Waves Restoration Bundle

Best known as a long time purveyor of high-end plug-ins, Waves has turned its attention to creating a powerful package of complementary audio restoration tools. ROB JAMES reaches for the vinyl and the earplugs.

I **HAVE BEEN PLAYING** about with products that purport to clean up recordings for as long as I can remember. Before digital audio became common we employed various strategies to improve location recordings and especially, gramophone records. Some techniques were purely mechanical, such as washing the discs, playing them wet, using various radii of stylus and different tracking weights. Other approaches involved filters and dynamics in various permutations and a rather ingenious Philips device that attempted to remove clicks. This relied on the fact that clicks often only occurred on one channel of a stereo recording. If it detected a click on one channel it substituted the other, hopefully silently.

I also experimented with Sonic Solutions No Noise, soon after it appeared, and have always listened avidly to Cedar demonstrations. In recent years many plug-ins and standalone software packages have appeared targeted, more or less successfully, at achieving the same goals. Namely to remove unwanted artefacts while causing minimum degradation to the wanted signal.

Waves' contribution to this area is the Restoration Bundle of four plug-ins. Each addresses a different set of problems. X-Click concentrates on the removal of large clicks such as scratches. X-Crackle is the second line of attack and deals with general surface noise. X-Hum deals with DC offset, rumble and constant tones such as mains hum. X-Noise provides broadband de-noising. The four may be chained together to deal with multiple problems in one pass.

I used a vinyl copy of Joan Baez's 'Silver Dagger' for experimentation. This ancient copy of the disc is in appalling condition with frequent scratches and scuffs and is all but impossible to listen to (Rob, there are times when it is best to just leave things alone – Ed).

My usual strategy is to deal with the big clicks first, then the crackles followed by filters, if necessary, and de-noising. In this case, filtering was not required and only a gentle de-noise was applied. Using automatic de-click and de-crackle the improvement was almost unbelievable. Sure, there were some evident processing artefacts but it was already possible to casually listen to the track without wincing (What are you taking for this condition? – Ed).

Using X-Click manually with different settings on various sections improved the result. Alternative techniques such as substituting left for right where a click only exists on one channel, or substituting from elsewhere in the track when the damage is severe, would give even better results. But, treating the whole track in this way would take the better part of a day. Manually redrawing sections of the waveform is even more time-consuming and requires considerable skill. Using the Restoration Bundle a reasonable result can be achieved in a very short time. The adjustments provided are meaningful and simple. For X-Click just threshold and click length. For X-Crackle, threshold and reduction. X-Noise also has these but adds attack, release and high frequency shelf controls. Each processor allows two set-ups to be compared or bypassed. Each also has output level bargraphs and,

apart from X-Hum, each has a red, top-down meter showing noise reduction.

The scope display in X-Click shows detected clicks as red bands on the last 10 seconds of processing

history. X-Crackle uses a similar display with activity shown as a separate, green element on the graph.

X-Noise uses the 'noise profile' principle. If you can locate a short section of 'pure' noise this is used as the template for the reduction process. Sampling the noise

is quick and fuss free. Once sampled the noise profile is displayed along with the incoming and outgoing spectra. Profiles can be stored for future use as can settings for all the modules.

X-Hum necessarily has a more complex set of controls. First there is a high pass filter with 12dB or 24dB/octave slope and then eight notch filters. These have a Q range of 3 to 60 and a maximum attenuation of 60dB allowing very narrow and deep notches. Inverse mode keeps the frequencies the same but boosts. This makes it easier to locate problem frequencies. The Q and gain is reduced when boosting just like the seminal Urei Little Dipper.

The clever part is the linking. All eight filters can be linked or the odd and even ones. This makes chasing harmonics much simpler.

I used some location recordings polluted with

generator noise to exercise X-hum. The results were similar to using an expensive hardware equivalent. Highly effective when used with care but overuse can lead to phasey artefacts.

The real achievement of this Restoration Bundle is the packaging. Although I'm quite prepared to believe they use the latest algorithms, the results are not so very different from several other products. However, they are much easier to use. Waves has obviously spent a great deal of time optimising the various parameters. This has allowed the controls to be kept simple. Waves has also managed to keep the interface consistent across all the modules and has provided useful graphic and audible evidence of what the processors are doing. In each case you can listen to the post processing output or the difference, i.e. what the process is removing.

This makes for easy setting up and speed. I do not believe this package approaches the Holy Grail of restoration, removal of unwanted artefacts without any side-effects. What it does offer, is a thoroughly professional and pragmatic answer to real world problems. Recordings can be drastically improved in a very short time without fuss or serious degradation. ■

PROS	Effective; simple and consistent user interface; good feedback
CONS	Nothing at the price
EXTRAS	Waves has introduced MaxxStream LX as an entry-level version of its radio broadcasting and internet streaming solution. MaxxStream products integrate audio encode supporting multiple encoder formats and bitrates simultaneously with audio capture, processing, archiving and transmission into a single easy-to-use system for improving sound quality in narrowband broadcasting applications.
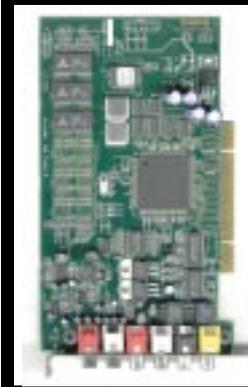
Benefits of MaxxStream LX include broadband sound from narrowband transmission, multiple encoding resolutions, and customisable 'tuning' for US$1,000.

The MaxxStream LX PCI card lacks the XLR AES-EBU I-Os, has a less powerful DSP and offers only two audio processors, the L1 Ultramaximizer and AudioTrack.

Contact