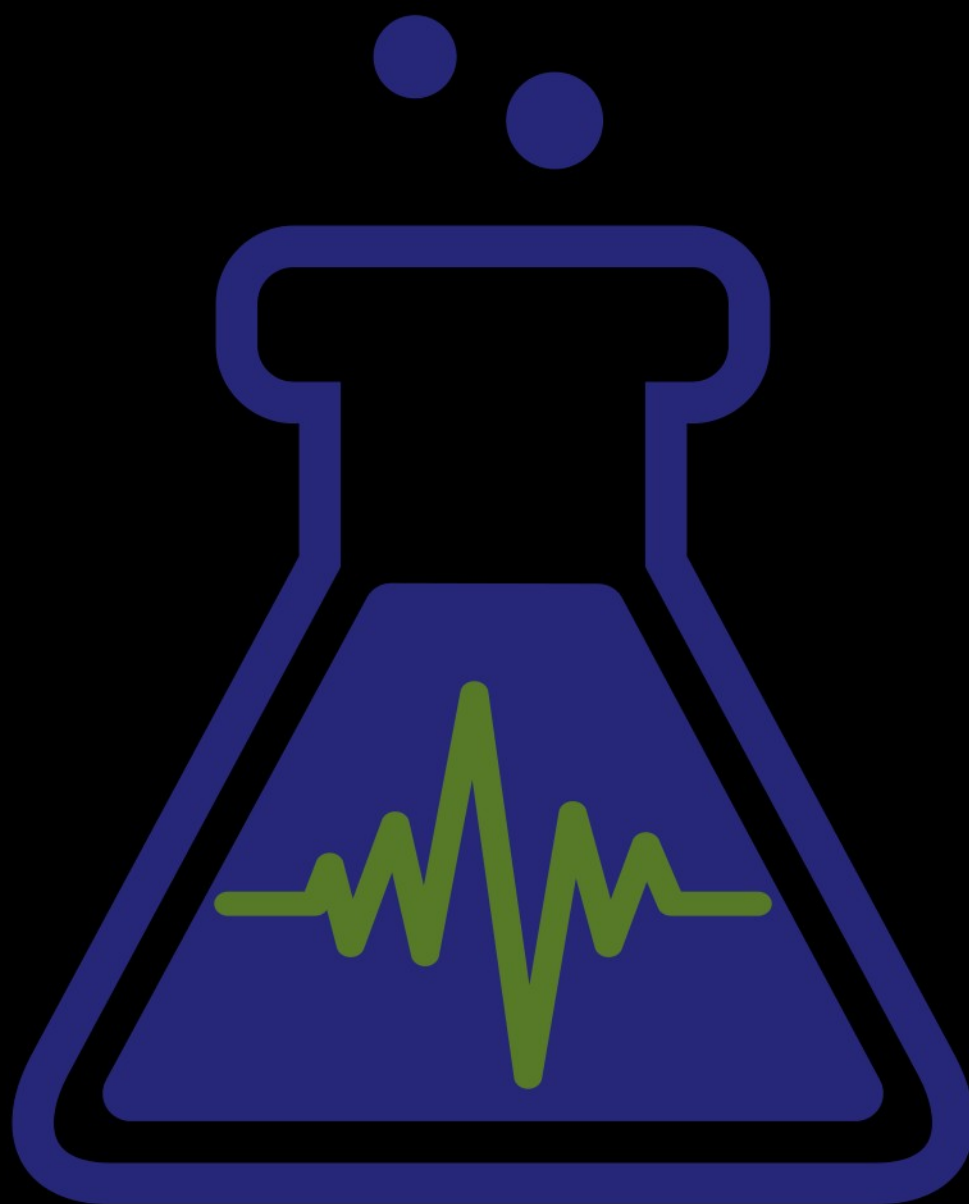# BlueLab denoiser

DESCRIPTION

Denoiser is a plugin which can be used to attenuate or suppress the background noise on a track. The noise and the interesting signal are separated in the spectral domain, then the noise is attenuated or suppressed on all the track.

PRINCIPLE

The track must contain at least a small part, even very brief, containing only noise. This part can be for example the beginning or the end of the recording. The plugin learns the characteristics of the noise. Then this noise can be attenuated or suppressed on the whole recording.

USAGE

To begin, it is necessary to capture the noise profile. To do that, it is recommended to create a play loop in the DAW, on a part of the track containing only noise.
Check the **LEARN (2)** checkbox and start the playback. The plugin will then learn the characteristics of the noise on the track.

The **NOISE PROFILE** curve gets-up-to date progressively with the characteristics of the noise to suppress. The noise profile is ready when the **NOISE PROFILE** curve becomes stable.

Then uncheck the **LEARN (2)** option.

The noise suppressing is now available, with the default parameters. The **NOISE** curve depicts the suppressed noise.

The **THRS. (4)** parameter adjusts the noise suppression threshold. By moving slightly the noise profile curve, this parameter defines more precisely what the noise is and what the signal to keep is.

To adjust this parameter, the **NOISE ONLY (3)** option will help, by enabling the possibility to listen only what we want to suppress.

The **THRS. (4)** parameter will be adjusted this way, by verifying that we don't remove too many interesting elements from the signal.

The **RATIO (5)** parameter defines the proportion of the noise to be suppressed. When setup to the value 0%, the result will be identical to the original signal. When setup to the value 100%, all the noise will be suppressed. In some cases, it is desirable to keep a light background noise, so not to suppress all the noise.

RESIDUAL NOISE

At this step of noise suppression, there can remain residual noise, that sounds like some many brief frequencies.

The **RES. NOISE (6)** parameter attenuates this phenomenon or even suppresses it. But this processing is costly in term of processor resources, and it is advised to use it only for offline processing (bounce).

Note: When the **RES. NOISE (6)** parameter is set to 0, the residual noise processing is not made, to save some processor resources.

Note: A technique for masking the residual noise can be used without having to use the **RES. NOISE (6)** parameter. For that, the **RATIO (5)** parameter can be used with a value of about 80%, in order to keep a few original noise in the result signal. The residual noise will no longer be audible, but the result will still contain some few background noise.

Note: By keeping a slight background noise, in addition to avoid residual noise, we will avoid to "smother" the sound too much.

Note: The more we increase the **THRS. (4)** parameter, the more we suppress the residual noise. We can process this way in some cases to suppress the residual noise without using the **RES. NOISE (6)** parameter, where it is possible to do that without suppressing interesting elements of the signal.

SOFT DENOISE

The **SOFT DENOISE (9)** option has several effects when activated :

- The residual noise (musical noise) is automatically removed. No need to take time to adjust the **RES. NOISE (6)** parameter.
- Better sound quality after residual noise removal. The sound is less gated, more clear compared to manual residual noise removal. The result sound contains more air from the original sound, while still removing the hiss.

Note: If the hiss in the initial sound is extremely high, the **SOFT DENOISE (9)** option may not remove all the residual noise.

Note: In all cases, the noise threshold parameter, **THRS. (4)**, still has to be setup carefully.

TRANSIENT BOOST

The **TRANS. BOOST (7)** parameter recovers the transients (attacks) which could have been attenuated after processing. When set to 0%, the transients remain unchanged, whereas when set to 100% the transients are amplified at a maximum.

Note: When the **TRANS. BOOST (7)** parameter is set to 0, the transient boost processing is not made, to save some processor resources.

QUALITY

The **QUALITY (8)** parameter defines the quality of the processing. This parameter goes from 1 (fast processing) to 4 (best quality).

When set to the value **1**, the plugin processes using a minimum of resources, to avoid overloading too much the DAW if for example the project is using many plugins.
At the contrary when set to the value **4**, the quality of the processing is at the maximum. The signal is analyzed with a maximum of accuracy and the processing is done on the most detailed data.

It is advised to adjust the noise suppression parameters with an intermediate quality, and then to make an offline processing (bounce) with the maximum quality.

However pay attention that the result can be slightly different when modifying the **QUALITY (8)** parameter. Indeed, by increasing this parameter, the plugin make a more accurate analysis of the signal, and processes some signal details that were not there with a lower quality.

SUMMARY

- create a playback loop on a part of the track containing only noise
- check the **LEARN (2)** option, start the playback, uncheck the **LEARN (2)** option
- start the playback
- adjust the **THRS. (4)** parameter
- if necessary, adjust the **RES. NOISE (6)** and **RATIO (5)** parameters

FAQ

When the RES. NOISE parameter is set to a too big value, sometimes the higher frequencies, or even all the signal totally disappear

Indeed, if the **RES. NOISE (6)** parameter is set to a value that is too big, the whole signal will be considered as residual noise and all will be suppressed! The **RES. NOISE (6)** parameter is to use additionally, after having suppress the background noise using the **THRS. (4)** parameter.

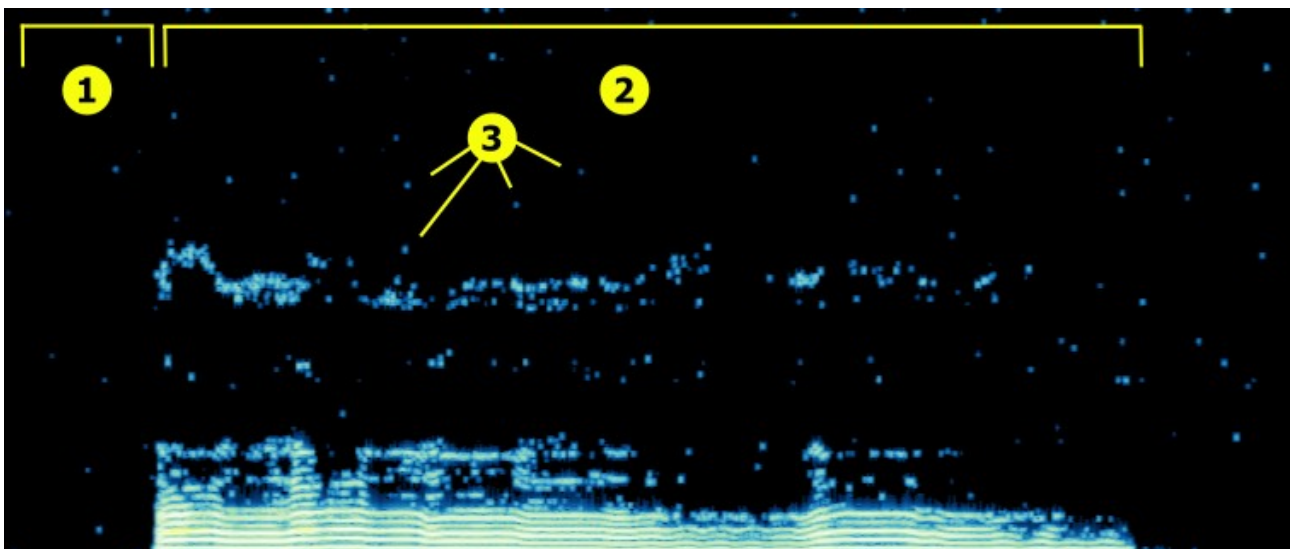# APPENDIX – SPECTROGRAMS

ORIGINAL AUDIO FILE
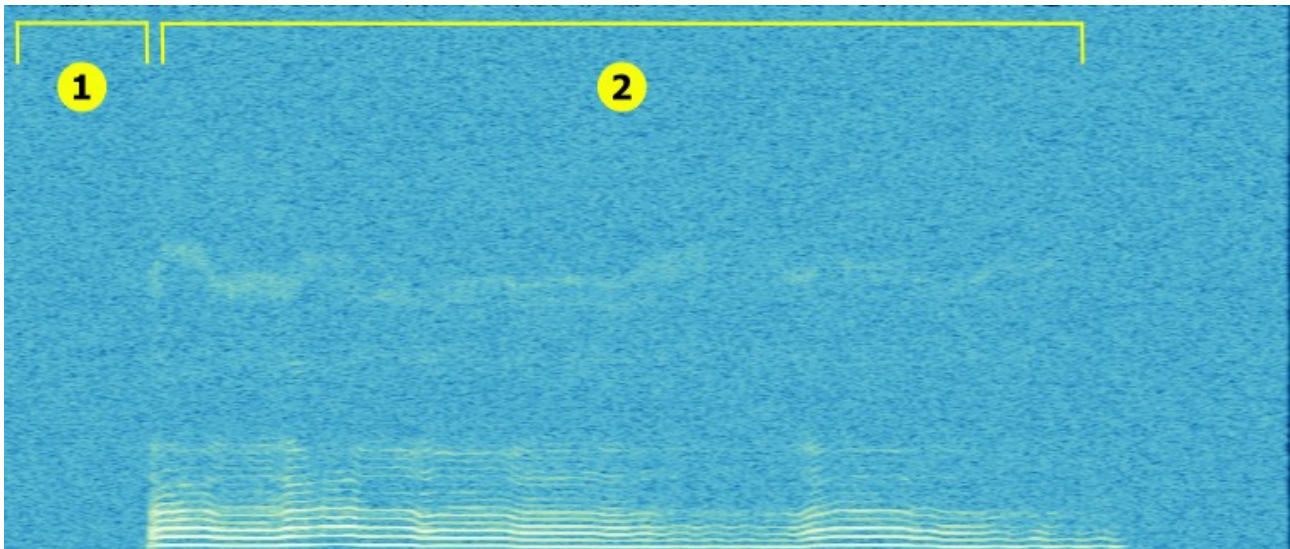
Spectrogram of the original audio file

Part **(1)** is a part that contains only noise
Part **(2)** contains signal and noise
The noise is displayed as a blue layer on the whole file

PROCESSING WITH THRS. (4)

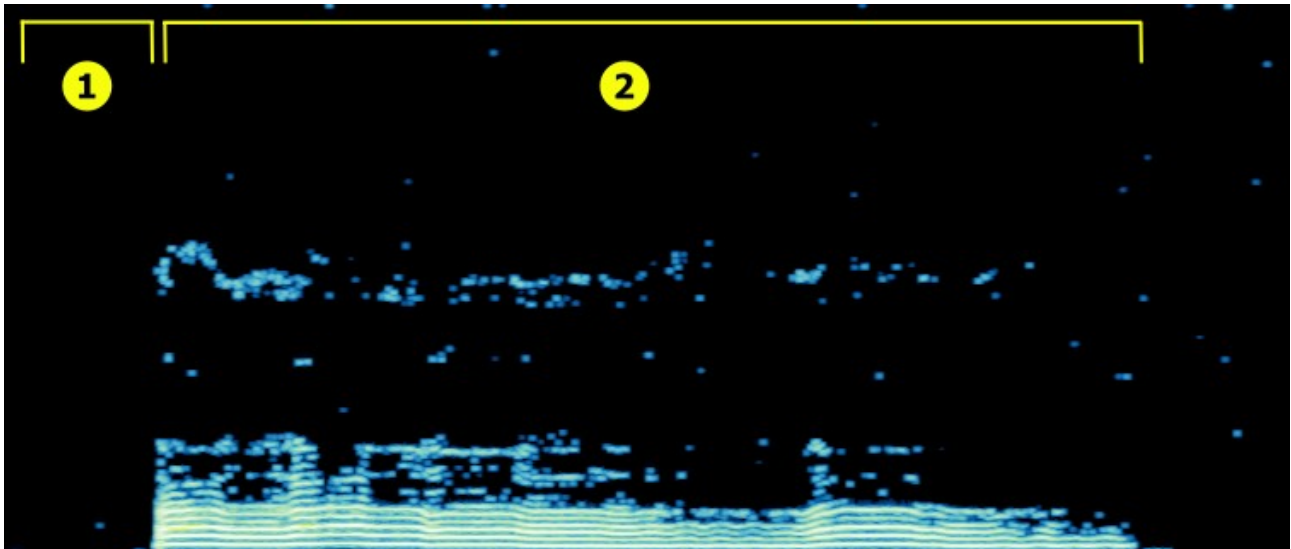**Spectrogram of the audio file after a first processing**

The **Denoiser** plugin has been used to suppress the noise. Only the **THRS. (4)** parameter has been used.

Part **(1)** is almost nothing else than silence
Part **(2)** contains the signal
The isolated dots as shown in **(3)** are the residual noise

PROCESSING WITH THRS. (4) + RES. NOISE (6)

Spectrogram of the audio file after attenuation of the residual noise

The **Denoiser** plugin has been used to suppress the noise. In addition to the **THRS.** parameter, the **RES. NOISE (6)** parameter has been used to attenuate the residual noise.

Part **(1)** is almost nothing else than silence
Part **(2)** contains the signal
There are a lot less isolated dots (residual noise)