

# How to Design

## a simple Wind sound effect

by

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As an aspiring sound designer, you'll soon realize that wind is quite tricky to record well so in this step-by-step tutorial we are going to see how we can design from scratch a simple howling wind effect suitable for games, machinima or other digital media without the need of going around with a microphone to catch an actual howling wind sound.

We'll be using the Audacity editing program so, in case you don't have this handy and free tool already, you can download it from <http://audacity.sourceforge.net/download/> Windows, Mac and Linux versions are available.

Our first step is to generate several seconds of white noise, as shown in figures 1 and 2. This will work for us like a canvas out of which we'll shape our own sound effect.

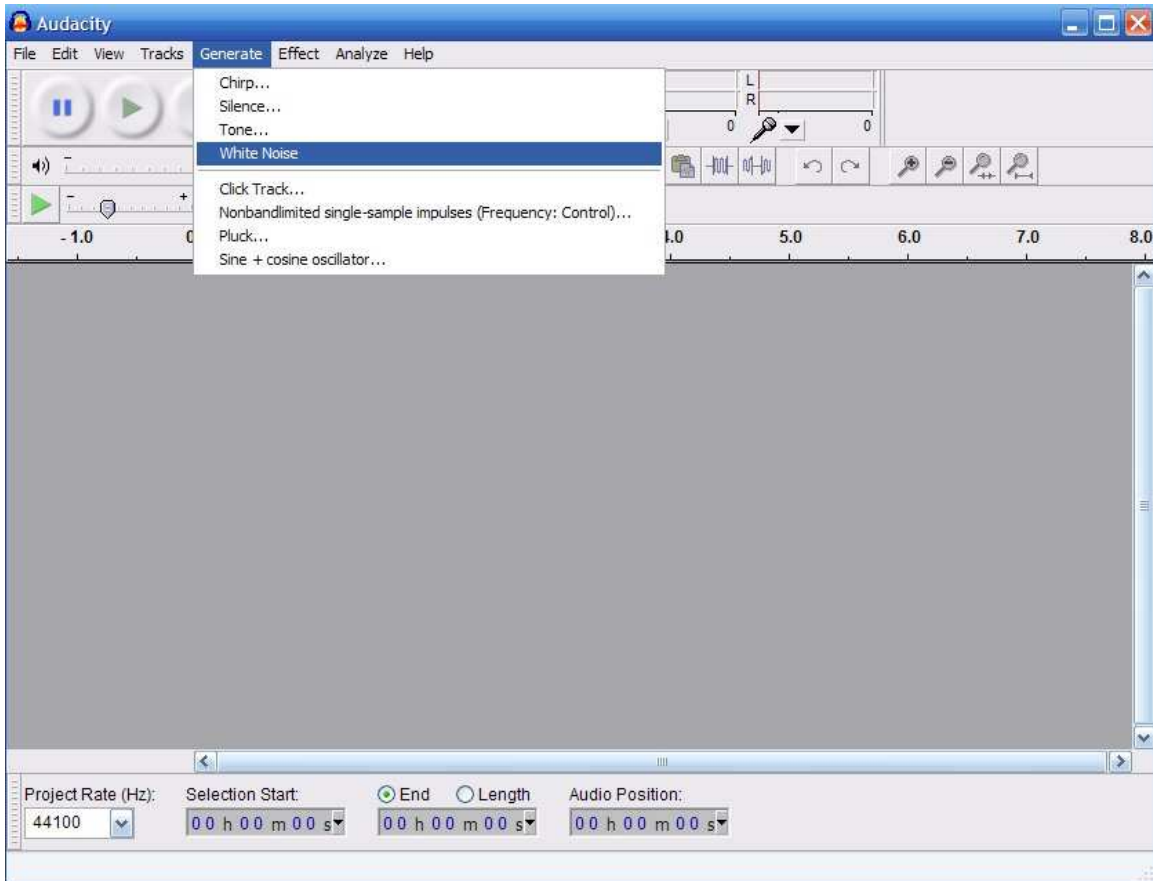


Figure 1: generating the white noise

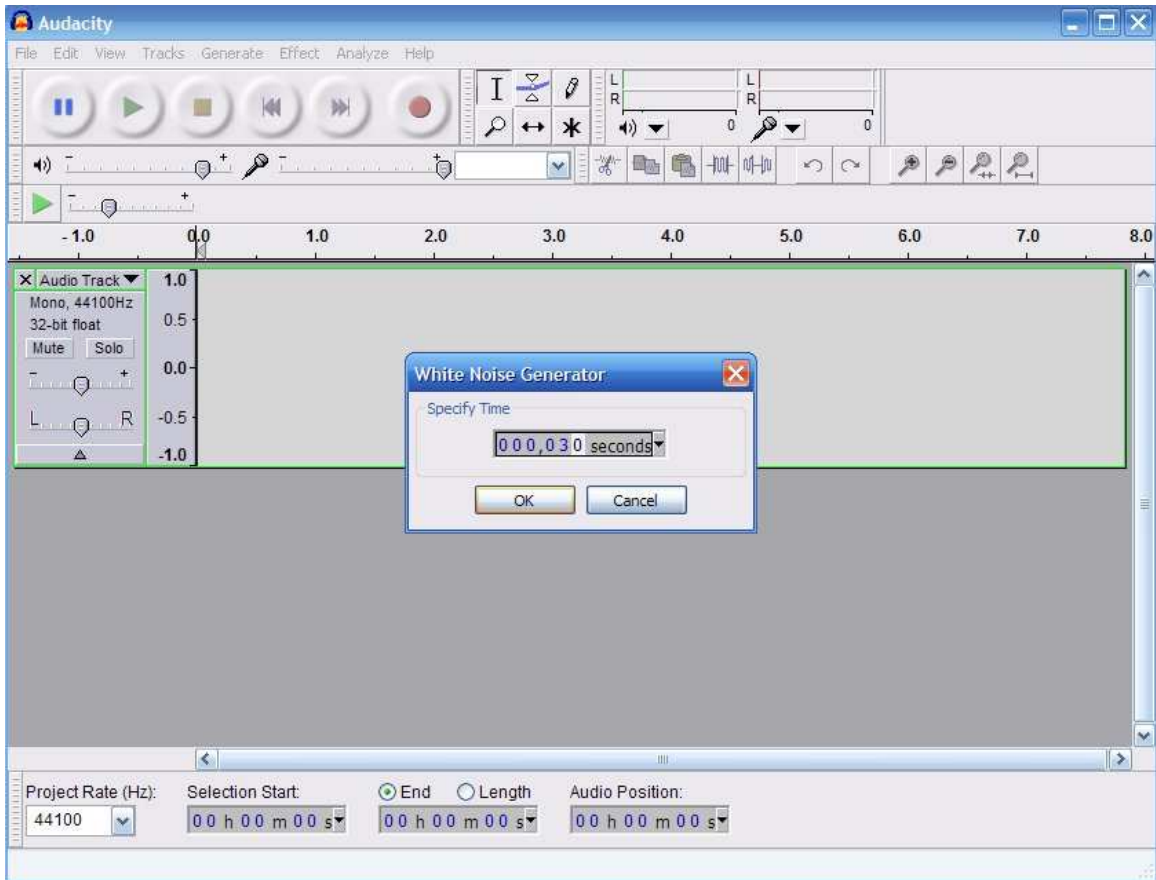


Figure 2: 30 seconds will be more than enough to understand whether our effect will feel natural or not

At this point it's a good idea to switch to dB view (figure 3) and, most important, to de-amplify the sound quite a bit (don't play it yet since it will be very LOUD unless you have your speakers set to a very low volume!). Let's say around -18 dB will help in avoiding a bad headache (figures 4 and 5).

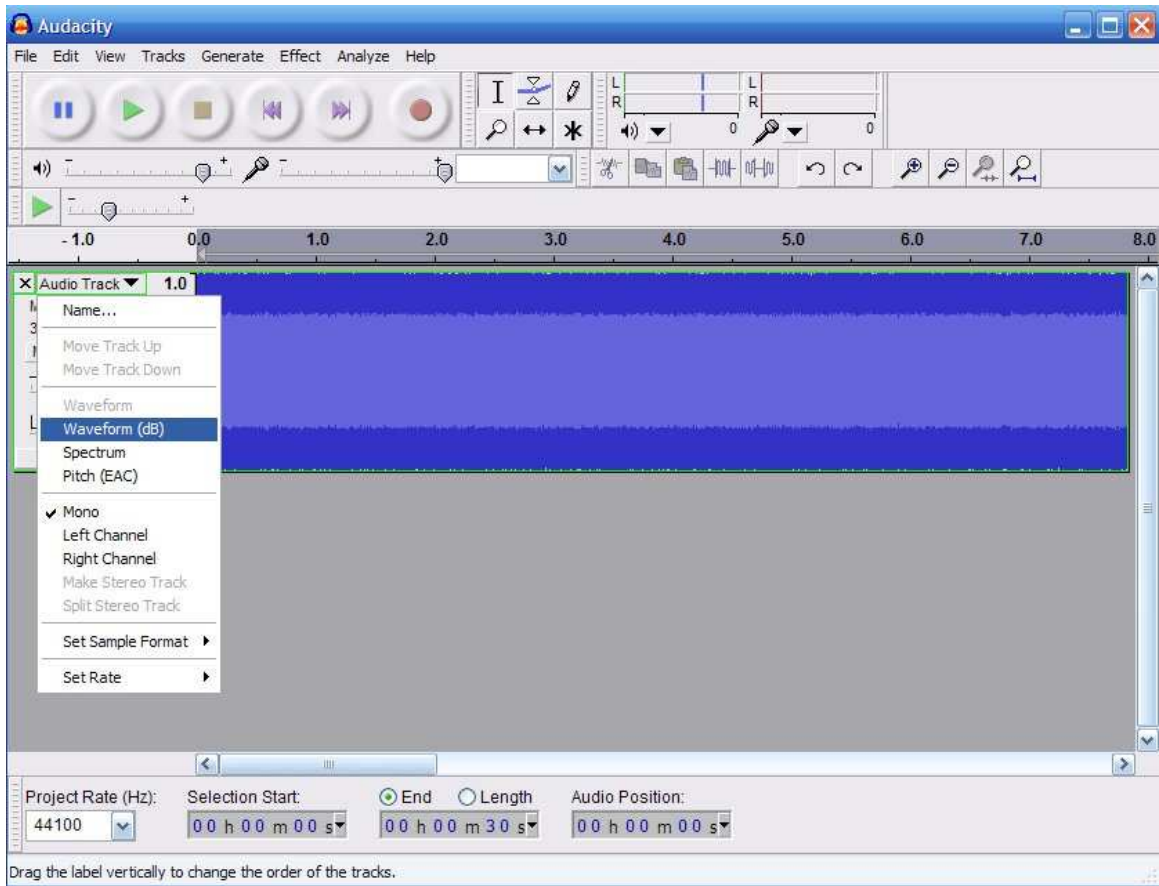


Figure 3: Switching to dB Full Scale (dB FS) view

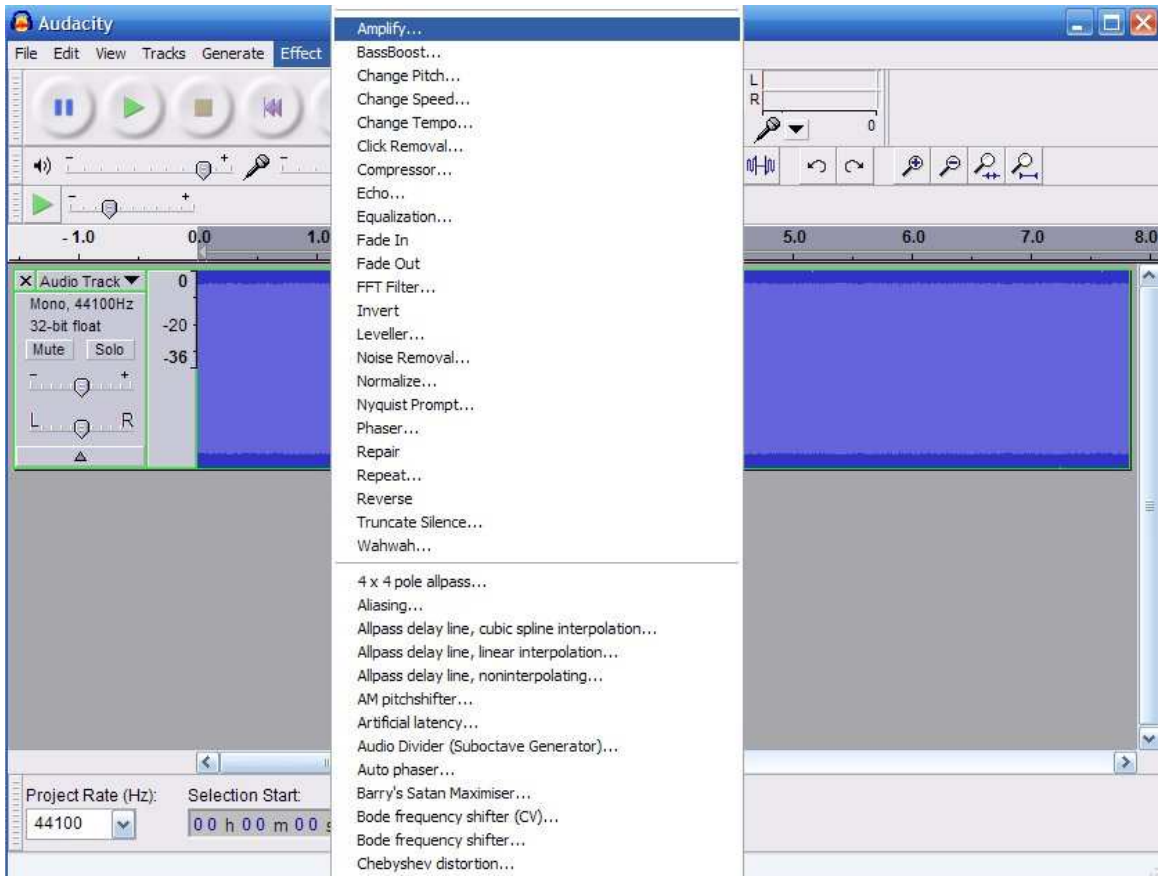


Figure 4: Choosing the “Amplify” effect to attenuate the noise. Note that the scale is now in dB FS

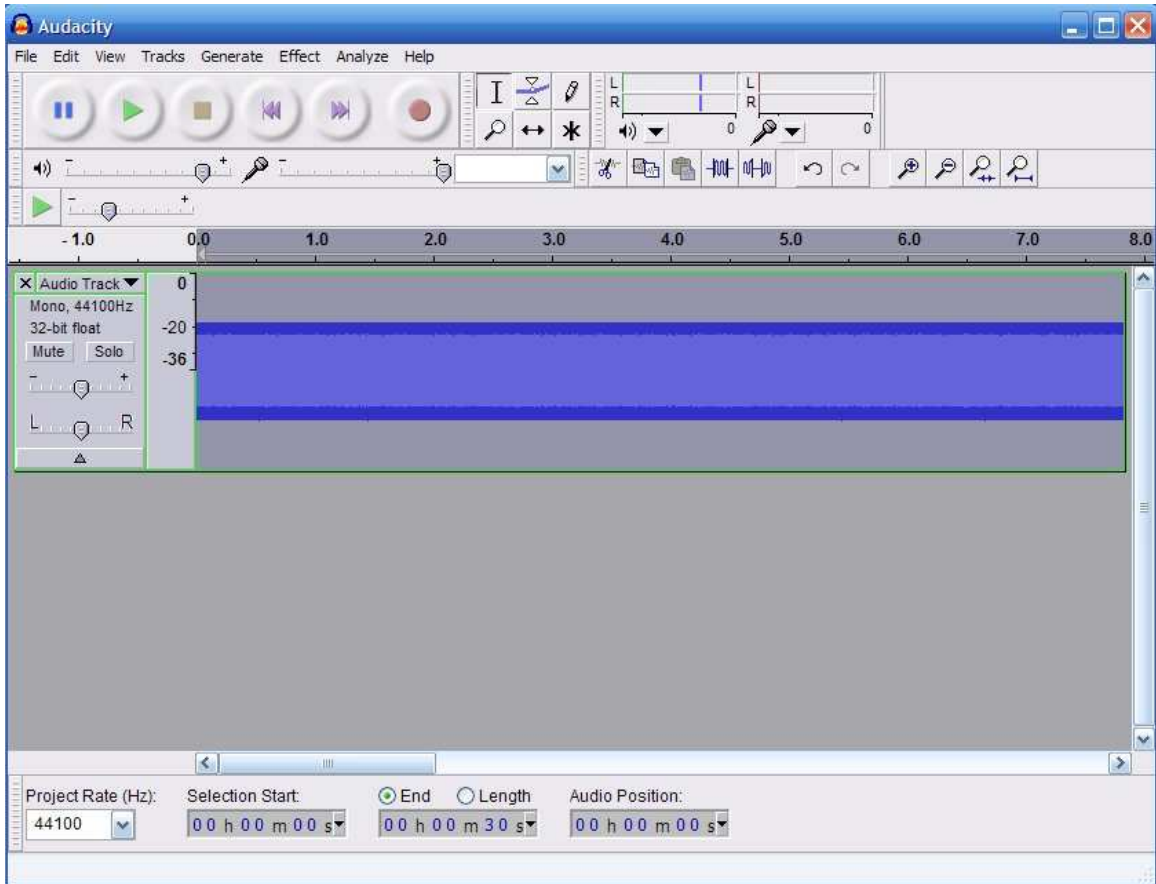


Figure 5: our white noise at a more comfortable level (-18 dB FS)

Now we are ready to start shaping our own wind effect. We'll use the so called "Wahwah" effect (figure 6).

This effect, still commonly used nowadays, was very popular in electronic music and electric guitars in the 1970's but its origins are much older as it can be traced back to the early Jazz groups in the 1920's and 30's where trumpet and trombone players could achieve a similar "moving sound" effect by proper use of their mutes.

The underlying idea is to change the spectral qualities of a sound by moving a passband filter across it. Here, a low frequency oscillator (LFO) is used to control the movement of the filter throughout the frequency spectrum, back and forth.

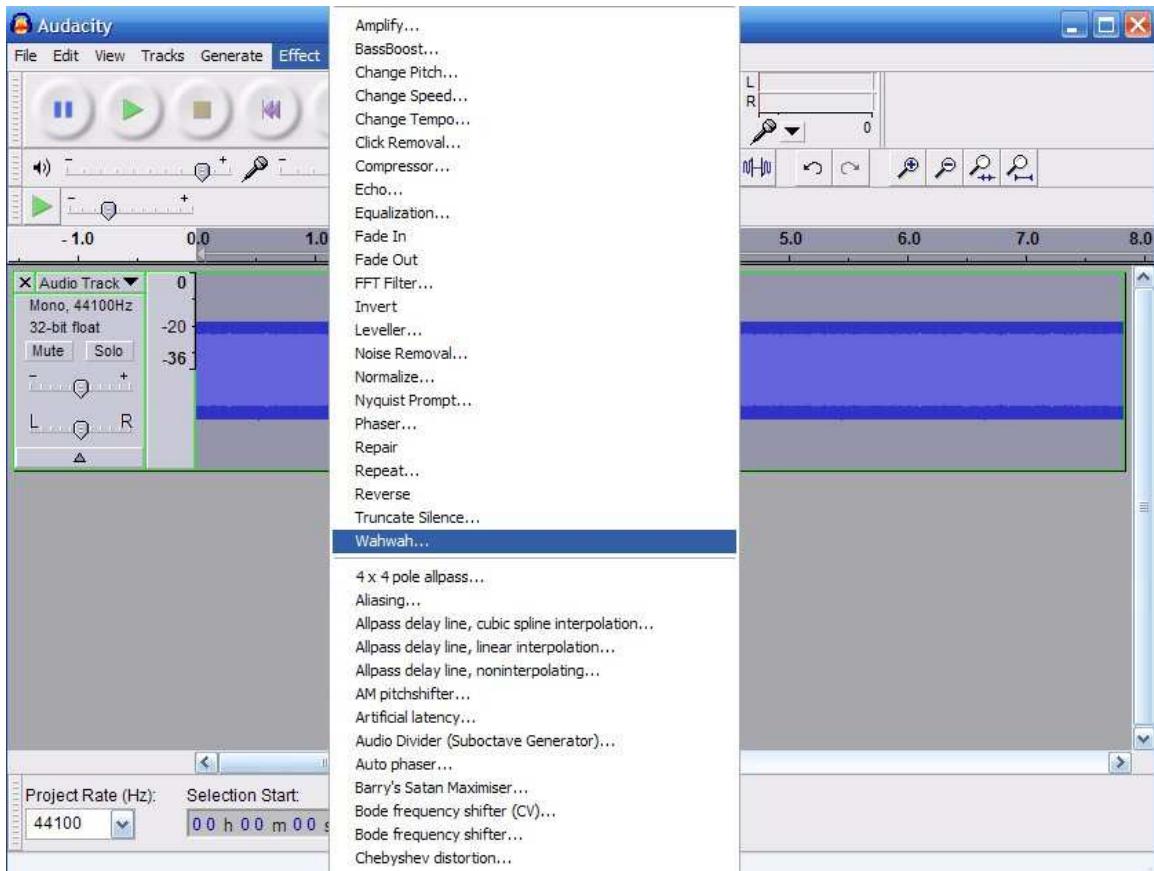


Figure 6: Selecting the Wahwah effect

In Audacity, these are the parameter we have at our disposal:

- LFO (Low-Frequency Oscillator – Hz): This is the most important parameter and it controls the oscillation frequency of the passband filter across the spectrum. In our case we don't want it to be too fast, otherwise our wind will not sound natural.
- LFO Start Phase (deg.): To specify where the oscillation begins. It is expressed in Degrees.
- Depth (%): How “deep” the oscillation should go. If we put a very high value the sound will be basically turned off and rise again with a frequency equal to that specified in the LFO parameter. In our case we need relatively low values
- Resonance: The filter resonance. In very simplified terms, a high value here will emphasize the high frequencies in the original sound.
- Wah Frequency Offset: Sets how close the effect plays in time with the original signal.

For our wind, we'll choose the values shown in Figure 7:

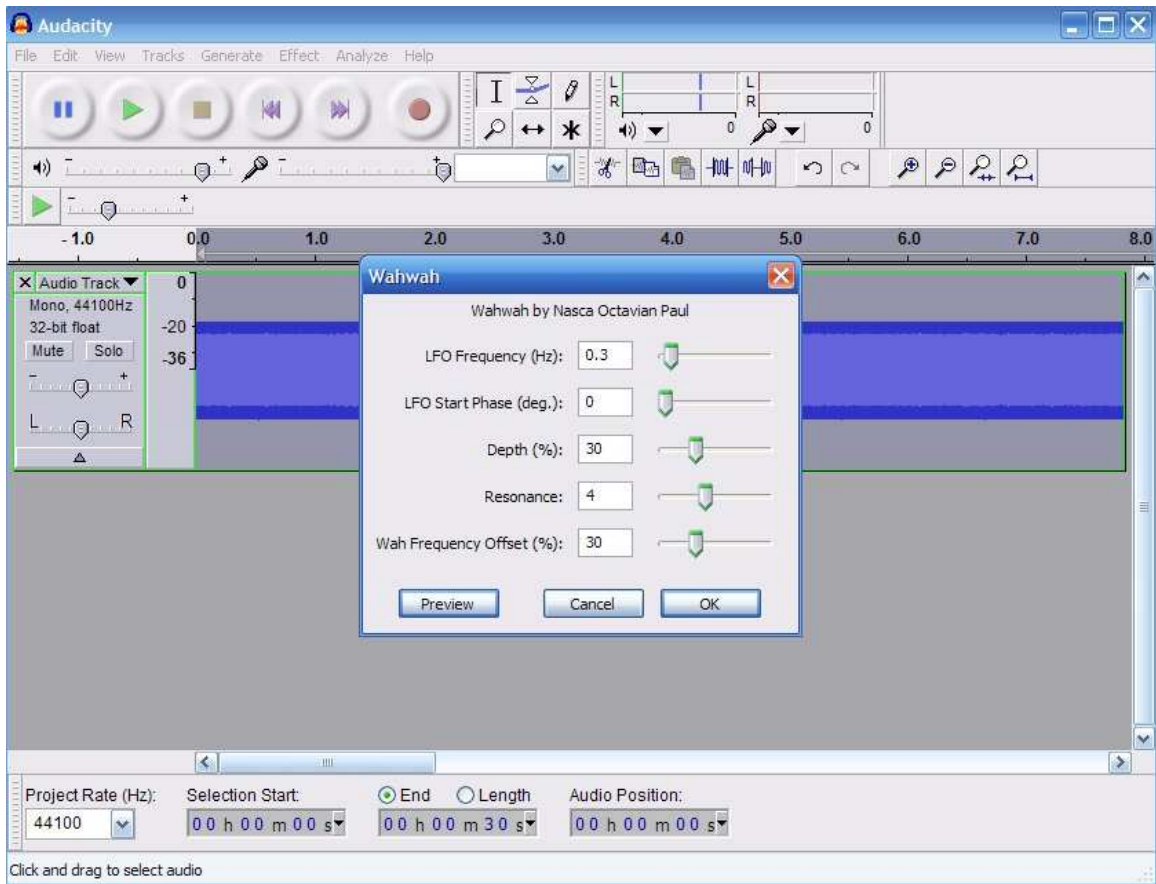


Figure 7: Specifying the characteristics of our Wahwah effect.

In particular:

- LFO Freq. = 0.3 Hz
- LFO Start Phase = 0 Degrees
- Depth: 30 %
- Resonance: 4
- Wah Freq. Offset: 30%

If we now listen to the resulting sound, we'd be able to classify it as a "wind-like" effect, anyway we'll find it quite boring and unnatural as it repeats itself constantly and there are no variations whatsoever in it.

To improve the effect, we can simply re-apply the wahwah effect once more, this time with slightly different values, for example with a LFO frequency equal to 0.2 Hz.

The result is shown in figure 8 and it will sound much more interesting than before.

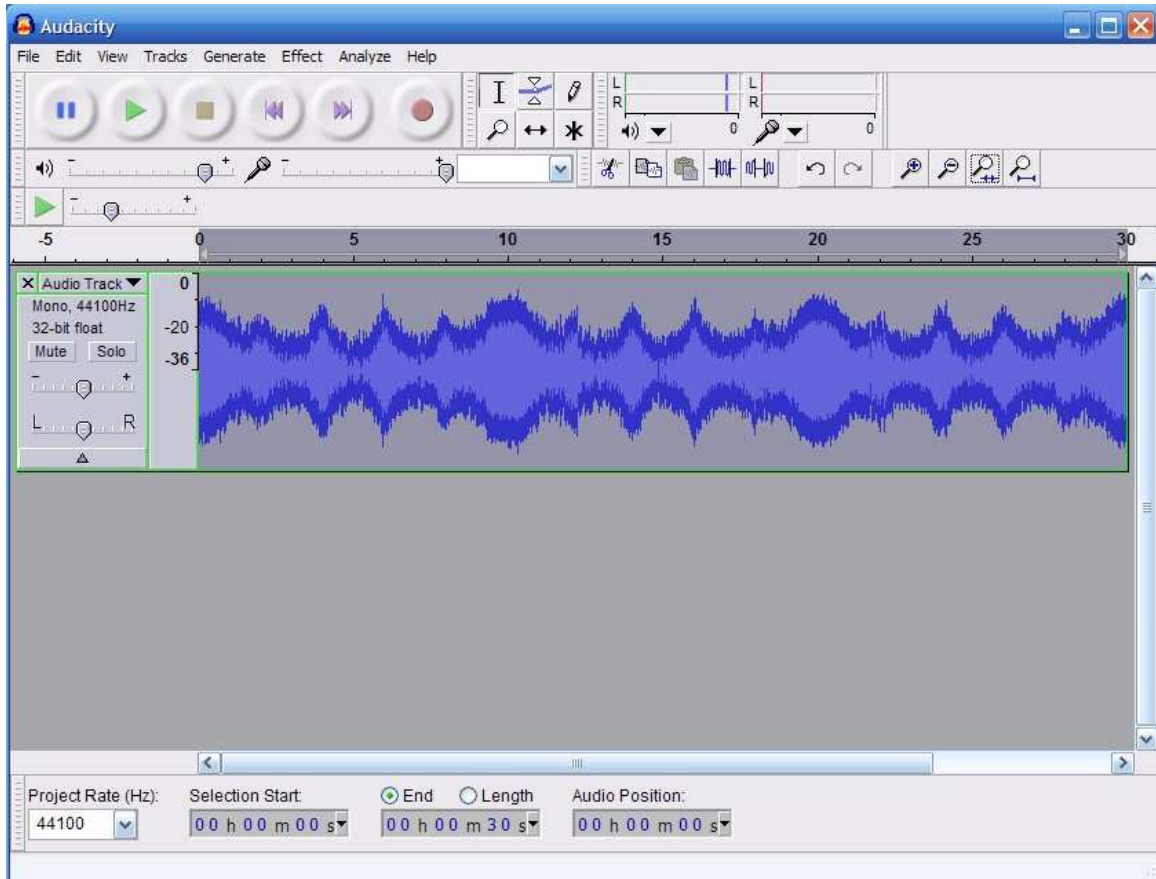


Figure 8: the white noise after having applied the Wahwah twice as explained in the text.

This is how I designed the background wind sound for my simple kids-oriented game “Hurry, Lucilla!” (you can freely download from my website if you are curious) and this method should allow you to easily design simple yet interesting wind effects.

Try experimenting with different values to get different sounds: you can also simulate the sound of ocean waves by using the proper values! Try to do it as an exercise.

Good luck!