

Video Script

Kaleidoscope 5 Viewer for Bat Analysis

Welcome to Wildlife Acoustics and Kaleidoscope software.

Download Kaleidoscope from WildlifeAcoustics.com. There is no charge and Kaleidoscope will run on the latest Windows, Mac, and Linux operating systems.

Kaleidoscope is a powerful set of tools which are used for analysis of wildlife recordings. Kaleidoscope can be upgraded to Kaleidoscope Pro, which then provides the features of auto-ID for bats, cluster analysis, noise level analysis, and database and cloud functions. In this video we're going to explore what can be done with the free download of Kaleidoscope, with an emphasis on the Viewer window.

When I launch Kaleidoscope the first thing I see is the Control Panel. I'm going to choose to Set Defaults from the File menu. This video is for people working with recordings of bats, so I'll choose Bat-analysis mode. In this video I'll highlight the functions specific to ultrasonic range recordings and I'll ignore buttons and menus that are specific to the lower acoustic range.

I'll go to the File menu and choose Open. Now I'll navigate to a standard .wav audio file. Let's take a look.

When I open an audio recording file from within Kaleidoscope, that causes the Viewer window to open. The Viewer provides visual and audible feedback and analysis of the content of the recording. In the top part of the Viewer is the oscillogram. The oscillogram displays a waveform of the audio signal and is typically most useful for observing amplitude at any given point. I can expand the oscillogram window to show a larger view. I can zoom in or out vertically with these buttons. You can see the amplitude here correlates with the activity in the spectrogram window below. This button allows me to switch between seeing the positive and negative energy of the waveform or just seeing a rectified view of one side of the waveform.

The bottom part of the Viewer window displays the Metadata Panel. If I scroll, I see the metadata that was embedded into the recording by the Echo Meter Touch 2 recorder. This includes things like location, time, and date of recording, and recorder settings such as sample rate, high pass filter, trigger settings, and so on. I'm going to explain the Metadata Panel further in a separate video which will also cover the Control Panel window and overall batch processing of files. I don't need the Metadata panel in order to use the basic functions of the Viewer window. So I'm going to press this button to close the Metadata panel. I now have more room to display the oscillogram and spectrogram.

The Viewer provides extensive zoom and scroll functions. I'll start by pressing the vertical zoom to fit button. This fills the window with the full frequency range of the audio file. I can zoom in and out vertically and scroll the view. I can zoom to fit horizontally to display the entire length of the file. There are plus and minus buttons to zoom in and out. And I can scroll left and right and up and down.

The Viewer makes extensive use of keyboard shortcuts for fast operation. For example, if I want to use keyboard shortcuts to zoom I first click on the Spectrogram to make it the window of focus. Then I press Control-Z and a number from the top of the keyboard. Here is the zoom preset for Control-Z-4. Here is the zoom keyboard shortcut for Control-Z-5.

Video Script

I'm going to click and drag to draw a box around this signal. I can right click and get an option to zoom to fit. I'll choose that and you can see the Viewer has now zoomed to my selection.

This button toggles between compressed view and real-time view. Compressed view hides the space between individual bat calls, so you can see more calls in the window at close zoom settings.

This button toggles the zero-crossing view. It's a three-state button. Zero crossing view can be on, off, or on with color coding to show the flattest part of the call. It's also possible to turn the full spectrum view off to show just the zero crossing view, using this button.

The spectrogram view shows frequency from top to bottom. There is a frequency ruler on the left. Time is displayed from left to right and there is a time ruler along the bottom. Color coding is used to represent relative amplitude of the full spectrum audio signal. I can use the brightness slider to increase amplitude and the color intensity changes. There's also a contrast slider to remove background noise.

If I want to copy and paste the entire Viewer window I can choose that option from the File menu. I can also choose to save a wav file of a selection or the entire visible contents of the window.

This button inverts the color display and that might be useful if you want to print the contents of the window without using up all your black ink.

If I right-click in the spectrogram I can place a horizontal guide line. I can right click a second time to place a second guide line. If I right click a third time I placed a new line and the first line I placed goes away. You can see there is a crosshair where I locate my mouse, and this shows elapsed time in the file, as well as frequency. The reference lines are a great way to compare frequencies of multiple signals. If I double-right-click the lines go away.

I'll make a selection. If I press this button that will open a Viewer Analysis window. The analysis window shows me information about the zero crossing and full spectrum of the selection. For example my selection includes three bat calls and one of the parameters in the analysis window is N, which shows me the number of selected pulses. If no selection is made the analysis window shows information about the entire visible area of the window. If I right click on the Analysis window I can copy the graphic of the spectrogram or all the displayed statistics. I can then paste the zero crossing and full spectrum statistics into a spreadsheet application or paste the spectrum view into a graphics program.

I can play the file. In order to hear playback, I'll make sure my computer speakers are turned up. In order to hear the ultrasonic bat call I'll slow down the playback to 1/10th of it's original speed. I also want to hear the call sequence played back with the same relative timing between pulses, so I'll exit the compressed view. There's a lot going on in this recording. This looks like a feeding buzz and I think this bat is having dinner. Let's give it a listen. I hear some low frequency noise in this recording. I can clean that up by clicking and dragging in the frequency ruler to create a band-pass filter. Now when I play back I only hear the selected frequency range and the low frequency noise is gone. If no selection is made the play button plays what is currently visible in the window.

If I make a selection and press play I only hear what is selected. If I want to get rid of the bandpass filter I can double-click on the frequency ruler.

There's a lot to know about Viewer window. I definitely recommend reading through the Viewer

Video Script

section in the Kaleidoscope User Guide. Be sure to check out the companion video that explores the Control Panel window, batch processing, and how to add manual IDs. And, Wildlife Acoustics also has an extensive library of tutorial videos for the Kaleidoscope Pro functions.

Thanks for watching!