Roundup

Every month we compare tons of software, so you don't have to!

AUDIO EDITORS

Don't you just hate it when the purity of minimalist electronica is threatened by the presence of a tune? Why not do what Graham Morrison does and cut it out with an audio editor?

ON the DISC

Audio editors aren't just the domain of musicians. Sooner or later, even normal listeners would like to edit a radio show, or trim and combine sections of music together. Used in that context, the editor needs to be easy to understand, efficient and able to get the job done without the user requiring too much specialist knowledge. It's a similar situation with *Gimp*, where users are far more likely to be editing their photos or images on their own websites than using it professionally.

This Roundup contains seven audio editors, all capable of taking your original sound file and mangling it beyond recognition. The selection of applications isn't quite what you might expect. We've included the biggest names, such as *Audacity* and *ReZound*, which use the familiar amplitude waveform interface augmented by dozens of smaller tools for fading and effects, but there are also a few that take a different approach.

FreeWheeling, for example, allows you to record, cut and paste everything in real time while you're playing the music. It attempts to create a performance out of the editing process. The same is true of *Sweep*, which may look like a normal editor, but the cursor actually moves with inertia, playing whatever it passes over as if it were a stylus on a record player.

The remaining editors, *Glame*, *WaveSurfer* and *Freecycle*, focus on a specific editing task. Whether it's for an *ad hoc* filter network using *Glame*, or loop generation for samplers with *Freecycle*, they all have a slightly different approach. Each editor has its own unique set of features, but we've judged them on whether these help or hinder the editing process. There's no use in providing the world's best distortion sound if you can't accurately select the audio you want to apply it to. In the end, the main criterion for judging these editors is that they get the job done with the least amount of hassle; after all, that's what *Gimp* has become so good at.

OUR SELECTION AT A GLANCE

Audacity

One of the most comprehensive editors.

■ **VERSION** 1.2.3 ■ **WEB** http://audacity.sourceforge.net
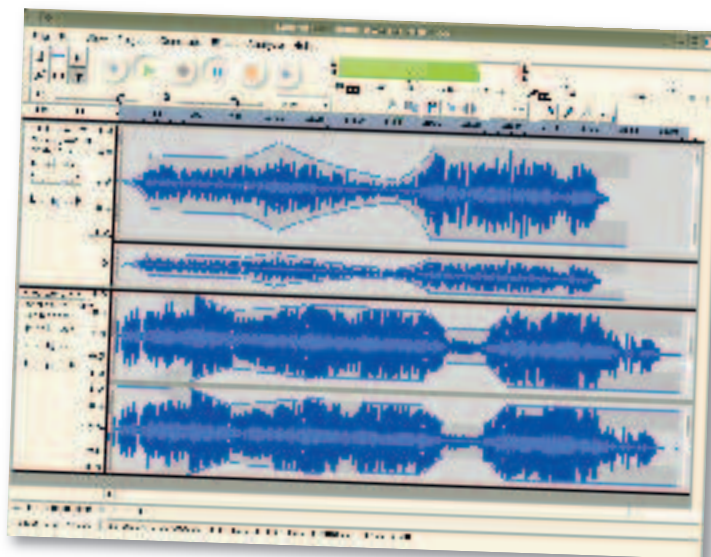■ **PRICE** Free under GPL

If you've ever edited an audio file using Linux, there's every chance you've used *Audacity*. It's one of the more functional and mature editors available, and this cross-platform application is extremely popular. Its design isn't going to set the world alight, but then you could say that about most audio editors and it shouldn't put you off *Audacity*, as it's perfectly capable of getting some serious results.

The most important feature is the multi-track support. It is possible to have up to 16 separate tracks stacked vertically in the main window, and record to any of them at the same time. This makes *Audacity* feel more like a multi-track recording application than an editor, but it's this same approach that has made *WaveLab* (on Windows) such an impressive application. It's a great way of compositing vocals, or editing dialogue, as you can move, edit and cut sections across all the channels.

The audio editing itself is also very well implemented; *Audacity*'s clever use of the cursor means that you can extend selections and loop points using just the mouse. There's also an excellent, non-destructive envelope mode for changing the volume of your audio over time. You're free to expand and contract each track view, so you can make the best use of your screen real estate by enlarging the tracks you're working on. As well as all this, *Audacity* keeps a history of every edit you've made, and you can move backwards, and forwards, through each edit should you need to retrace your steps.

Unfortunately, and unlike *WaveLab*, effects can still only be added offline, but at least there is a real-time preview available. You could always use *Jack* in some way, but it's still extremely difficult to make subtle changes. But without doubt the biggest criticism we have with *Audacity* has to be the sluggishness of the interface. Because of its versatility, the display can take a long time to update, and what should be simple things like moving the playing position are a little unintuitive. Otherwise, *Audacity* is an excellent application for getting the job done.

Amplitude envelopes can easily change the volume of the audio over time.

LINUX FORMAT VERDICT

The most functional editor available – there are few tasks *Audacity* isn't capable of. The only thing letting it down is its sluggish feel and quirky interface.
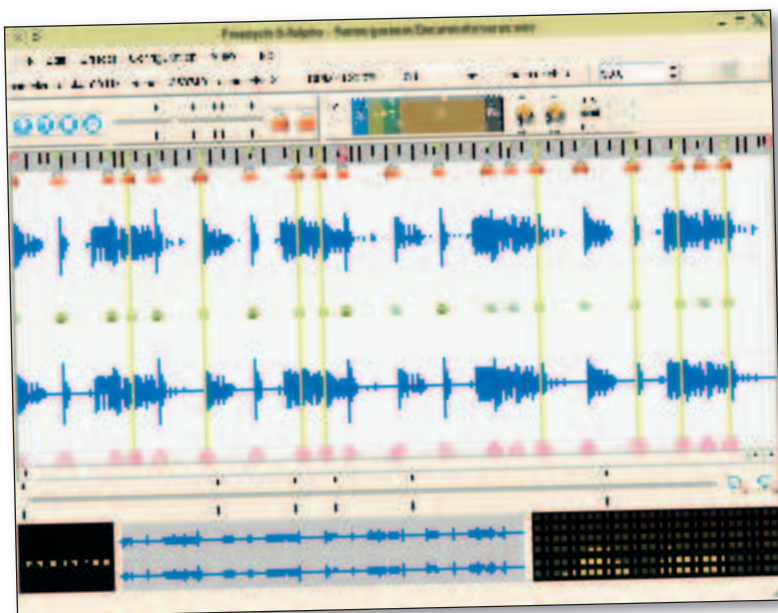
RATING   **5/10**

Freecycle

Beat slicing and loop creation.

■ **VERSION** 0.4alpha ■ **WEB** www.redsteamrecords.com/freecycle/index.php
■ **PRICE** Free under GPL

If you're familiar with other beat slicing tools, you'll feel right at home with the open source *ReCycle* clone, *Freecycle*.

For many years, an audio application called *ReCycle* has been at the heart of drum loop creation. Before *ReCycle*, you had to alter the playback speed of a loop to force it into the time signature of the tune you were working on. This changed the pitch of the loop, in the same way that speeding up or slowing down a tape affects the sound. Too slow, and it sounds like an Ent; too fast and it sounds like a cartoon chipmunk.

Most of the information the brain decodes from a sound is in the initial attack stage of a waveform, and it's this part *ReCycle* focuses on. By finding the starting point of each drum hit in a drum loop (called the hit point), the software is able to cut or add to the tail of each hit, without altering the frequency. As long as the change isn't too great, you won't notice, and a vast library of previously unusable drum loops can be recycled. That's where *Freecycle* comes in.

Freecycle shares many of its features with *ReCycle*, but also manages to add a few of its own, though both user interfaces look very similar. Most of the main window is taken up by a waveform display, with many of the main functions scattered around the periphery. As with *ReCycle*, the main control is the threshold slider, and it's this that's used to introduce the hit points. Lowering the threshold increases the number of hit points, which are drawn as vertical lines across the waveform. You can easily see when the hit points correlate with the beat, and you can even remove individual hit points by right-clicking on their small X icons.

Beat detection isn't restricted to amplitude threshold. You can also use frequency analysis, or several others courtesy of the *Aubio* library (yes, that is spelt with a 'b'), and an envelope can be created for every slice. Of course, none of this would be much use if you couldn't use the output in some way. As with *ReCycle*, you can export your beats in an Akai sample format, or as separate samples that can be played using an automatically generated MIDI file.

LINUX FORMAT VERDICT

A wonderful tool for slicing up beats; it just needs a little extra functionality.
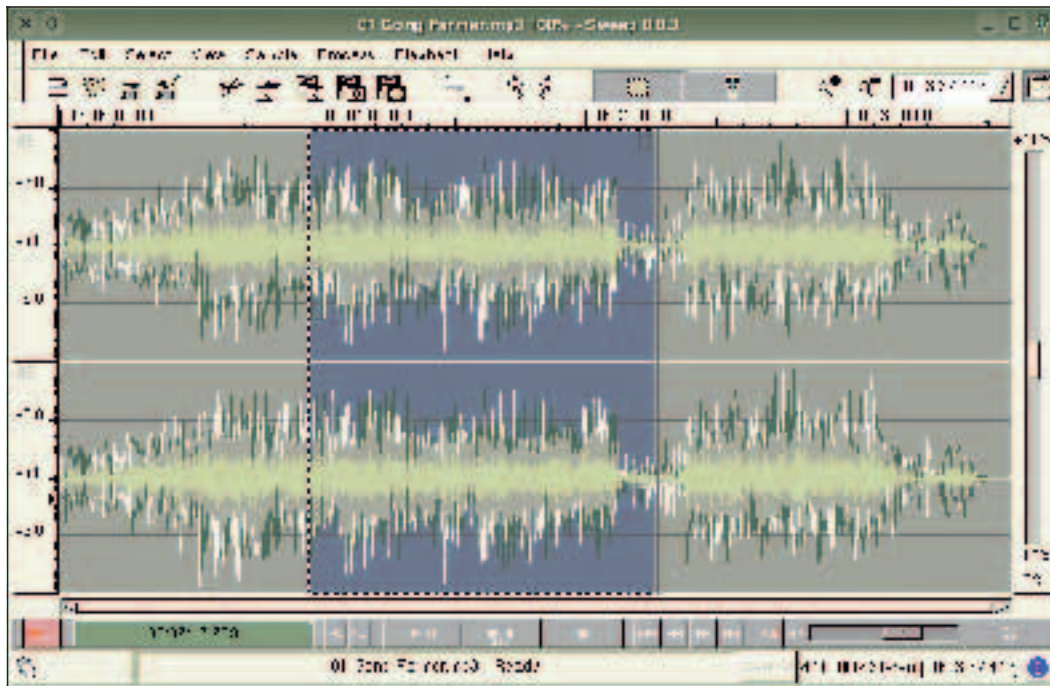
RATING   **7/10**

Sweep

Fun real-time editor that keeps things simple enough for newbies.

■ **VERSION** 0.8.3 ■ **WEB** www.metadecks.org/software/sweep ■ **PRICE** Free under GPL

It looks benign, but drag the cursor and *Sweep* comes alive.

Sweep is primarily developed by Conrad Parker under part-sponsorship from Pixar Animation Studios and CSIRO Australia (Australia's national scientific research organisation). The result of such heavyweight support is a professional design that's a step ahead of the competition, which is what you'd expect from an editor used at Pixar.

Sweep is excellent. Unlike nearly all of the other applications in this roundup, it is not functionally bloated and slow. It's fast and efficient. When you first load an audio file, you can see it instantly while the rest of the waveform loads in the background. This is what you need when you're working with audio, this is the way hardware used to work and this is how any software replacement should work.

If you've used some of the other audio editors available for Linux, you may have been left with the impression that it's impossible to have a responsive user interface, but *Sweep* will change your mind. You can fly through an audio file, select, copy and paste in seconds, and change the waveform magnification without ever having to stop and wait. The compromise is that it's nowhere near

as featureful as something like *Audacity* or *ReZound*. But, for the most common functions where you're cutting and pasting the beginning and end of audio tracks, it's perfect.

Like *FreeWheeling*, but unlike any other audio editor, *Sweep* actually has some real-time performance capability. The playback cursor, affectionately called Scrubby by the developers, can be thrown around the amplitude waveform in the same way you might move a stylus over a vinyl record. This means that the audio feels very elastic. As you drag 'Scrubby' over the track, the output speeds up and slows down as if the cursor had inertia, and you find yourself skipping the parts of the waveform you can easily recognise.

You can also use the keys on your Qwerty keyboard to trigger playback of the sound from the cursor position, at different pitches depending on the key you press. It's almost like sampling, and being able to drag and skip the cursor to differing positions while playing the audio from each point at

different pitches could be genuinely useful for those who like to remix their music. You can even reverse the playback by pressing a single button.

Remix heaven

This makes *Sweep* an excellent performance tool, and it's certainly a lot of fun to use. Run several instances of *Sweep* at the same time, for example, and the output of all of them is mixed automatically. You could have a drum beat in one, and use another as an *ad hoc* sample player, where you could jump between different sections of an audio file in time to the beat playing from the other instance.

Real-time performance capabilities may seem a little esoteric, but the bonus is that for normal editing tasks, the flying cursor makes the whole application feel very responsive. If *Sweep* were just an ordinary audio editor, it would still be good. It makes such a difference to be able to move around within a file the same way you can with editors for other systems. The user interface is just so responsive, even with large files. Selections can be extended or reduced by dragging the borders, and you can alter the playback speed using a large slider on the right. There are all the usual features you might expect, such as LADSPA effects, although you still can't preview them in real time.

A real editor

As with the rest of the app, you can work with the audio file while effects are processing in the background. Multi-channel files are also supported, so you can edit a whole suite of tracks in one go. With such a straightforward application, the only other feature to mention is the comprehensive edit history, allowing you to undo and redo any of your changes. It even has its own window from which you can see all your edits, enabling you to revert to and from specific points easily.

This is how an audio editor should be. It loads and saves all the formats you need, and does so quickly. The interface is uncomplicated, and it has every feature you will need for the

> ## "A PROFESSIONAL DESIGN THAT'S A STEP AHEAD OF THE COMPETITION – WHICH IS WHAT YOU'D EXPECT FROM AN EDITOR USED AT PIXAR."

majority of editing tasks. But the best thing about *Sweep* is that it's fast – you don't have to wait for the user interface to catch up, or for a process to finish before you can move on. *Sweep* has been designed to accommodate professionals who need that kind of performance, and it shows.

LINUX FORMAT VERDICT

This is the only editor that doesn't seem to get in the way of the edit. It's quick and it's functional and it makes it hard to use anything else.

RATING   **7/10**

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FreeWheeling

Why not bring a little serendipity to your editing?

■ **VERSION** 0.5pre4 ■ **WEB** http://freewheeling.sourceforge.net
■ **PRICE** Free under GPL

FreeWheeling **doesn't quite fit into** the same category as the other editors listed here, but it takes such an interesting approach that it's well worth making room for it. The program enables you to remix and edit your music in real time, either as a performance or written directly to an Ogg Vorbis file, and it does this through the most colourful and psychedelic user interface since *Attack Of The Mutant Camels*. In fact everything − from the title to the incredibly laid-back video tutorials by the author − feels rather freewheeling, for want of a better phrase.

The big difference between this and other audio applications is that you can't load a music file into *FreeWheeling*, not directly anyway. Instead, it relies almost entirely on the *Jack* protocol to both feed it with an audio stream and to drive the output. When there is an audio signal on its *Jack* inputs, the waveform is transformed into purple and scrolled from right to left across the lower half of the screen, and it's at this point that you can change things.

As you can see from the screenshot, the top half of the screen houses a graphical Qwerty keyboard. When you press one of those keys, *FreeWheeling* starts recording. With the next press of the same key, it stores a looping sample that can be triggered via further presses. Small circular representations of samples are drawn on to the corresponding key, and, like clubland revellers, they all start to rotate and pulsate in time with the music, a feature that's supposed to help you to trigger the samples in time. There's also a clever Synchronise option that can lock the tempo of all the loops together.

You could easily end up with a mess of sound blasting from your speakers, but if you take a more conservative approach, it does work very well. You can use *Jack* to introduce all kinds of other sounds, or tracks, and edit them together in a strangely intuitive way. There's even a built-in sample player (using *SoundFonts*) that can be triggered via MIDI and mixed on to a separate channel, but all this control can be overwhelming. This is one piece of software you really need to try before you rely on it for a mission-critical edit.

LINUX FORMAT VERDICT

Definitely worth a try for the different approach, but don't expect to get the hang of it quickly, or to be able to make any fine edits.
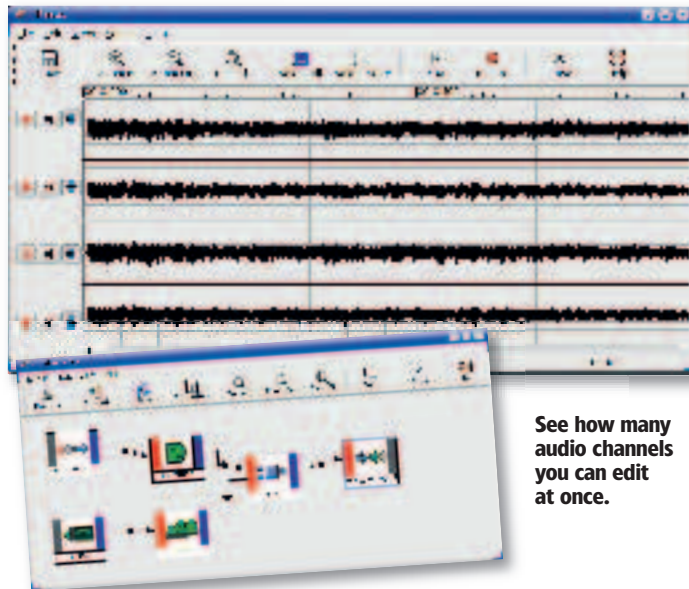
RATING   **5/10**
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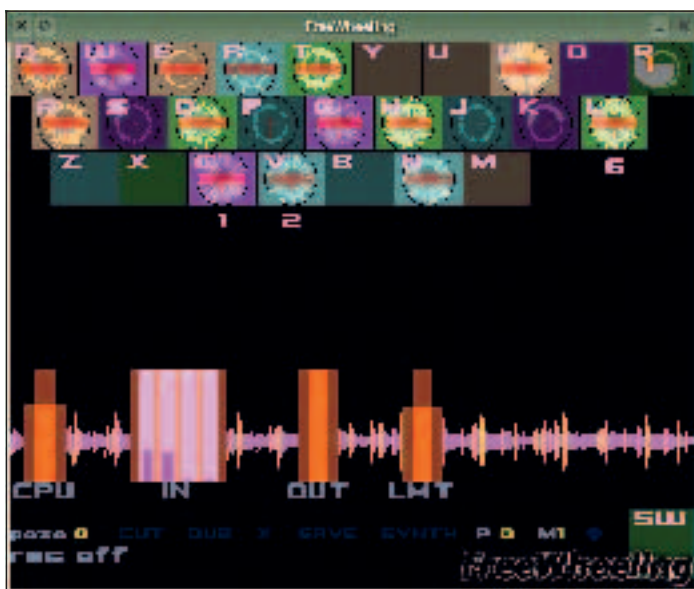
Look into my eyes, look into my eyes...

Glame

Established multi-track editor.

■ **VERSION** 2.0.1 ■ **WEB** http://glame.sourceforge.net
■ **PRICE** Free under GPL

See how many audio channels you can edit at once.

Glame **has been around for** a long time, and has recently been overhauled to provide support for the Gnome 2.0 desktop. It's an interesting piece of software because it doesn't work in the way you'd expect.

The first window you see when you start the application is for your audio projects. These are groups of audio files you can either record directly into, or import from external files. This is obviously meant for multi-track recording and editing, where you can record from several sources at the same time and group them into the same folder.

You can edit each audio file from either the parent folder or by selecting each file individually. If you edit the files in a folder they are all included in the edit window, so you can edit them at the same time as you would with a multi-track editor. But selecting a single file or a stereo pair means you get the more usual view. The really interesting part of *Glame*, though, is the filter network editor. It seems to have become something of a tradition with Linux audio applications that the makers need to offer functionality over and above the run-of-the-mill editing tools, and the filter network editor is just that.

The filter network is basically a modular interface for building your own effects, and even synthesizers.

Glame provides dozens of its own modules you can connect together, including Fast Fourier Transform analysis, echo and distortion effects, as well as saw, sine and noise oscillators. It's nearly as versatile as the *Alsa Modular Synth*, and provides almost limitless potential for changing your audio files beyond recognition. You can open the filter network editor while editing your audio files and *Glame* will automatically create channel inserts so you can process your file directly, or you can create a library of new networks from the project manager.

Editing stereo files may not be *Glame*'s strength, but its ability to edit more than two files at once makes a real difference. You can easily create a multi-track project, record-enable each track and record from eight separate microphones around a drum kit, for example. You could then conjure up a filter network to process all your hard work into a series of beeps and blips, and that's what makes *Glame* a particularly interesting piece of software.

LINUX FORMAT VERDICT

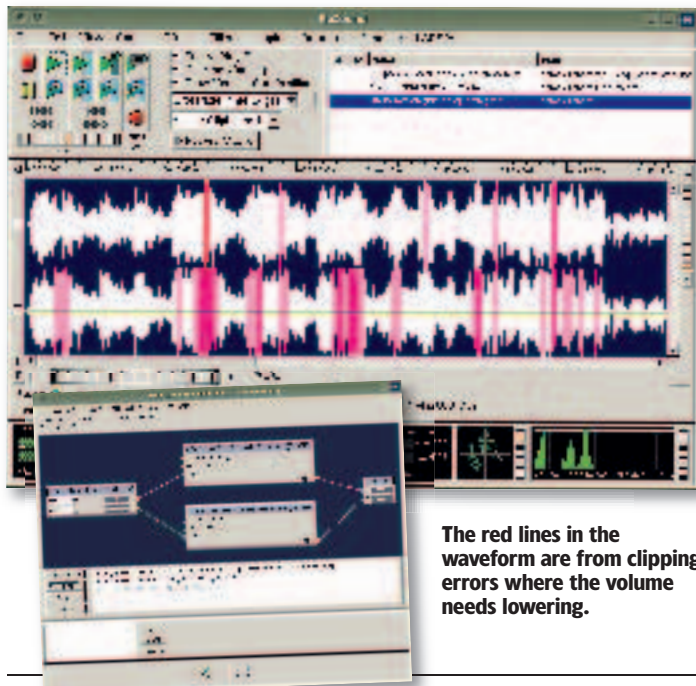The best option if you need to organise a lot of audio files, and a great filter network.

RATING   **6/10**
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ReZound

The best for stereo live recording.

■ **VERSION** 0.12.0beta ■ **WEB** http://rezound.sourceforge.net
■ **PRICE** Free under GPL

The red lines in the waveform are from clipping errors where the volume needs lowering.

ReZound **feels very like the first** generation of audio editors available for Windows PCs about six or seven years ago. The makers have gone for stability over bleeding–edge functionality, and the user interface is so stable it even manages to look like *SoundForge*, a popular Windows audio editor, circa 1999. Despite this, *ReZound* is definitely one of the better Linux audio editors available, simply because it works. It doesn't flinch when you attempt to load an MP3 or Ogg file, and you don't have to spend an eternity waiting for it to generate a large waveform.

The main reason you'll want to try *ReZound* is for its monitoring, as it's in this field that it really comes into its own. The real-time update of the signal levels, along with a stereo weight indicator, make this an invaluable tool for checking a final master before burning to a CD or uploading to your website. The meters are perfectly synchronised with the music (something that often evades even the best commercial editors), and clipping points, where the volume is too high, are clearly labelled as vertical red lines in the waveform.

Otherwise, *ReZound* works in a pretty straightforward way. The main view is dominated by the unavoidable waveform display, and you can select regions using the left and right mouse button. There are also a number of real-time controls, so you can skip though an audio file or change the amplification of a meter by scrolling your mouse wheel, or dragging a stylised bar. The waveform view is more responsive than on other editors, and the zooming speed in particular seems far more efficient than its peers.

The big problem with *ReZound* is that you can only add effects 'offline', without any preview. This part really does feel reminiscent of 1999, and while it is still possible to get good results, those of us who take real–time effect changing for granted are going to find it hard going.

LINUX FORMAT VERDICT

Another strong contender for the most featured editor, but excellent monitoring makes *ReZound* slightly more effective than *Audacity*.

RATING **6/10**

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WaveSurfer

**If you can't hear the problem, maybe you can see it.**

■ **VERSION** 1.8.3 ■ **WEB** www.speech.kth.se/wavesurfer
■ **PRICE** Free under BSD

WaveSurfer **is described as an** audio 'visualiser' rather than an audio editor. This doesn't mean it's totally bereft of editing tools – it does have rudimentary cut, copy and paste – but to use it solely for that purpose would be missing the point. If there are problems with an audio recording, they're often a lot easier to see than hear, which is where a visual tool like this comes in. *WaveSurfer* was developed at the Centre for Speech Technology (CTT) at the Royal Institute of Technology in Stockholm to aid research there, but don't worry about it being too academic: the application is easy to use.

When you load an audio file, you can view it using several predefined profiles, but you can also start with the amplitude waveform view. The best thing about *WaveSurfer* is that you can add and remove analysis panels as and when you need to. The range

analysis is also impressive; you're not just restricted to the spectrogram. Some of the highlights include a pitch contour, for mapping pitch against time for mono signals. It's also possible to plot other signals, such as power and formants on top of a spectrogram, which itself can be modified for either low or wide band analysis.

This may all sound rather technical, but in reality viewing a spectrogram of an audio file can reveal many problems without any specialist knowledge. Noise and hum stick out like two sore thumbs, as does the frequency range of a recording, which are some of the more common problems. There is also a transcription mode, where you can enter words in a horizontal strip, and if that's not enough, you can easily add functionality using the plugin architecture and the provided API. It looks a little like a Windows application,
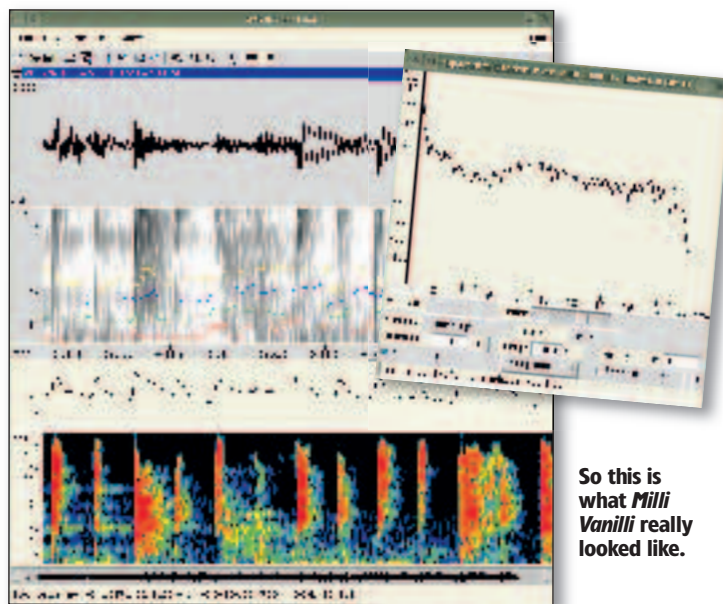
So this is what *Milli Vanilli* really looked like.

but *WaveSurfer* works instinctively, loading and playing large files with ease. If you rely on it for making edits, it can feel a little cumbersome. Updates are slow, and it's difficult to know whether the application has crashed or is still working, but it's worth it for the great visualisation tools. Analysis like this used to cost good money, but now it can be yours for free.

LINUX FORMAT VERDICT

Not too long ago, this kind of tool would have cost some serious money. Now you can have a great piece of analytical software for next to nothing, as long as you know what to do with it.

RATING **6/10**

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AUDIO EDITORS
THE VERDICT

All of the editors in this Roundup are good at something, whether it's *Audacity*'s multi-track display or *WaveSurfer*'s incredible visuals. There may be situations where you need to use a little of each, where you can use the advantages of one before moving on to another. That's the great advantage with open source, and it also means that each editor can concentrate on its own niche far better than any monolithic application could ever hope to.

There are several common problems with audio editors. They can take an age to load the original file, and any processing you perform on that file, whether it's cutting out a small section or applying an effect, can take almost as long as loading the file in the first place. While you can't reduce the CPU time it takes to perform all these actions, you can, to a certain extent, hide it in the background, and that's just what *Sweep* manages to do so well.

Sweep is the default audio editor with SUSE for good reason. Loading is transparent and fast, and the way it consigns processing to a background task – so you can still work on the audio file – is excellent. This is just what you need when you're working on something as interactive as audio editing. After using *Sweep*, it's hard to go back to the clunky approach of *Audacity* or *ReZound* unless you need some of their more advanced features.

Freecycle is worth a mention as it copies an excellent idea and does it well; it's the only option for creating percussive loops and for use with a sampler or a sequencer, but for general editing it's obviously not so useful. The same is true for *FreeWheeling*, which takes such an unusual approach you have to give the author credit for even coming up with the idea in the first place. But when it comes down to editing a file and getting the job done, *Sweep* just can't be beat. It's quick and easy for beginners to understand, and comprehensive enough for more demanding tasks. As a result it gets the award for the best audio editor in our Roundup. **LXF**

SWEEP 7/10

What you can't see in the image is that *Sweep* lets you drag the cursor over the sound in real time, which is a real boon.

TABLE OF FEATURES

Client	Real-time FX	Offline FX	LADSPA	24-bit	Synth	MIDI	Jack	Spectrogram	Ogg	MP3	Frequency analysis	Multi-track	Undo–Redo	History
Audacity		✔	✔	✔			✓	✔	✔	✔		✔	✔	
Freecycle	✔	✔	✔	✔			✓							
FreeWheeling	✔				✔	✔	✓		✔					
Glame	✔	✔	✔		✔				✔	✔	✔	✔	✔	
ReZound		✔	✔	✔			✓	✔	✔	✔	✔	✔	✔	✔
Sweep		✔	✔	✔					✔	✔	✔			✔
WaveSurfer	✔							✔	✔	✔	✔		✔	