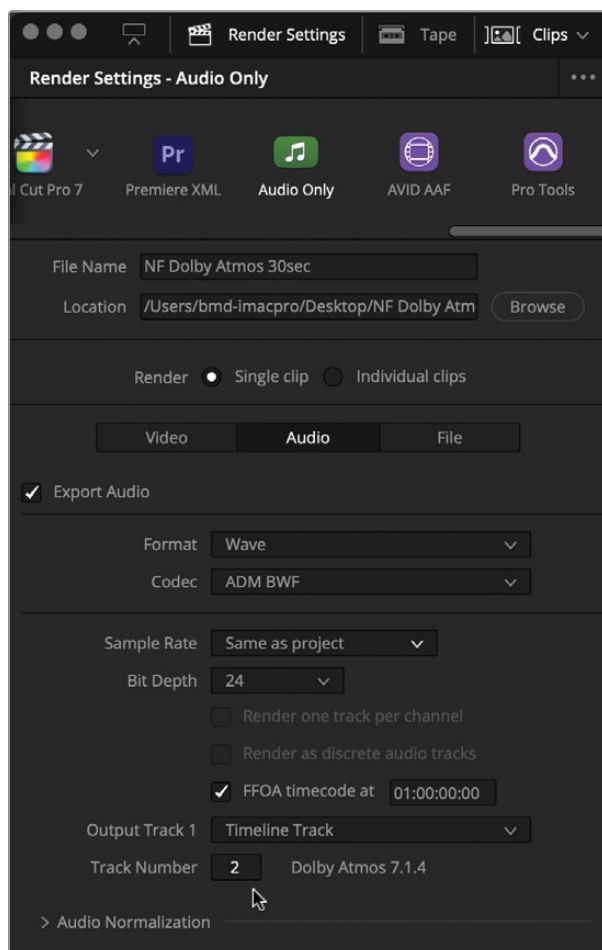
3 Click Add to Render Queue.

Next, you'll use the IMF Netflix preset to deliver an IMF IAB package containing the video and Dolby Atmos master file.

4 At the top of the Render Settings panel, select the IMF > Netflix preset.

Since this is a preset, you won't change the Video, Audio, or File settings. You'll only need to check the Output Track and Track Number to ensure they are set to the correct timeline track on the Audio tab.

5 Click the Audio tab, if necessary, to see the audio settings.

6 Click the Output Track 1 dropdown menu to see the options, including Timeline Track, All Timeline Tracks, and IAB Track File.
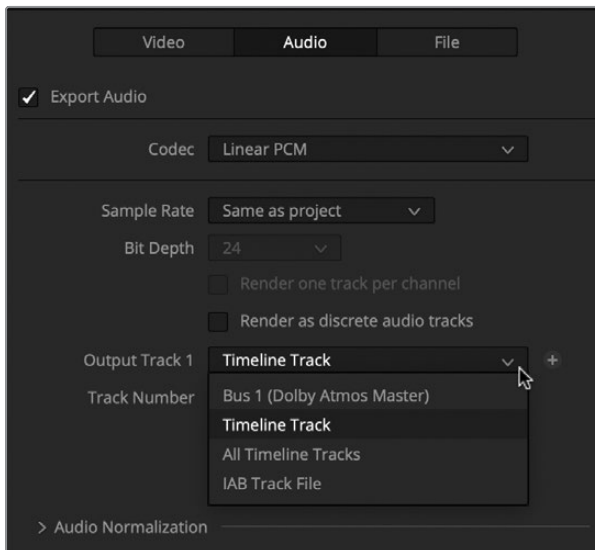
For this exercise, you'll use the Timeline Track option.

> **NOTE** When creating an IMF package with a Dolby Atmos master file in the deliver page, the All Timeline Tracks option can be used if you want to render additional channel-based tracks, such as the stereo and 5.1 downmixes, along with an IAB Dolby Atmos master file in the same package.
>
> Any timeline track that does not contain a Dolby Atmos master file will render a file based on the track's channel configuration. The IAB Track File option lets you browse to and select the original Dolby Atmos master file at the Finder level and copy it directly into the IMF package rather than render a new master file.
>
> If you're working with a Dolby Atmos master file as a pre-existing IAB.mxf, or you've imported an existing Dolby Atmos master file format to the timeline, the Dolby Atmos Master is packaged without modification. However, if a Dolby Master File is in the timeline, it can be trimmed, cut, and synced to video before authoring to IMF.
>
> For example, if the export is the same frame rate and the clip is simply trimmed, the source master file is fully copied into the IMF.

7 Set the options at the bottom of the Render Settings Audio panel as follows:

— Output Track 1: Timeline Track

— Track Number: 2

— Export as Dolby Atmos IMF IAB (This option should be checked automatically when you select a track containing a Dolby Atmos master file.)
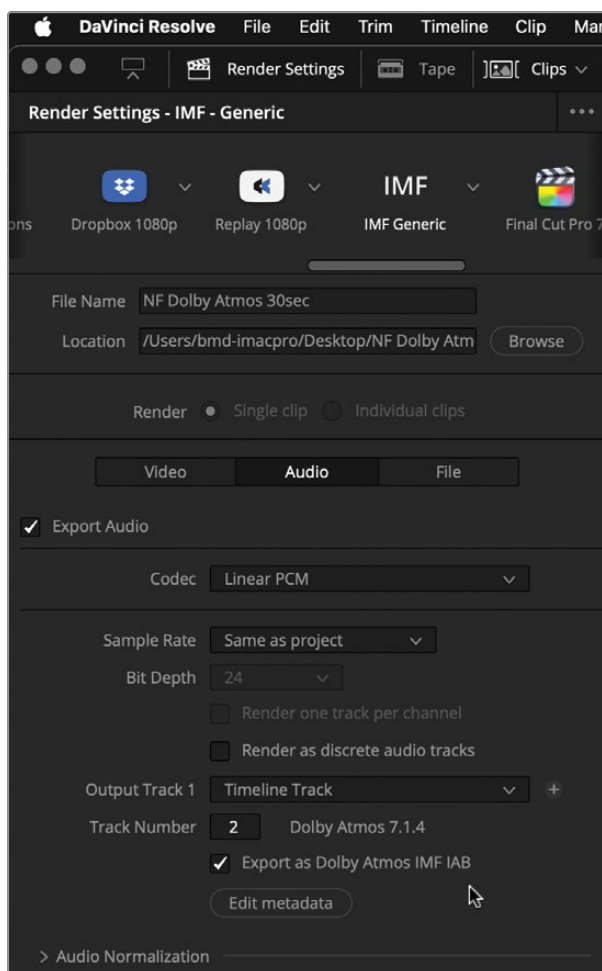
8 Click Add to Render Queue.

9 In the Render Queue, deselect both render jobs, if necessary. Click Render All.

10 At the Finder level of your system, locate the **NF Dolby Atmos Deliverables** folder and view the contents.
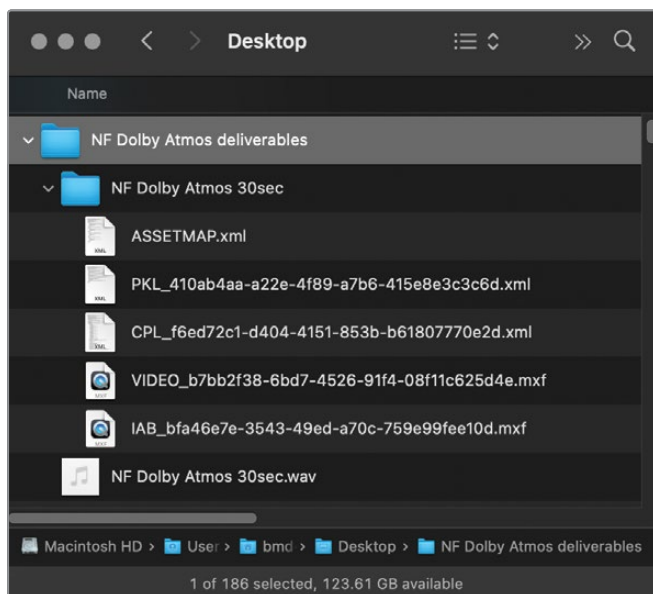
Here, you should find an IMF package **NF Dolby Atmos 30sec** (folder) containing numerous XML files as well as the IAB Dolby Atmos .mxf master file and the Video .mxf file. Additionally, there should be a Broadcast Wave File (BWF) named **NF Dolby Atmos 30sec.wav**.

Check Your Deliverables

You've generated two 30-second Dolby Atmos files from the original Dolby Atmos master file. Before moving on to the next section, it's a good idea to import and verify that your deliverables worked as expected. In the Fairlight page, import the contents of the NF Dolby Atmos Deliverables folder. Make a new timeline from the IMF and ADM files. In the timeline, expand the audio track vertically to see if it has the Dolby badge and is in the default 7.1.4 Dolby Atmos master file format.

Importing a Dolby Atmos Master

So far, you have added a Dolby Atmos Master bus to a 7.1 timeline to begin mixing Dolby Atmos. You've also added a Dolby Atmos master file to the timeline, created re-renders, and delivered the master file in two different formats. Now, it's time to step things up a notch and import the same Dolby Atmos master file through the Fairlight page > Immersive Tools menu. This method of importing a file will generate a new timeline that

will re-create the full Dolby Atmos mix, complete with content, bed and object tracks, panning automation metadata for the flying objects, and VCA groups to control the object tracks based on the group assignments before generating the master file. Once you have imported a Dolby Atmos master file through the Fairlight Immersive tools, you can utilize additional immersive tools, including the Space View scope, Renderer Settings, and real-time playback monitoring via the internal Dolby Atmos Renderer.

1   Choose Fairlight > Immersive Audio > Import Master File.

2   In the Finder window, navigate to the R20 Fairlight Book Media > R20 Fairlight Part 4 > Lesson 11 Dolby Atmos > **NaturesFury.wav** file.

3   Click Open.

Once you click Open, the following things will happen:

— A new timeline will be created.

— The timeline will be populated with newly rendered content necessary to re-create the Dolby Atmos mix.

— Automation is turned on so that all panning automation on the object tracks will be active during playback and rendering.

— The new timeline contains all the bed (standard channel mix), object (mono tracks with panning metadata), and VCA groups (faders to control groups of tracks) with the playhead at the start of the newly generated clips.

— The new timeline's timecode and position of the content will be based on the timecode of the original Dolby Atmos master file. In this case, the timeline starts at 00:00:00:00, and the clips start at 00:59:58:00 with a 2-pop on the first audio frame. The sound (FFOA) starts at 01:00:00:00.
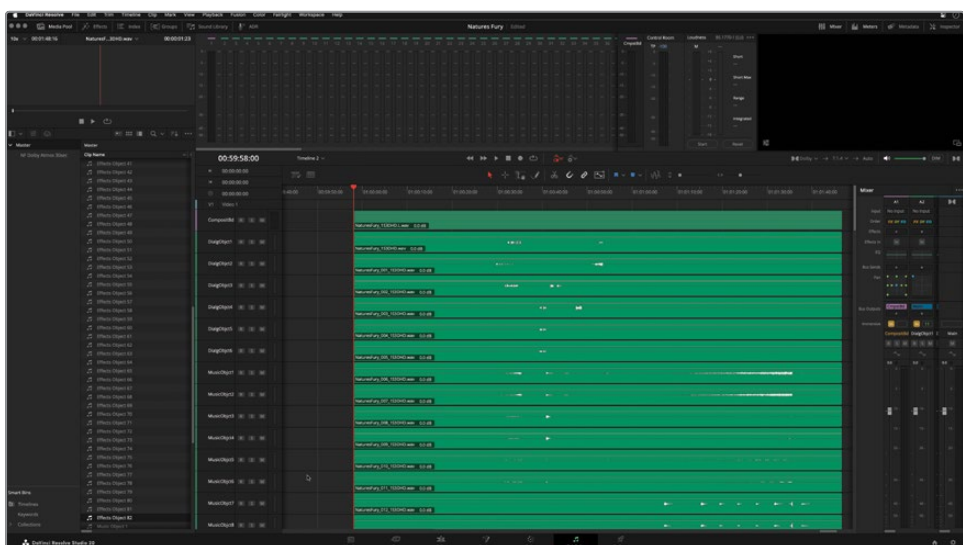
> **TIP** When working with a timeline with a large gap between the start of the timeline and the first clip, it's easy to scroll too far in one direction and lose sight of the clips in the timeline. If that happens, you can use the Up Arrow and Down Arrow keys to quickly jump forward or back to the head or tail of the timeline clips.

4 Play the beginning of the clips in the timeline.

This is the exact same master file that you were working with before, only this time you have an all-access backstage pass to see the full behind-the-scenes mix, including every track, waveform, panner, and fader needed to output the Dolby Atmos master file.

Identifying Bed, Object, and VCA Groups

Now that you have imported the Dolby Atmos master file, let's take a moment to identify its various components in the timeline. These include the A1 Composite Bed track, subsequent object tracks, and the four VCA groups that can be used to control the levels of the corresponding object tracks. Dolby Atmos master files can contain up to a maximum of 128 channels. The first 10 channels are reserved for the bed track. The bed track or tracks represent the standard channel-based mix, such as 5.1 (6 channels) or 7.1 (8 channels). When you import a Dolby Atmos master file through the Fairlight Immersive tools, the bed track (A1) matches the channel format of the bed track when the original master file was created. In this case, the Dolby Atmos bed track in A1 is 7.1.2 (7 surround channels, 1 LFE, and 2 overhead channels), hence the first 10 channels. The remaining 118 channels can be used for additional beds or mono objects. This example includes a 7.1.2 bed track and the maximum allowable 118 object tracks, plus four VCA groups with faders.

1 Hide the media pool.

2 Expand the mixer as far as you can toward the left.

3 Double-click the track meters in the monitoring panel to double-stack the meters so that you can monitor all 109 tracks at once.
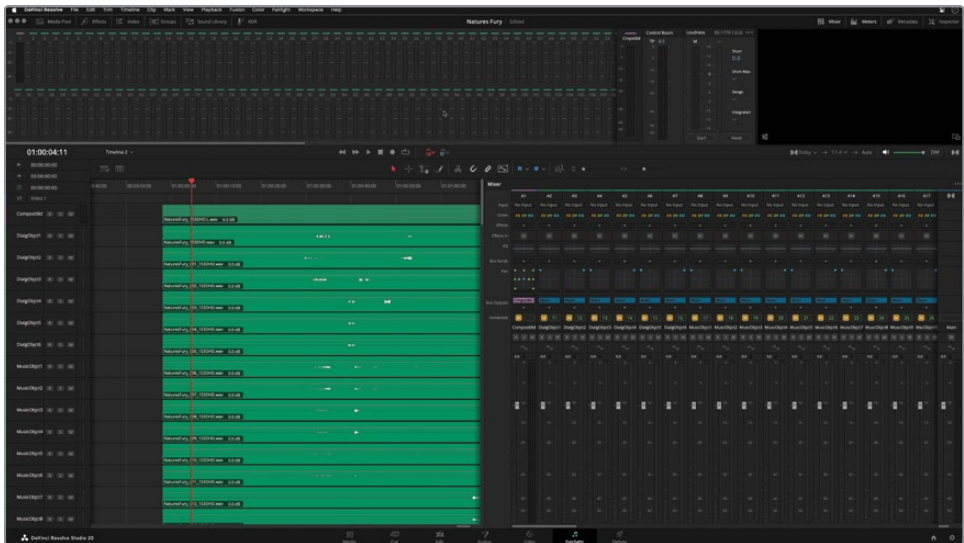
> **NOTE** By default, bed tracks are purple, and object tracks are green, similar to what you will find in the external Dolby Atmos Renderer available in the Dolby Atmos Production Suite and Dolby Atmos Mastering Suite.
>
> For more detailed information about Dolby Atmos and the Dolby Atmos Renderer, go to *https://professional.dolby.com/siteassets/content-creation/dolby-atmos/dolby_atmos_renderer_guide.pdf*.

4 Increase the height of the A1 track header until you can see all the channels in the timeline.
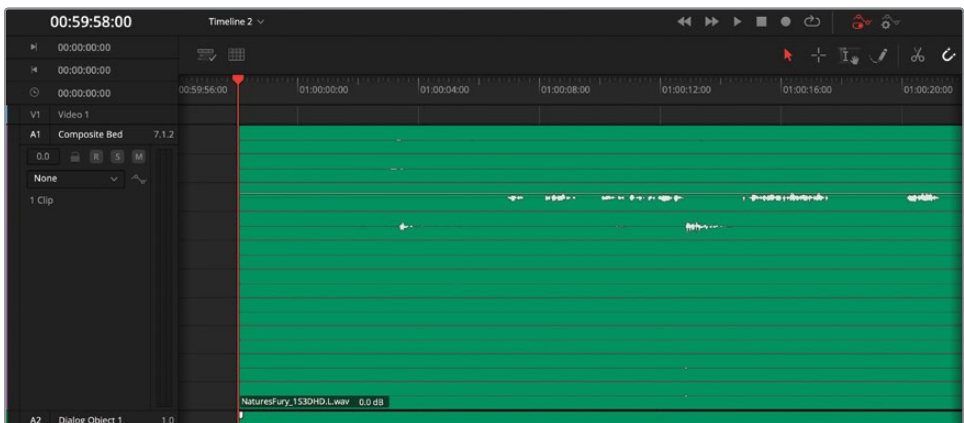
You can see 10 audio channels, but there are no visible labels on the stem channels—yet.

5   Choose Fairlight > View Clip Info Display.

6   In the Clip Info Display dialog, enable the Stem option. Then click OK.
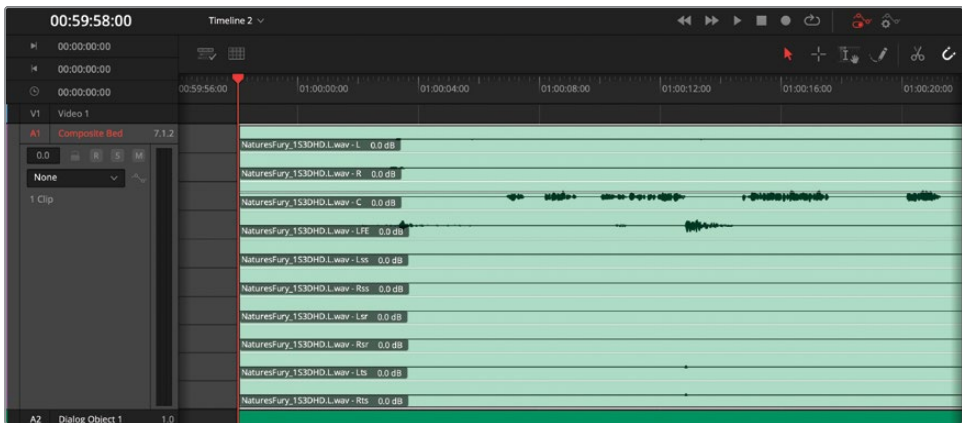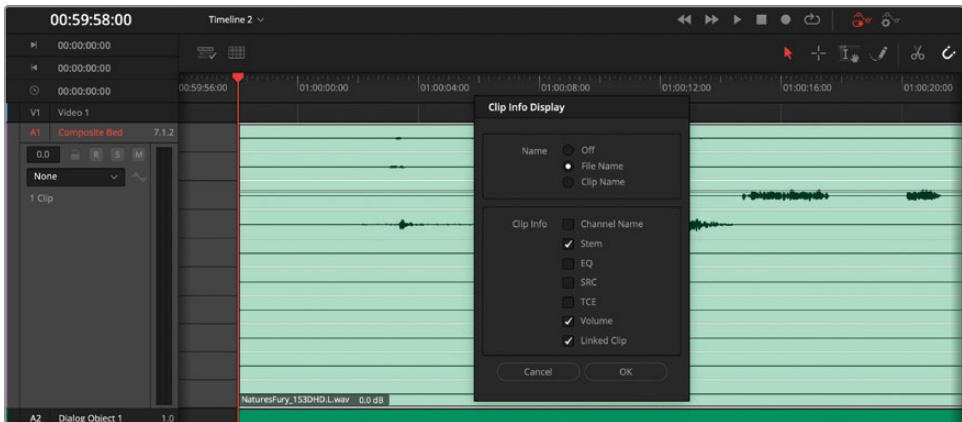
The contents of the A1 bed track are just what you would expect to see for a 7.1 mix, with the added Left top surround (Lts) and Right top surround (Rts) channels.

7   Zoom vertically to reduce the height of all the tracks as much as possible.

You can read the first word in each object track's header and quickly identify the types of object tracks by name: Dialogue, Music, or Effects. For training purposes, these names were added to the original master file to match the VCA groups in the mixer. Otherwise, when importing a master file through the Fairlight Immersive tools, unnamed object tracks would be named "Object" with a sequential number starting with the first object track.
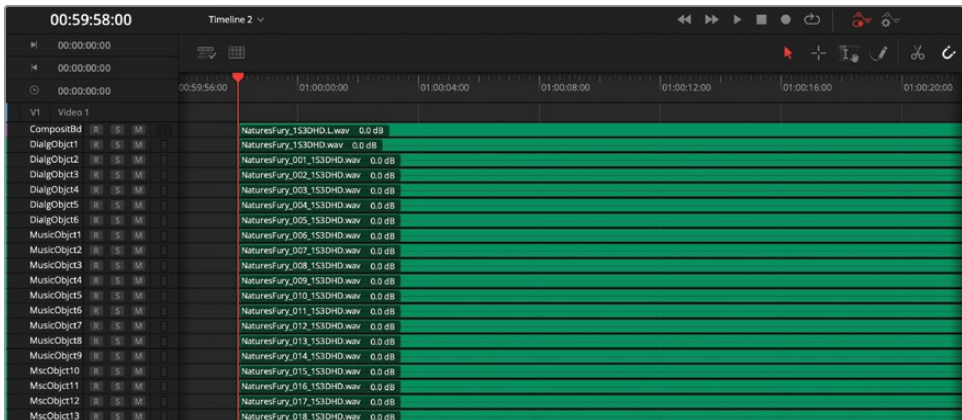
8 Select the first Dialog Object track, A2, and zoom vertically to increase the height of the tracks until you can see the track name.
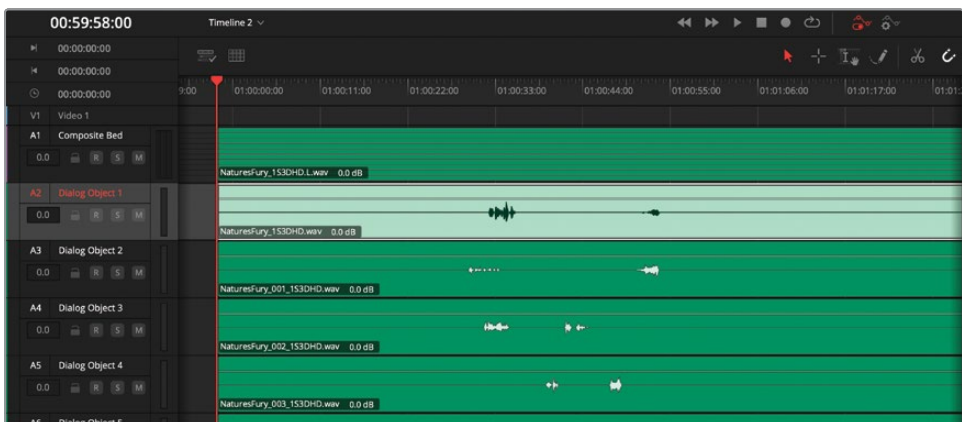
The first object track in A2 is labeled accordingly as Dialog Object 1.

Next, let's look at the VCA groups in the mixer. VCA groups let you adjust relative levels of all tracks in a group, even if they have automation applied.

9 In the mixer, expand the bus section toward the left until you can see the channel strips for Bus 2 and all four VCA groups.
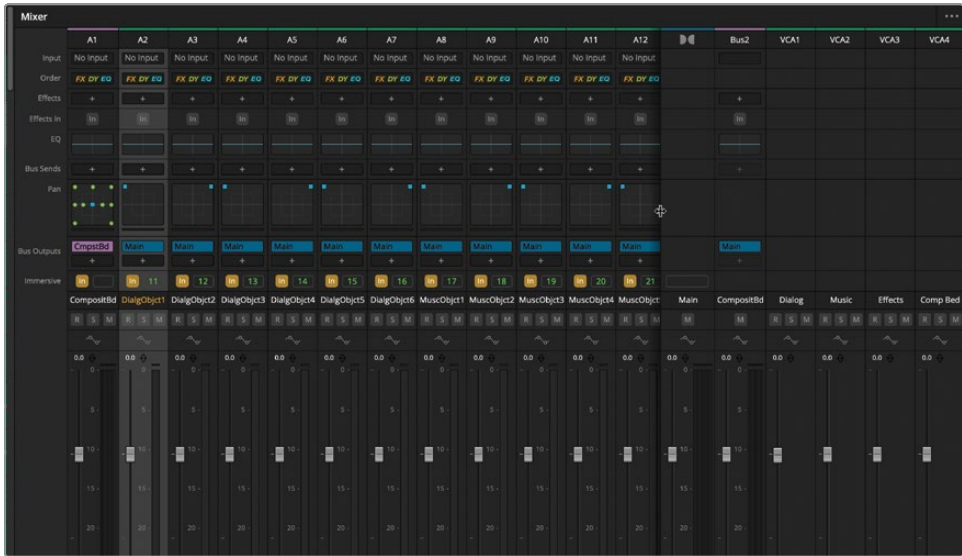
These VCA faders can be used to adjust the levels of all the member tracks, even with automation turned on.

10 In the mixer, drag the Dialog VCA fader up and down to see all the faders in the Dialog group move simultaneously, relative to the movement of the VCA fader.

11 Double-click the Dialog VCA fader to reset the level of the VCA group and all member tracks to unity.

12 In the mixer, drag the left edge of the Main bus channel strip toward the right to reveal more track channel strips and hide the VCA channel strips.

Revealing Auto-Patching to the Internal Dolby Atmos Renderer

The last stop on this master file timeline tour is patching to the internal Dolby Atmos Renderer. As you already know, the internal Dolby Atmos Renderer handles all the processing under the hood, so you can play the master file, generate re-renders, or deliver a new master file. When you import a master file via the Fairlight Immersive tools, the bed and object tracks are automatically patched to the internal Dolby Atmos Renderer. This is the same patching you would do manually if you were mixing and creating original Dolby Atmos content in DaVinci Resolve.

1   Choose Fairlight > Patch Input/Output.

2   In the Patch Input/Output window, set the Source to Bus Out and the Destination to Dolby Atmos Send.
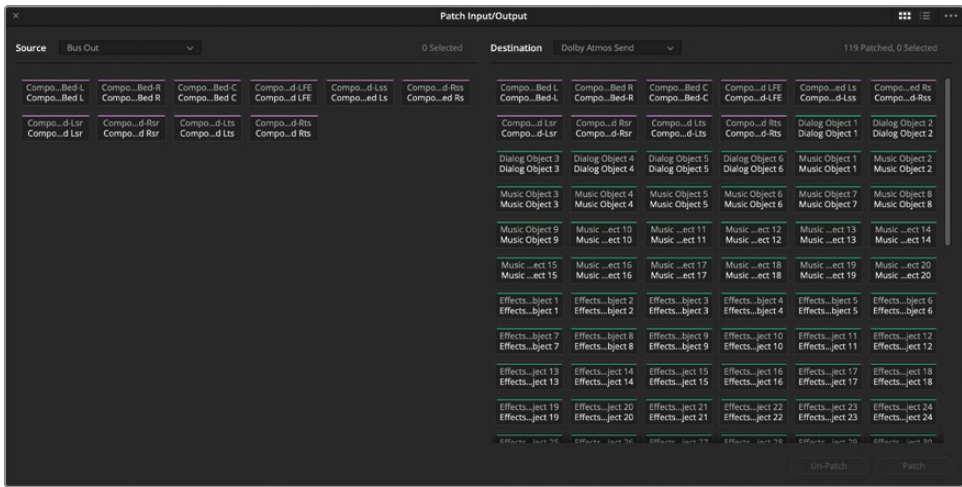
Here, you can see that the 10 Composite Bed channels are patched to the first 10 channels of the Dolby Atmos Send.

3 Set the Source to Track Direct.
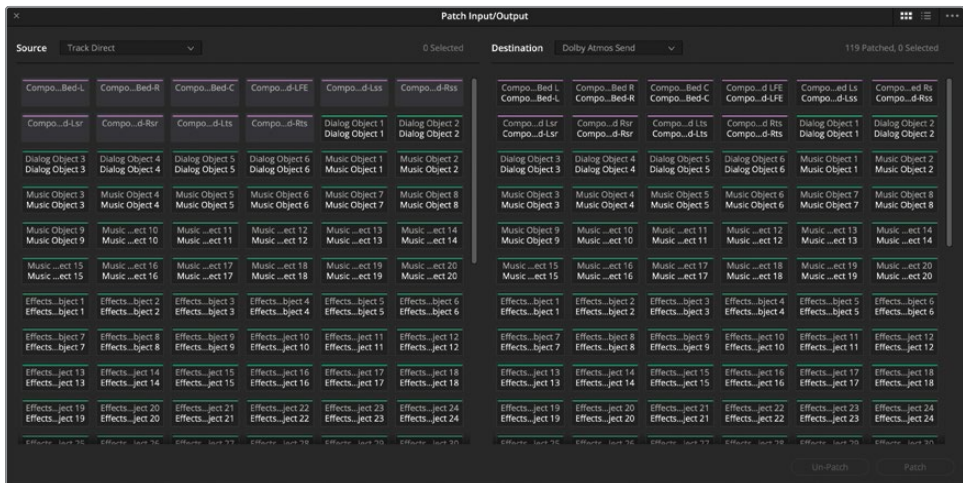
Here, the object track channels starting at Dialog Object 1 are patched to the sends starting with Send 11.

4 Close the Patch Input/Output window.

Syncing Video From an A/V Source Clip

If you have a video-only clip to sync to the audio tracks in the timeline, you can drag it right from the media pool to the timeline and move it into position for sync. That isn't the case here, since the video clip for this project includes a stereo track. Currently, in the Fairlight page, there is no way to add video only from a source clip that includes audio. So for this exercise, you'll jump over to the edit page where you can edit just the video from an A/V source clip to the timeline.

1 Press Shift-4 to go to the edit page. Press the Down Arrow to move the playhead to the beginning of the clips in the timeline.

2 In the media pool, double-click the **NaturesFury.mp4** clip to load it into the source viewer.
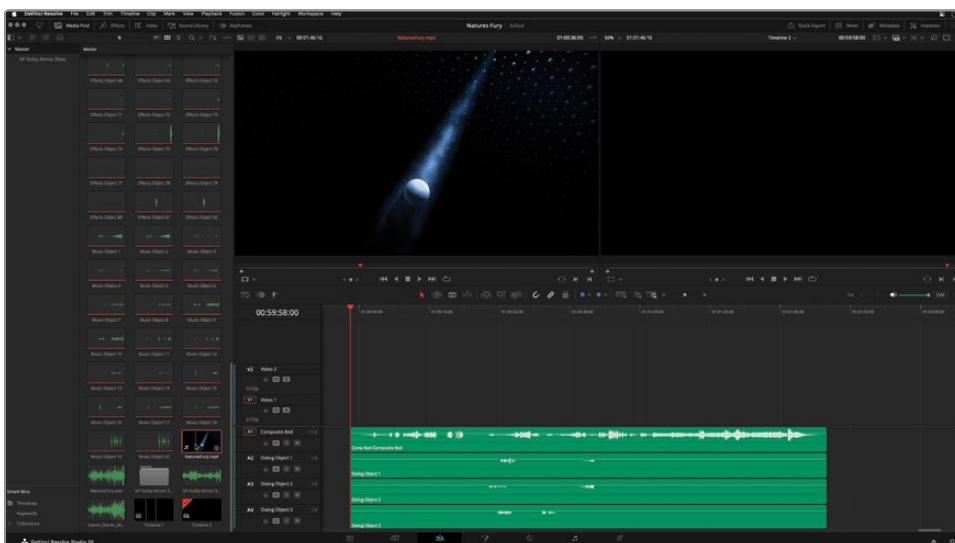
3   Hover your pointer over the source viewer until you see an overlay with a video clip icon on the left and an audio waveform icon on the right.

This editing overlay allows you to edit video only or audio only from the source clip. In this case, you want to edit video only.

4   Drag the video-only overlay to the empty Video track in the timeline.

Now that the video clip is in the timeline, you can sync the tail of the clip to the tail of the audio clips. If snapping is turned on, the tail of the video clip should snap to the end of the audio.

5   In the V1 track, drag the video clip into position so that the last frame aligns with the last frame of the audio clips.
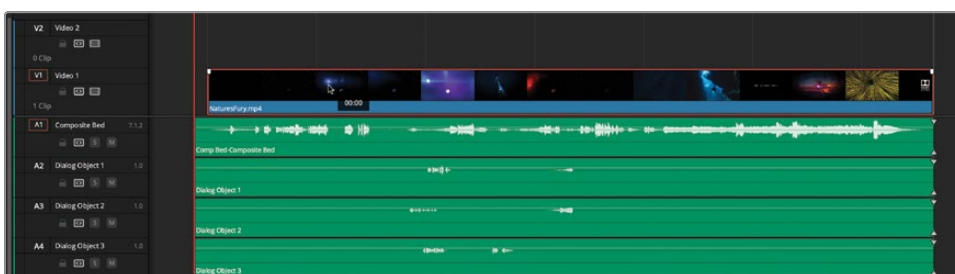
6   Press Shift-7 to go to the Fairlight page.

Now that you've imported the Nature's Fury Dolby Atmos master file and synced the video, you can move on to the next exercise, where you'll watch and listen to the panning and immersive sound during playback.

Exploring the "Flying Objects" and Pan Metadata

In this self-guided exercise, you'll utilize tools and skills you've already learned as you watch and listen to this professionally produced Dolby Atmos timeline. Take your time as you do the following:

— Set the monitoring to Binaural (if using headphones) or a channel-based speaker setup to match your current speaker configuration.

— Notice the Immersive controls in the mixer channel strips that indicate which channels are objects and which Dolby Atmos Send they are assigned to in the Patch Input/ Output window.

— Play the timeline clips from start to finish while listening to and watching the video.

— Increase the track height until you see the automation dropdown menu in the track headers. Then press Command-Option (macOS) or Ctrl-Alt (Windows) while setting one of the automation dropdown menus to Pan > L/R Pan. Now you can see the left/right pan automation curve for all tracks.

— Scroll down to the tracks A28–A34 or any other tracks with busy automation curves.

— In the Fairlight menu, choose Immersive Audio > Space View. Watch the objects in Space View during playback. Feel free to experiment with different settings to show all, show only selected, etc.
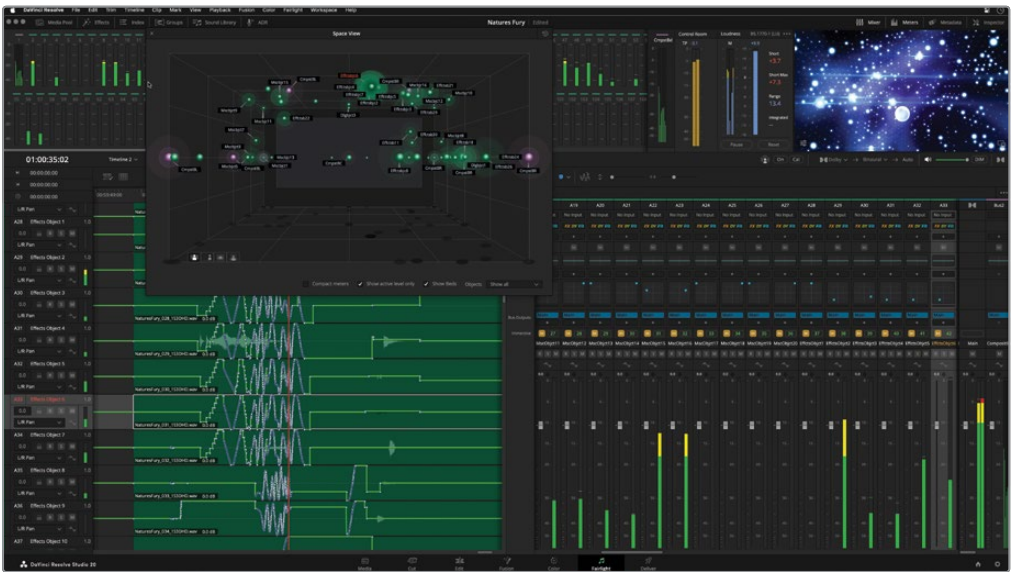
Showing the Dolby Atmos Renderer Settings

Dolby Atmos master files can be monitored with speaker layouts that include overhead speakers for immersive playback and more traditional 7.1, 5.1, and stereo formats.

When a Dolby Atmos master is monitored in 5.1 or stereo, controls determine how the overhead content and rear surround content are derived: either directly from the renderer or downmixed from an intermediate layout. These are referred to as *downmix settings*.

1   Choose Fairlight > Immersive Audio > Renderer Settings.
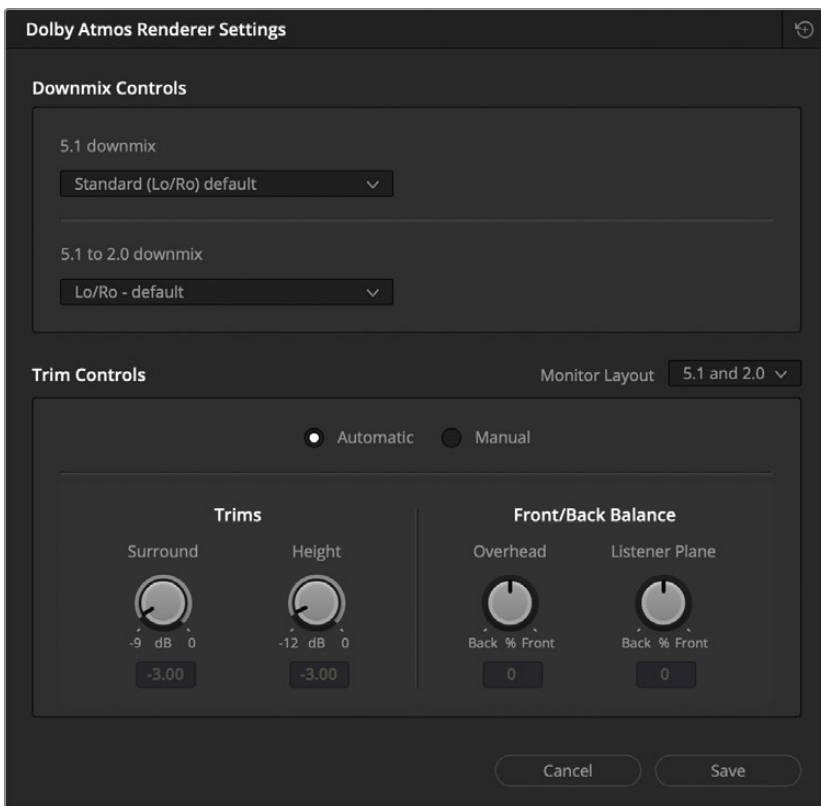
Downmix settings work in conjunction with trim controls when monitoring in 5.1.2, 5.1, and stereo. The automatic setting provides algorithmic dynamic trims that are appropriate for the vast majority of content. In some cases, more specific control of rear surround and height content is needed, along with adjustment of the front/back balance to ensure dialogue intelligibility and balance with the floor speakers. Manual trim controls are provided for this purpose. Remember that any changes to these controls are applied to the entire master. Manual trim control should be considered an advanced setting.

2   In the Trim Controls, click the Manual option to engage the Trims and Front/Back Balance controls for manual adjustment.

3   Click the Automatic option to return the Renderer settings to the Automatic controls using the automatic Dolby Atmos algorithms to calculate the downmix trims.

4   Click Cancel to close the dialog.

> **NOTE** The *learning.dolby.com* webpage provides detailed information about Dolby Atmos workflows for downmixing to 5.1 and stereo, as well as using the Dolby Atmos Renderer Downmix and Trim Controls.

Importing the Podcast Intro Master File

Now, let's step into a different project you've been working with since the first lesson and import a Dolby Atmos ADM master file for the Post Park Normal podcast intro. As you've just witnessed, when you import a Dolby Atmos master file in the Fairlight page, new media is rendered in a new timeline to re-create the Dolby Atmos mix. These newly rendered files appear in the media pool and media location designated on your system.

In this exercise, you'll import a simple Dolby Atmos mix with 1 bed bus and 11 object tracks to see and hear the results. To simplify the steps, an empty bin named Imported Master File has already been added to the Lesson 11 Timelines folder.

1 Open your Podcast Intro Combo project.

2 In the media pool, Lesson 11 bin, open the **11e Dolby Atmos Bus and Bed** timeline.
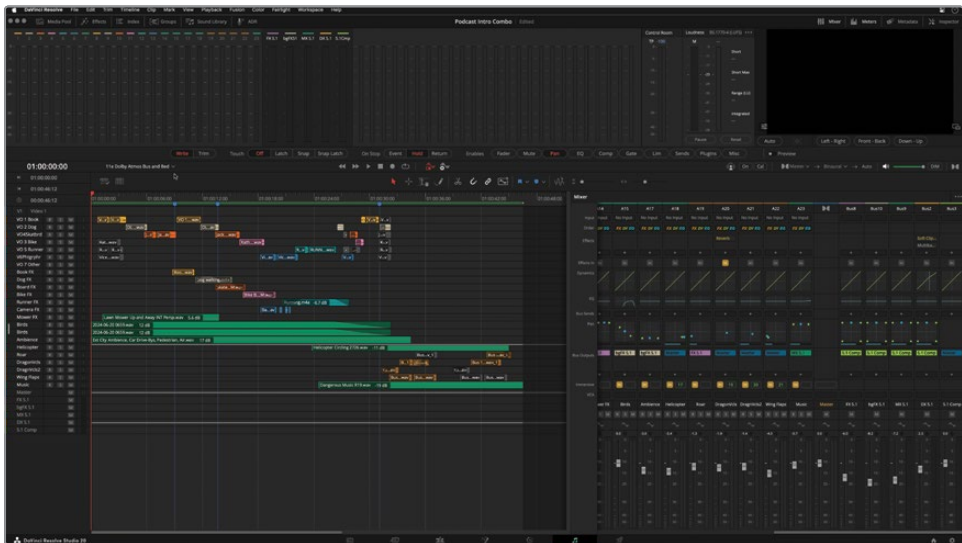
This is the 5.1 mix of the Post Park Normal podcast intro with 23 tracks, 4 submix busses, a 5.1 comp bed bus, and a 5.1.4 Dolby Atmos Master bus. You'll work more with this timeline shortly. First, let's import the Dolby Atmos master file created from this timeline.

3 In the media pool, Lesson 11 bin, double-click the Imported Master File bin to open it.
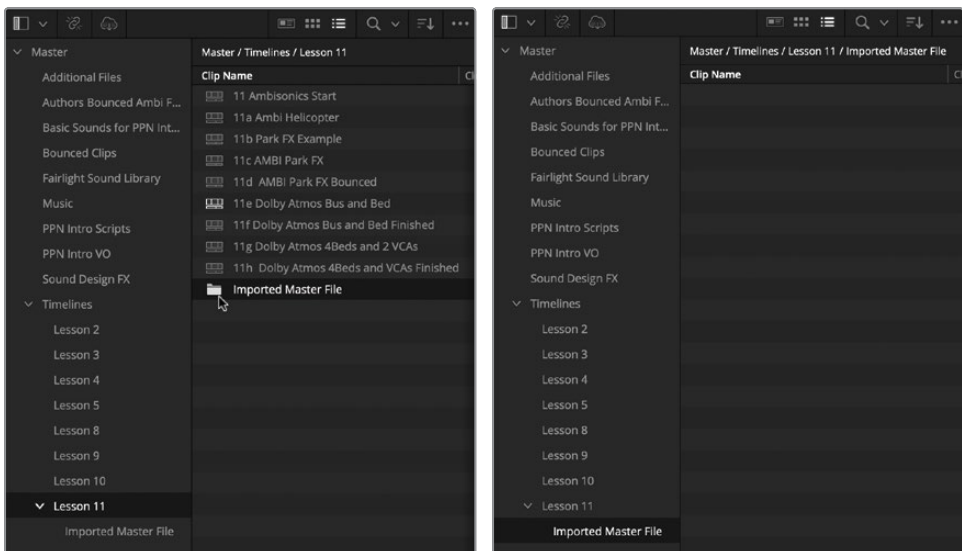
As you can see, the bin is empty, but not for long.

4 Choose Fairlight > Immersive Audio > Import Master File.

5 In the Finder window, navigate to the R20 Fairlight Book Media > R20 Fairlight Part 4 > **PPN Intro Combo 1 Comp bed.wav** file.
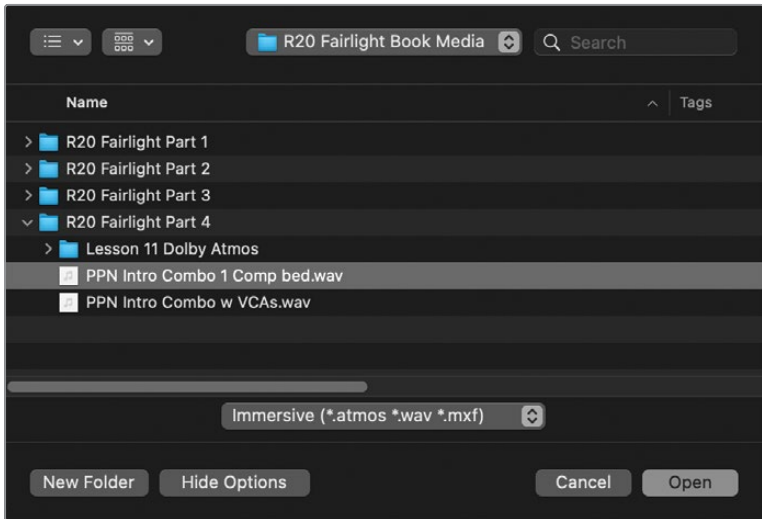
6 Click Open.

A new timeline is created, complete with a 5.1 Comp bed track and 12 object tracks. The rendered files are located in the Imported Master File bin in the media page.

7 Extend the mixer to show all tracks and busses, and then press Shift-Z to fit timeline clips horizontally in the visible timeline area.
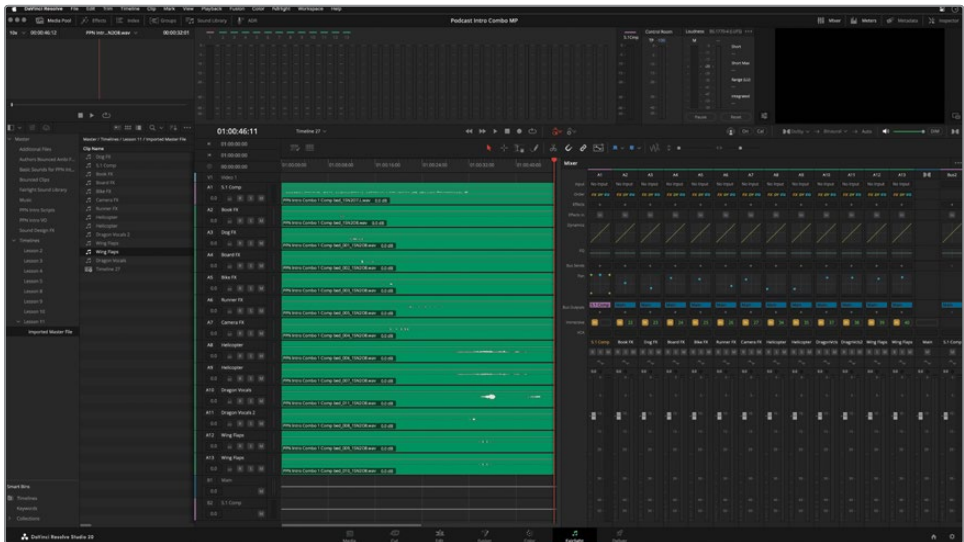
8   If necessary, set the monitoring controls to Binaural if you are listening with headphones, or whichever format matches your current monitoring speaker configuration.

9   Play the timeline once from the beginning to hear the Dolby Atmos mix of your podcast intro.

Wow! This podcast intro has come a long way since you created it from scratch in Lesson 1. Let's quickly look at the Patch Input/Output settings for the Dolby Atmos Send to see how the master was patched before rendering.

10 Choose Fairlight > Patch Input/Output.

11 In the Patch Input/Output window, set the Source to Track Direct and the Destination to Dolby Atmos Send.
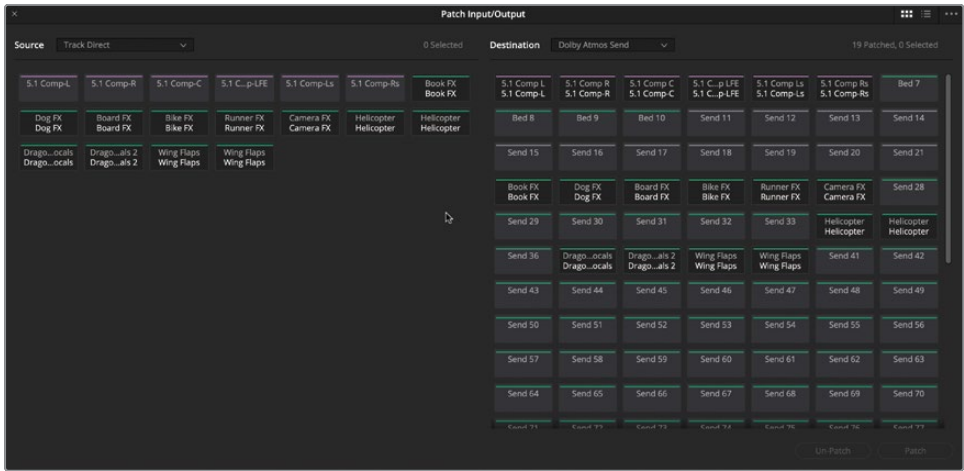
Here you can see that the six 5.1 bus channels were patched to the first six channels in the Dolby Atmos Send, and 12 FX channels were patched to 12 Dolby Atmos sends. The VO, music, ambience, and a few FX tracks were assigned to the bed bus and therefore don't have associated object tracks.

Remember, there can only be 128 channels in a Dolby Atmos master file, and the first 10 channels are reserved for bed bus channels. Other than those restrictions, you can assign objects to any open object sends between Send 11 and Send 128.

12 Feel free to explore the Space View and panning curves on this timeline before moving on to the next exercise.

In the next exercise, you'll create an original Dolby Atmos ADM master from the Fairlight timeline.

Creating Original Dolby Atmos Content in DaVinci Resolve

DaVinci Resolve Studio makes it easy to patch, mix, and export any soundtrack into a Dolby Atmos master file via the internal Dolby Atmos Renderer. In this set of exercises, you'll continue working with your Podcast Intro Combo project as you follow the workflow from a 5.1 mix to a rendered Dolby Atmos ADM master. A Dolby Atmos ADM (Audio Definition Model) is a standardized file format, based on the Broadcast Wave Format (BWF), that stores both audio and metadata for Dolby Atmos mixes. First, you'll reopen the 11e timeline, enable the Dolby Atmos Renderer, and patch the bed and object tracks to the Dolby Atmos Sends for the bed bus and objects going to the renderer. Once patched, you can export an original Dolby Atmos master file right from the Fairlight page.

1   In the Media Pool > Timelines > Lesson 11 bin, open the **11e Dolby Atmos Bus and Bed** timeline.

Earlier in this lesson, you enabled the Dolby Atmos Renderer in the preferences. Let's verify that the renderer has been enabled, since this is a necessary step for generating a Dolby Atmos master file in DaVinci Resolve.

2   Choose DaVinci Resolve > Preferences. In the Preferences window, System preferences tab > Video and Audio I/O, scroll down to the Dolby Atmos settings and make sure that the Dolby Atmos Renderer is enabled. If necessary, enable the Dolby Atmos Renderer and then quit and reopen DaVinci Resolve.

3   Open the **11e Dolby Atmos Bus and Bed** timeline, if necessary.

4   In the mixer, notice that there are four 5.1 (6 channels) submix busses, including FX 5.1, bgFX 5.1, MX 5.1, and DX 5.1.

These submix busses are all routed to the lime-green 5.1 Comp bus.

5 While in the mixer, look for the 5.1 Comp bus assigned to the Dolby Atmos Master bus.

Notice that the tracks are all either assigned to a submix bus, which is in turn assigned to the 5.1 Comp bus as part of the bed mix, or assigned to the Master bus as objects.

Now that you've identified the timeline bussing for this mix, let's assign the tracks and busses to the renderer.

Using the Patch I/O Window to Patch Channels to the Renderer

Which sounds should be busses and which are objects is very subjective, depending on how you want to mix your soundtrack and the amount of control you want to retain versus assign to the Dolby Atmos Renderer. For this simple podcast intro timeline, the sounds controlled by the VO characters—such as the book, dog, skateboard, bike, and camera—will all be objects. Fixed sounds—such as birds, park ambience, and music—will continue as channel-based bed sounds. The helicopter and dragon sounds will all be objects, except the Roar track, which will continue as a bed sound. Let's start by patching the bed bus channels, followed by the object tracks to the Dolby Atmos Sends.

1 Choose Fairlight > Patch Input/Output.

2 Set the Source to Bus Out and the Destination to Dolby Atmos Send.
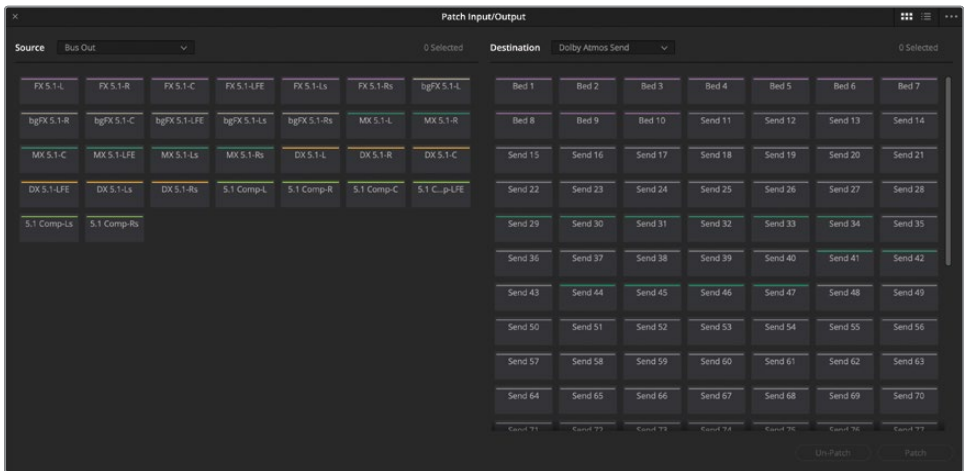
In the Source area, you can see all six channels for each of the five busses, including FX 5.1, bgFX 5.1, MX 5.1, DX 5.1, and 5.1 Comp. This version of the 5.1 Dolby Atmos mix has all four submix busses assigned to the 5.1 Comp bus and the 5.1 Comp bus assigned to the Master as the only bed bus for this mix. Therefore, you'll only need to assign the six 5.1 Comp channels (lime-green) on the Source side to the first six Bed Sends on the Destination side.

3   On the Source side of the Patch Input/Output window, select all six lime-green 5.1 bus channels. Then, on the Destination side, select Bed 1–Bed 6.
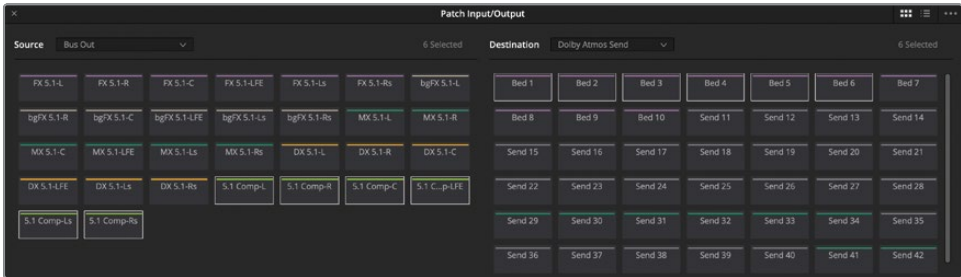
4   Click Patch.
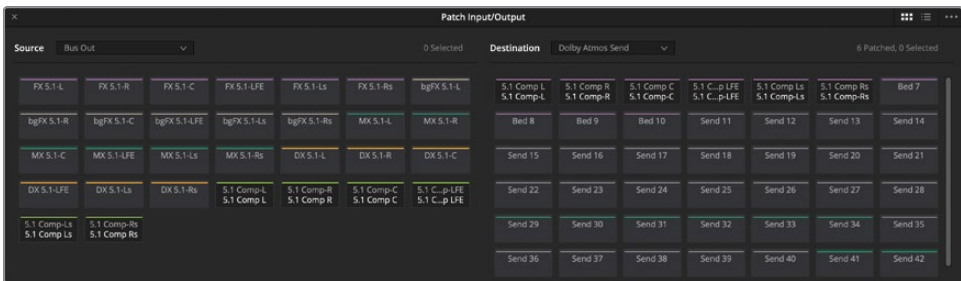
The Bed bus has been patched to the renderer, but you still need to assign the object tracks.

5   In the Patch Input/Output window, set the Source to Track Direct.
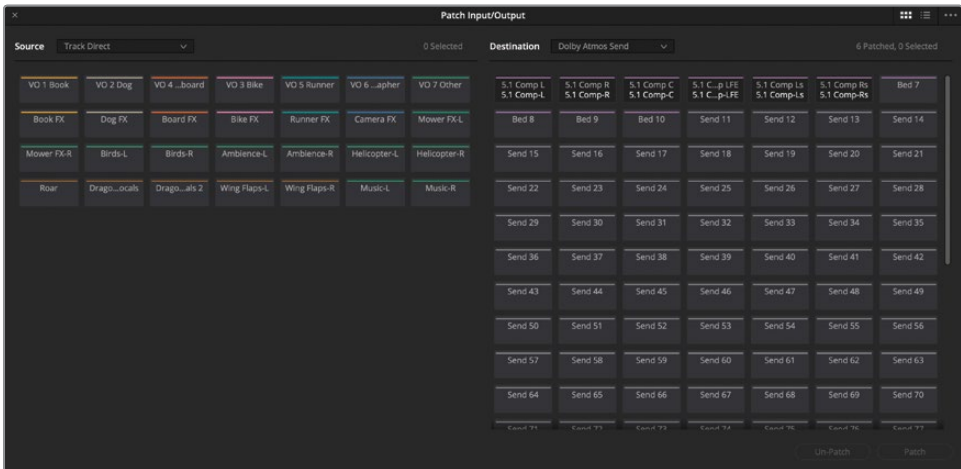
Here, you'll see all the audio track channels. Now, you only need to choose which channels you want to use as objects. You could pick and choose channels, or select and patch all the FX channels, then unpatch any channels you don't want to be assigned as objects. In this example, you'll try the latter option and patch all the FX channels, and then unpatch the channels that remain assigned to the bed bus.

6 Select all 21 Source channels from Book FX to Music-R. Then, on the Destination side, select 21 consecutive sends.
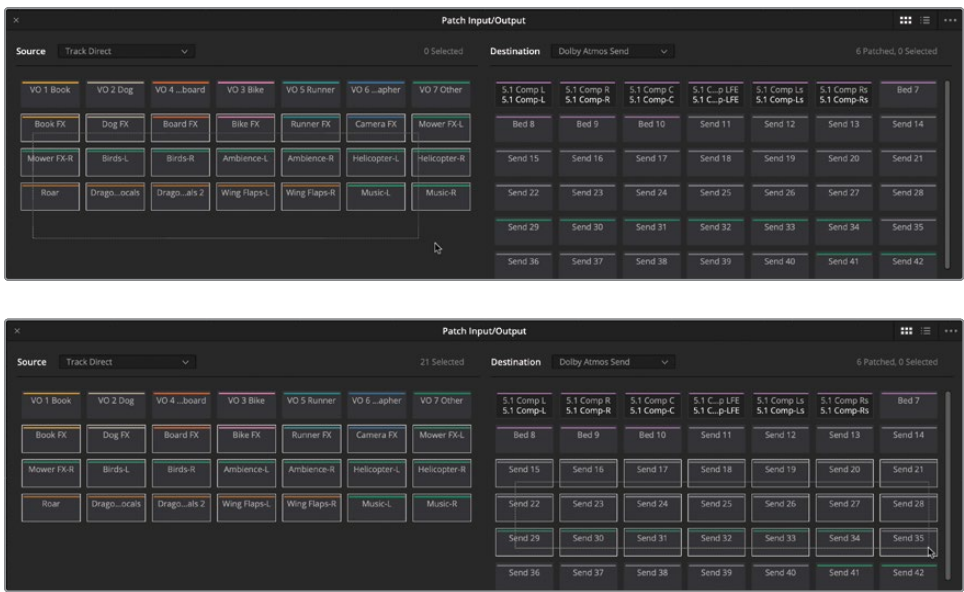
7 Click Patch.

8 The Sends have been patched to the internal Dolby Atmos Renderer.

Next, you'll select and unpatch the channels you don't want to send as objects.

9 On the Source channels, select Mower FX-L, Mower FX-R, Birds-L, Birds-R, Ambience-L, Ambience-R, Roar, Music-L, and Music-R. Click Un-Patch.
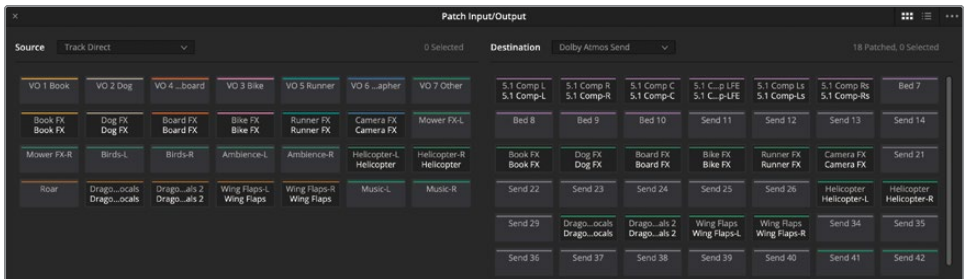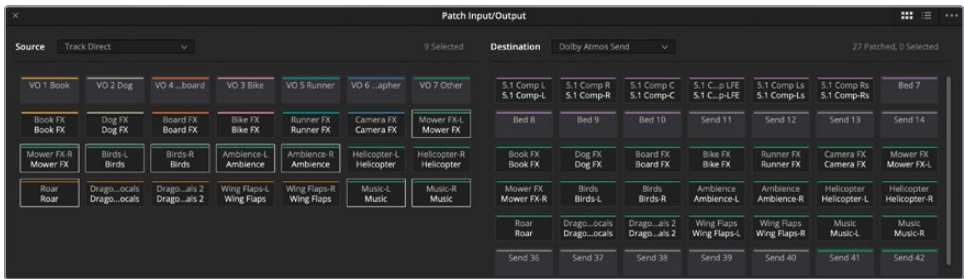
The Patch Input/Output window updates to show the bed and object patching.

10 Close the Patch Input/Output window.

11 Play the timeline once from the beginning to hear this Dolby Atmos version of the podcast intro.

> **NOTE** To see which channels are assigned as object sends to the internal Dolby Atmos Renderer in the mixer, you'll need to enable the Immersive Objects option in the mixer options menu.

Exporting a Dolby Atmos Master File from the Fairlight Timeline

Once your mix is patched and ready to deliver, you can export a Dolby Atmos master file right from the Fairlight page timeline. In this exercise, you'll go to the Immersive Audio tools in the Fairlight menu, where you'll work with the Export Master File dialog to learn another method for exporting an audio-only ADM or IMF IAB Dolby Atmos master file from your own mixes and original content. First, you'll need to mark a range in the timeline that you wish to export as a master file.

1 Mark an In point at the beginning of the **11e Dolby Atmos Bed and Bus** timeline.

An Out point will automatically be set after the last frame of media in the timeline.

2 Choose Fairlight > Immersive Audio > Export Master.

3 In the Export Immersive Master dialog, set the following options:
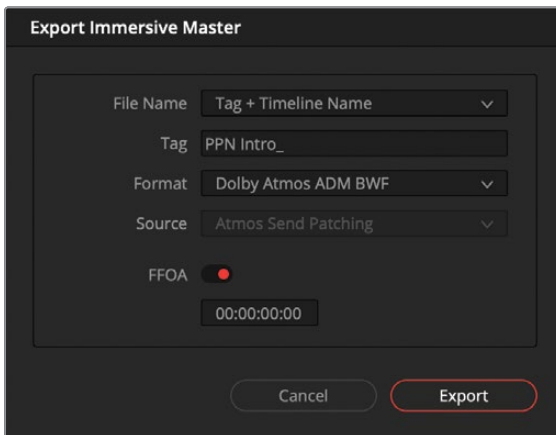
— File Name: Tag + Timeline Name
— Tag: **PPN Intro_**
— Format: Dolby Atmos ADM BWF
— Source: Atmos Send Patching (automatic)
— FFOA: Enabled

4 Click Export.

5 In the Export Immersive Master window, navigate to the PPN Podcast Intro folder.

6 Click Save.
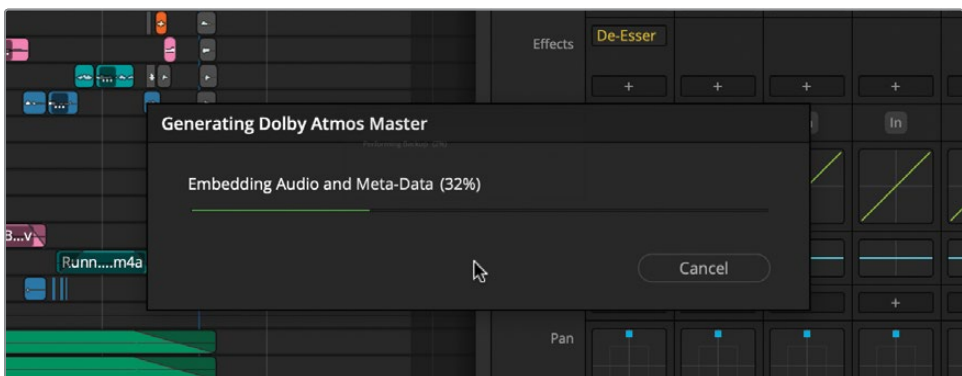
A progress dialog indicates that a new master file is generated from the current timeline.

> **NOTE** If you did not complete the earlier lessons, create a new folder for the PPN Intro master file.

Well done! You've generated a new Dolby Atmos master file from an original project. In the next exercise, you'll examine a more complex mix of the same timeline and the corresponding master file.

Exploring a Dolby Atmos Master with Multiple Beds and VCAs

In the previous exercises, you worked with a simple Dolby Atmos mix with one 5.1 comp bed bus. In this exercise, you'll create a more complex Dolby Atmos mix with four bed busses based on the submix busses and two VCAs for additional control of the mix before and after the Dolby Atmos master file is created. You've already performed most of the tasks in this exercise earlier in this lesson, so you'll primarily be practicing your skills and learning how to create VCAs along the way.

1   In your Podcast Intro Combo project, open the **11g Dolby Atmos 4Beds and 2VCAs** timeline.

2   Expand the mixer as needed to see all the busses.
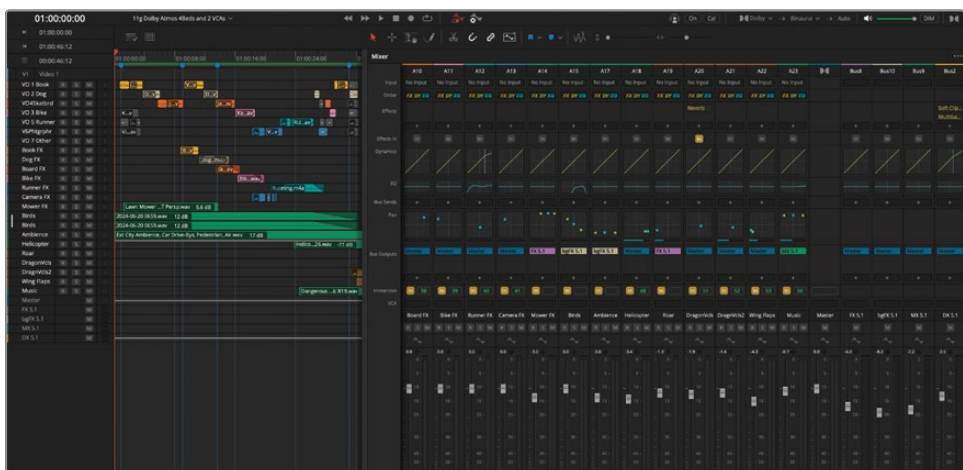
Here, you can see four 5.1 busses, including FX 5.1, bgFX 5.1, MX 5.1, and DX 5,1.

In this timeline, instead of assigning these busses as submix busses to a 5.1 Comp bus, and then assigning the 5.1 Comp bed bus to the Dolby Atmos Master bus, each of the 5.1 submix busses were assigned as bed busses to the Master bus.

3   Choose Fairlight > Patch Input/Output to open that window.
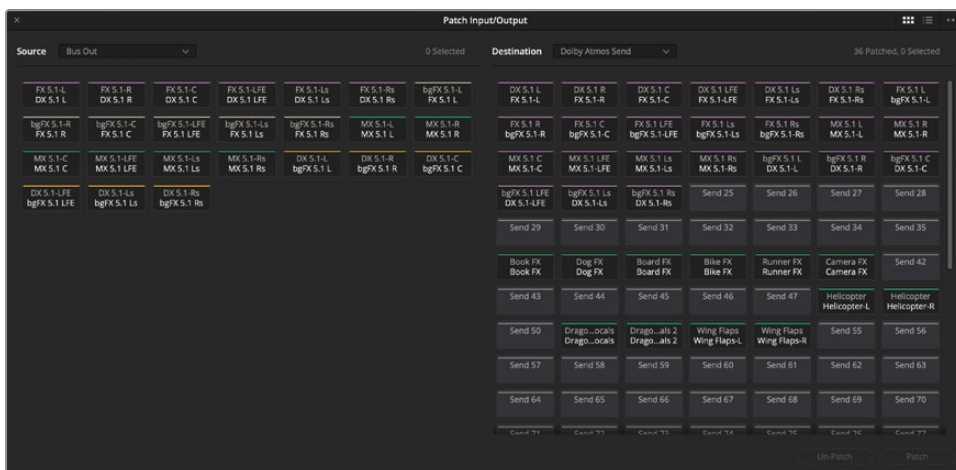
In the Destination Dolby Atmos Send settings of the Patch Input/Output window, you can clearly see four busses assigned to the first 24 sends, including DX, FX, MX, and bgFX. You can also see that there are 12 object channels assigned to as many sends.

4   Close the Patch Input/Output.

Now that you've seen how the bed busses and objects are assigned to the renderer, let's create two VCAs.

Creating VCAs in the Fairlight Mixer

In audio post mixing, a VCA acts like a master volume control for a group of tracks. A VCA is a special fader that lets you control the overall volume of a group of tracks at once without changing their individual settings, making it easier to adjust and balance your mix. In this exercise, you'll create two VCAs to add level control to the park FX objects and dragon sounds. In DaVinci Resolve, both VCAs and bed busses are incorporated when you generate a new Dolby Atmos master file and offer additional controls for playback and re-renders from the master file.

1   In the mixer, look for the park sound FX that are not assigned as objects. Hint: They will not be assigned to the Master bus or have a green send number in the Immersive Objects area of the mixer.

2 Select the following park-related FX channel strips in the mixer: A8 Book FX—A13 Camera FX. Option/Alt-click the VCA field above the track names for the selected track and choose VCA 1.

3 In the mixer, select the A20–A22 Wing Flaps tracks.

4   Option/Alt-click the VCA field for the selected tracks and choose VCA 2.

You can clearly see the VCA name beneath the designated tracks in the VCA row on the mixer.

NOTE To open the full VCA Assign window where you can see and modify VCA assignments, choose VCA Assign from the bottom of the VCA dropdown menu in the mixer.

Customizing VCAs

Once you've created a VCA, you can change the name and color in the Tracks Index.

In this exercise, you'll name VCA 1 "Park-FX" and VCA 2 "Dragon." You'll also change the color of the Dragon VCA to brown.

1   Hide the media pool, if necessary.

2   Show the Tracks Index.

At the bottom of the Tracks Index, you'll see the current VCAs listed.

3   In the Tracks Index Name column, name VCA1 **Park-FX** and VCA2 **Dragon**.

Now that you've named the VCAs, let's change the Dragon VCA to brown.

4   In the Tracks Index, right-click VCA2 and choose Change Track Color > Brown.

The new VCA names are also visible in the mixer.

That's it. You've customized the VCAs in just a few simple clicks.

NOTE Adding VCAs and multiple bed busses won't change the sound of your mix; instead, they offer more control during the mix, and when working with a rendered master file. Additionally, there are more custom re-render options in the Bounce Mix to Track window when a master file has multiple bed busses, such as when rendering a full mix or individual bed busses.

Exploring the Multi-Bed Dolby Atmos Mix

This last exercise will be a self-guided exploration of the Dolby Atmos podcast intro with four bed busses and two VCAs. Using the skills you've learned in this lesson, you'll import a finished master file and test the VCAs in the mixer.

1   Using the Immersive Audio toolset in the Fairlight menu, import the **PPN Intro Combo w VCAs.wav** master file located in the R20 Fairlight Part 4 folder. Tip: Before

importing, remember to open the bin in the media pool where you want the imported timeline and rendered files to be located. You can use the Imported Master File bin.
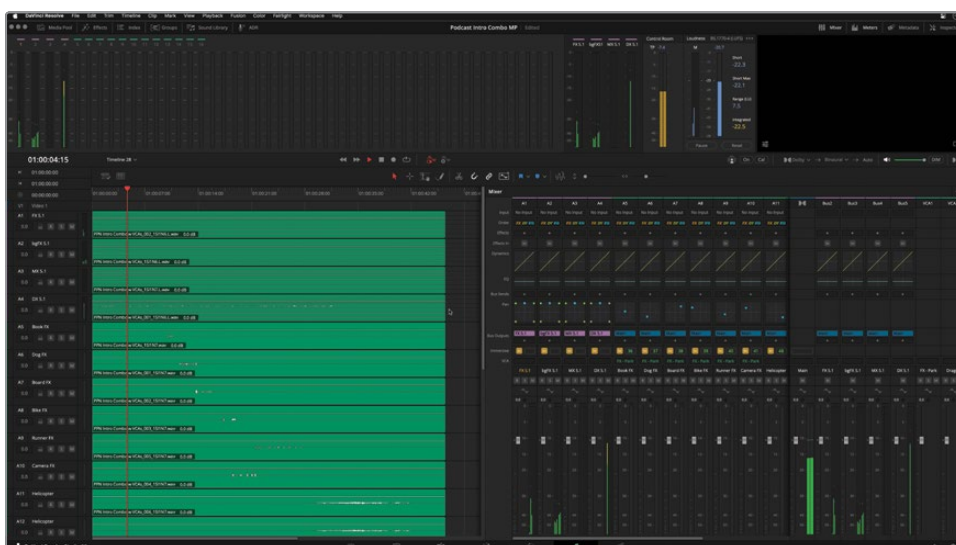
2   Play the timeline and look at the bed busses and object tracks in the timeline and mixer. Toggle the monitoring controls between Binaural, 2.0 (stereo), and other Dolby Atmos formats.

Notice that everything set up in the original mix timeline was incorporated into the Dolby Atmos master file except the custom track, clip, and VCA colors.

> **NOTE** The Dolby Atmos renderer uses only three colors across all platforms: purple for bed busses, blue for the Master bus, and green for the object tracks. Once you've imported a Dolby Atmos file, you can change the track and VCA colors while working in DaVinci Resolve.

3   Use the Space View to see the relationship of the bed sounds and objects in 3D space.

4   Open the **11g Dolby Atmos 4Beds and 2VCAs** timeline. Adjust the faders and mix to your liking. Export a new master file from the Immersive Audio toolset in the Fairlight menu.

5   Feel free to experiment with the individual track levels, busses, and VCAs.

That concludes your Dolby Atmos exploration for this lesson. Feel free to revisit the Nature's Fury project and use it as a study guide for observing, listening to, and exploring Dolby Atmos integration in DaVinci Resolve Studio.

> **NOTE** If you want to learn more about working with Dolby Atmos, you'll find more information at the *Dolby.com* website. Here are some helpful links to some of the Dolby Atmos resources:
>
> *https://www.dolby.com/technologies/dolby-atmos/*
>
> *https://professional.dolby.com/content-creation/Dolby-Atmos-for-content-creators/*

Lesson Review

1   True or False? Immersive formats such as Ambisonics and Dolby Atmos require the Studio version of DaVinci Resolve.

2   Where do you enable a project for Immersive workflows?

   a)   Inspector

   b)   New Project window

   c)   System Preferences

   d)   Dolby Atmos Renderer settings

3   How many channels are in a 1st-order ambisonics track?

   a)   1

   b)   2

   c)   3

   d)   4

   e)   There are no channels in ambisonics tracks

4   Which Ambisonics Meters are available in the viewer (choose all that apply)

   a)   Spherical

   b)   Power Map

   c)   Sonar

   d)   Waterfall

   e)   Image Mapping

5 In DaVinci Resolve 20 Studio, you can export which types of Dolby Atmos master files?

  a) XML and AAF

  b) ATMOS and BWF

  c) PCM and IMF IAB

  d) IMF IAB and ADM BWF (.wav)

6 Where are the Immersive tools located in the Fairlight page?

  a) Fairlight menu

  b) Dolby Atmos Render menu

  c) Patch Input/Output window

  d) Mixer

7 Where in the Fairlight page do you find the option to import a Dolby Atmos master file so it will re-create the full mix, including content, automation, bed, and object tracks?

  a) File menu

  b) Fairlight menu

  c) Media pool

  d) Mixer

8 What does the 2 represent if you are monitoring a Dolby Atmos 7.1.2 master file?

  a) Overhead channels

  b) LFE subwoofer channels

  c) Immersive channels

  d) Object channels

Answers

1 True.

2 c. Immersive audio formats including Dolby Atmos are enabled in the Video and Audio I/O panel of the System Preferences window.

3 d. First-order ambisonics comprises four channels.

4 b, c

5 d. You can export IMF IAB and ADM BWF master files from either the Fairlight timeline or the deliver page.

6 a

7 b. You can import a master file in the media pool as a single clip that will play back through the Dolby Atmos Renderer, or import a master file through the Fairlight menu Immersive tools to re-create the entire mix.

8 a

Congratulations!

You have completed *The Fairlight Audio Guide to DaVinci Resolve 20* and are ready to explore more editing, visual effects, color grading, and audio mixing functionality using the additional certified books in this series. Completing all the lessons in this book has prepared you to become a certified DaVinci Resolve user. You can take the online certification exam by following the link below to earn your certificate.

We also invite you to become part of the DaVinci Resolve community by joining the web forum on the Blackmagic Design website: https://forum.blackmagicdesign.com

There, you can ask further questions about the creative aspects of editing, color correction, visual effects, and audio mixing.

We hope you have found DaVinci Resolve's professional audio tools intuitive to learn and a perfect fit to become the hub of your creative workflow.

Test your skills by taking the online assessment located on the Blackmagic Design DaVinci Resolve Training page—The Fairlight Audio Guide to DaVinci Resolve 20 Online Exam: www.blackmagicdesign.com/products/davinciresolve/training

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The Fairlight Audio Guide to

DAVINCI RESOLVE 20

Blackmagicdesign

DaVinci Resolve 20 features a dedicated Fairlight audio page built right in! This official Blackmagic Design hands on training guide will teach you the art of sound editing, sweetening, recording, mixing and delivering. Beginning audio editors and assistants will find clear, workflow driven lessons, while seasoned audio professionals will quickly learn Fairlight's user friendly tools for creating incredible soundtracks. Best of all, you never need to send projects out to another application because Fairlight is just a click away from your editing timeline!

What You'll Learn

- Navigating and customizing the Fairlight page
- Working with the Fairlight Sound Library
- Creating and editing dialogue, music and sound effects tracks
- Recording voiceover, ADR and Foley tracks
- Working with audio track layers to stack, split and build a composite
- Balancing clips and tracks
- Repairing and replacing unwanted sounds like clicks, pops and hums
- Using Track FX to improve dialogue tracks
- Enhancing and sweetening tracks with native EQ and dynamics
- Automating track changes over time
- Using busses, nested timelines and track groups to simplify mixing
- Finishing your soundtrack, bouncing tracks and delivering a final mix
- Exploring the Fairlight immersive sound integration toolset.

Who This Book Is For

This book is designed for both beginners and professionals. Beginners will find clear lessons to get up and running quickly. If you're a professional switching from another system, you'll find lessons that cover everything from recording and editing tracks to mixing and finishing. You'll also find dozens of pro tips and tricks that will help you work smarter and faster!
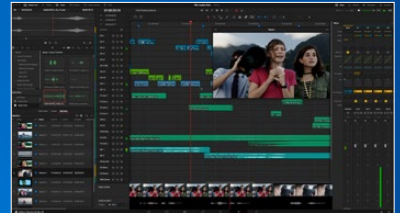
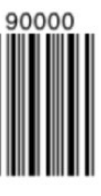**Full Digital Audio Workstation**
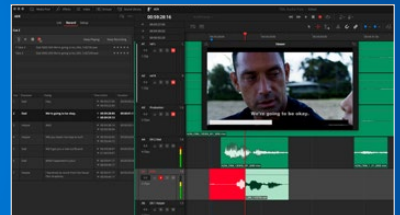
Professional Recording and ADR Tools
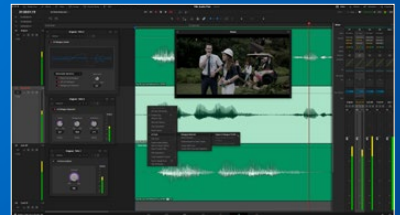
Powerful AI Based Dialogue Repair

Immersive Audio Integration