

# Ocean Swift Wavetable Creator

Version 1.4.6

[Ocean Swift Synthesis](#)

*"The breaking of a wave cannot explain the whole sea."* — Vladimir Nabokov

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## Introduction

The Ocean Swift Wavetable Creator is a versatile and intuitive software designed for musicians, producers, and sound designers seeking the ultimate level of creativity in their sonic explorations. The application provides a powerful environment to generate custom wavetables, blend waveforms, and create evolving, rich sounds that can be used in wavetable synthesizers. The robust export options ensure that the resulting wavetables are compatible with almost any possible wavetable synthesizer.

Ocean Swift Wavetable Creator allows you to morph and blend up to two different waveforms into new, unique timbres that can be further customized with advanced processing options. The application features a user-friendly graphical interface where users can select from a variety of waveforms, including classic shapes like sine, square, triangle, and sawtooth, as well as more complex and unusual waveforms such as additive, FM, and even custom noise-based waveforms.

A core strength of the Wavetable Creator is its interaction system, which provides multiple ways to combine two sets of waveforms creatively. Users can apply crossfades, mixes, amplitude modulation, and harmonic blending options to create wavetables that evolve and transform over time. For sound designers interested in more experimental techniques, there are unique blending options like ring modulation, morphing phase shifts, and harmonic emphasis, providing a wealth of possibilities to craft evolving sounds with intricate harmonic content.

Ocean Swift Wavetable Creator also supports advanced waveform processing tools, such as clipping, tube saturation, folding, quantizing and more. Each processing effect can be applied individually to either waveform, allowing for complex sound manipulations that produce truly unique sonic results.

In addition, the app offers a batch creation feature that makes it possible to automate the generation of large sets of wavetables with varied settings. Users can randomize waveform choices, processor effects, and blending methods to generate a library of unique wavetables that can be used in different projects.

Whether you are an experienced sound designer or a producer exploring new possibilities for custom synthesizer sounds, Ocean Swift Wavetable Creator aims to empower your creativity. With the ability to produce wavetables ranging from subtly morphing textures to aggressive, experimental soundscapes, this tool is an essential addition to any producer's toolkit. The straightforward interface makes it accessible to beginners, while the depth of modulation and processing capabilities ensures that professionals will find a wealth of creative options to explore.

## Installation and Quick Start

### Windows

**Important Note:** When running the app for the first time, Windows Defender SmartScreen may display a warning since the app is not code-signed. This is normal for independently distributed software and can be bypassed easily.

#### - Download and Unzip the App

Download the app and unzip it to a location of your choice.

#### - Double-click the app's executable file (.exe) to run it.

#### - SmartScreen Warning

If a Windows Defender SmartScreen warning appears with the message "Windows protected your PC," click More info.

#### - Run the App

Click Run anyway to proceed with opening the app.

#### - Future Launches

After you confirm the app once, subsequent launches should not trigger the warning, and you can run the app by simply double-clicking the executable.

## macOS

### - Download and Unzip the App

Download the app and unzip it to a location of your choice.

### - Navigate to the ARM or Intel version and double-click the app icon

### - Confirm to Open

A dialog will appear warning that the app is from the internet and not the app store. Click to confirm. The logo will appear and then disappear, and then the app might take a few seconds to launch.

## Linux

### - Install System Dependencies

```
sudo apt update
```

```
sudo apt install qtbase5-dev qttools5-dev-tools libxcb-xinerama0 libportaudio2 portaudio19-dev
```

### - Download, Unzip and Run ARM or Intel version

Download the app and unzip it to a location of your choice and run the app.

### Note for Virtual Machine Users

- If you're running this application in a VM (like VirtualBox, UTM or QEMU), you may encounter audio issues when using the audio preview due to limited virtualized hardware.

## Waves

At the core of the Wavetable Creator are two separate waves that are each constructed by morphing between five selectable wave shapes through the length of the wavetable. After each wave is created, it can be further shaped by waveshaping processors, and these two waves can interact in a variety of ways in order to construct the final wavetable.

## Wave Shapes

The Wavetable Creator offers a wide selection of wave shapes that serve as building blocks for your custom wavetables. Clicking to select a shape in each of the wave shape menus while holding SHIFT will set all the shapes for the respective wave to that selected shape.

## Sine

**Sine:** A pure, smooth, and continuous wave that represents a single frequency. Ideal for clean and simple tones.

**Exponential Sin:** A sine wave that varies in frequency exponentially over time, creating an evolving pitch sweep.

**Sine FM 1:** A basic sine wave subtly modulated by a secondary frequency. This introduces a slight frequency modulation effect, giving the sound a touch of movement and tonal complexity. Ideal for adding a bit of character without overwhelming the fundamental tone.

**Sine FM 2:** A sine wave with moderate frequency modulation. This setting enhances the sine wave's harmonic content, resulting in a richer and more dynamic sound, great for subtle textures in ambient or atmospheric sound design.

**Sine FM 3:** A sine wave with strong frequency modulation, creating pronounced harmonic complexity.

**Sine Self FM 1:** A sine wave that slightly modulates itself.

**Sine Self FM 2:** A sine wave that moderately modulates itself.

**Sine Self FM 3:** A sine wave that strongly modulates itself.

**Sine Tri:** Morphs gradually from a sine wave to a triangle wave, creating a transitional, evolving waveform.

**Sine Square:** A sine wave with its amplitude squared, emphasizing smoother peaks and reducing sharpness.

**Double Sine:** A sine waveform completing two cycles within the frame size, resulting in a sound that is one octave higher than a single-cycle sine wave. Useful for creating higher-pitched sine tones with the same smooth characteristics.

## Tri

**Tri:** A linear waveform with a softer sound than a square wave. It produces a tone rich in odd harmonics but softer in timbre.

**Tri BL:** Band-limited version of the Tri waveform, useful for reducing aliasing.

**Tri Saw:** A combination of triangle and sawtooth waves for a blend of sharp and smooth characteristics.

**Tri Saw BL:** Band-limited version of the Tri Saw waveform, useful for reducing aliasing.

**Double Tri:** A triangle waveform with two cycles per frame, creating a higher-pitched sound while retaining the characteristic smoothness of the triangle wave.

**Double Tri BL:** Band-limited version of the Double Tri waveform, useful for reducing aliasing.

## Saw

**Saw:** A sharp, ramping waveform that has both even and odd harmonics, giving it a bright, rich sound. Great for leads and basses.

**Saw BL:** Band-limited version of the Saw waveform, useful for reducing aliasing.

**Exp Saw:** A variation of the sawtooth wave with an exponentially decaying ramp, adding a unique timbre.

**Exp Saw BL:** Band-limited version of the Exp Saw waveform, useful for reducing aliasing.

**Shark Fin:** A wave that ramps up quickly and then drops, resembling the profile of a shark's fin. Used for unique, edgy tones.

**Shark Fin BL:** Band-limited version of the Shark Fin waveform, useful for reducing aliasing.

**Double Saw:** A sawtooth waveform that completes two cycles within the frame size, producing an octave-higher tone while maintaining the aggressive harmonic profile of the sawtooth.

**Double Saw BL:** Band-limited version of the Double Saw waveform, useful for reducing aliasing.

## Square

**Square:** Alternates abruptly between high and low values, creating a sharp, buzzy sound. Useful for electronic and chiptune sounds.

**Square BL:** Band-limited version of the square waveform, useful for reducing aliasing.

**Square Tri:** A blend of square and triangle waveforms, balancing the sharpness of the square with the smoothness of the triangle.

**Square Tri BL:** Band-limited version of the Square Tri waveform, useful for reducing aliasing.

**Square Saw:** A combination waveform with aspects of both square and sawtooth waves for a unique harmonic profile.

**Square Saw BL:** Band-limited version of the Square Saw waveform, useful for reducing aliasing.

**Double Square:** A square waveform that completes two cycles within the frame, doubling its frequency to produce a sound an octave higher with a strong, distinct pulse.

**Double Square BL:** Band-limited version of the Double Square waveform, useful for reducing aliasing.

## Pulse

**Narrow Pulse 1:** A pulse wave with a short duty cycle, creating a thin, sharp tone.

**Narrow Pulse 1 BL:** Band-limited version of the Narrow Pulse 1 waveform, useful for reducing aliasing.

**Narrow Pulse 2:** A slightly wider pulse than Narrow Pulse 1, producing a distinct sharpness with more harmonic content.

**Narrow Pulse 2 BL:** Band-limited version of the Narrow Pulse 2 waveform, useful for reducing aliasing.

**Fat Pulse 1:** A pulse wave with a broader duty cycle, offering a thicker and warmer tone.

**Fat Pulse 1 BL:** Band-limited version of the Fat Pulse 1 waveform, useful for reducing aliasing.

**Fat Pulse 2:** An even wider pulse wave that creates a fuller and more robust sound.

**Fat Pulse 2 BL:** Band-limited version of the Fat Pulse 2 waveform, useful for reducing aliasing.

**Double Pulse:** A pulse wave with two peaks per cycle, adding complexity to the sound.

**Double Pulse BL:** Band-limited version of the Double Pulse waveform, useful for reducing aliasing.

## Noise

**Noise:** Random signal with equal energy at all frequencies, producing a "static" or "hiss" sound. Useful for effects and percussive elements.

**Noise BL:** Band-limited (filtered) version of the Noise waveform, useful for reducing aliasing.

**Pink:** A noise signal with energy decreasing proportionally with frequency, producing a warm, natural sound often used in soundscapes.

**Pink BL:** Band-limited version of the Pink waveform, useful for reducing aliasing.

**Brown:** A deeper noise with an even stronger emphasis on low frequencies, simulating natural phenomena like waterfalls or thunder.

**Brown BL:** Band-limited (filtered) version of the Brown waveform, useful for reducing aliasing.

## Harmonics

**Harmonic Series 3:** A composite waveform including the first three harmonics, creating a richer sound.

**Harmonic Series 4:** Adds the first four harmonics, increasing the complexity and richness of the sound.

**Partials 1 3:** A mix of the fundamental and the third harmonic, producing a distinctive tone.

**Partials 1 4:** Combines the fundamental and the fourth harmonic for a unique tonal blend.

**Partials 1 5:** Incorporates the fundamental and fifth harmonic, adding subtle brightness.

**Partials 1 7:** Incorporates the fundamental and fifth harmonic, adding sparkling brightness.

**Partials 1 3 5:** A combination of the fundamental, third, and fifth harmonics for a more complex sound.

**Partials 1 3 8:** A combination of the fundamental, third, and eighth harmonics, producing a sound with both warmth and a slightly metallic edge due to the higher partial.

**Partials 1 4 7:** A blend of the fundamental, fourth, and seventh harmonics, creating a harmonic-rich waveform.

**Partials 1 6 9:** A blend of the fundamental, sixth, and ninth harmonics, creating a harmonic-rich waveform.

**Partial 3->1 FM:** A sine wave whose fundamental is frequency modulated by the 3rd partial.

**Partial 4->1 FM:** A sine wave whose fundamental is frequency modulated by the 4th partial.

**Partial 5->1 FM:** A sine wave whose fundamental is frequency modulated by the 5th partial.

**Partial 6->1 FM:** A sine wave whose fundamental is frequency modulated by the 6th partial.

**Partial 7->1 FM:** A sine wave whose fundamental is frequency modulated by the 7th partial.

**Partial 8->1 FM:** A sine wave whose fundamental is frequency modulated by the 8th partial.

**Partial 3->1 AM:** A sine wave whose fundamental is amplitude modulated by the 3rd partial.

**Partial 4->1 AM:** A sine wave whose fundamental is amplitude modulated by the 4th partial.

**Partial 5->1 AM:** A sine wave whose fundamental is amplitude modulated by the 5th partial.

**Partial 6->1 AM:** A sine wave whose fundamental is amplitude modulated by the 6th partial.

**Partial 7->1 AM:** A sine wave whose fundamental is amplitude modulated by the 7th partial.

**Partial 8->1 AM:** A sine wave whose fundamental is amplitude modulated by the 8th partial.

## Randoms

**Additive Random:** This waveform starts with a fundamental sine wave and randomly adds between 2 to 8 harmonics, selected from the first 16 harmonics. Each harmonic is mixed with a randomized volume, which gradually decreases with each additional harmonic. This creates a unique and evolving harmonic structure, adding subtle complexity to the sound.

**Additive Random FM:** This waveform is similar to Additive Random but introduces subtle frequency modulation to each added harmonic. As each harmonic is layered, a slight pitch modulation creates evolving textures and adds richness, making it ideal for dynamic, atmospheric sounds with a hint of unpredictability.

**Complex Random:** This waveform is constructed by randomly selecting and combining three waveforms (Sine, Triangle, Sawtooth, Narrow Pulse, or Square). Each chosen waveform is given a random volume, producing a complex, layered shape with a distinct timbre that varies with each selection.

**Complex Rand BL:** Band-limited version of the Complex Random waveform, useful for reducing aliasing.

**Phased Random:** Similar to the Complex Random waveform, but with an added twist—each selected waveform is given a random phase shift. This adds an extra layer of modulation, creating subtle variations in the waveform's structure and introducing dynamic phase interactions between the combined shapes.

**Phased Rand BL:** Band-limited version of the Phased Random waveform, useful for reducing aliasing.

**Complex Doubles:** This waveform functions similarly to the Complex Random waveform, but with an expanded selection, including both standard and "Double" versions of each wave shape. It randomly selects and combines three waveforms from the following options: Sine, Triangle, Sawtooth, Square, Narrow Pulse, Double Sine, Double Triangle, Double Sawtooth, and Double Square. Each chosen waveform is assigned a random volume, creating a rich, layered timbre that varies with each selection. The inclusion of "Double" waveforms adds higher harmonics by completing two cycles within the same frame, resulting in a more complex and harmonically rich sound ideal for creating intricate textures and evolving soundscapes.

**Comp Doubles BL:** Band-limited version of the Complex Doubles waveform, useful for reducing aliasing.

## Special

**TX2:** This unique waveform, inspired by Yamaha's TX2 shape, features a quick ramp-up to a sharp peak, followed by a steep drop to a pronounced dip before returning to zero.

**TX2 Gaussian:** A unique hybrid waveform that combines the characteristics of two distinct shapes. The first half of the waveform follows the profile of the TX2 shape, featuring a sharp triangular peak and descent, emulating the classic TX2 structure. This is followed by a smooth Gaussian Bell curve in the second half, introducing a rounded peak and gradual tapering.

**Gaussian Wave:** A wave shaped like a Gaussian curve, ideal for softer, bell-like sounds and smooth transitions.



**Chirp:** A waveform with linearly increasing frequency over time, producing a "sweeping" sound effect.

**Exp Chirp:** A waveform with exponentially varying frequency, creating a more rapid sweep effect.

**Impulse (Sinc):** A wave that resembles an impulse response, ideal for sharp, percussive sounds and unique sound design.

**Double Impulse:** Two evenly spaced impulses.

**Tangent:** A waveform based on the hyperbolic tangent function, providing a soft clipping effect. This shape introduces subtle harmonics, resulting in a warmer, slightly compressed tone.

**Damped:** A decaying sine wave oscillator that simulates a damped oscillation. This waveform gradually loses amplitude, creating a ringing effect, ideal for simulating natural, percussive, or plucked instrument sounds.

## Wave Shapers

For either Wave 1 or Wave 2, two shaper processor stages can be selected which further modulate, shape and manipulate the wave. A final processor stage can be applied to the final wave resulting from the interaction step.

Off

**None:** Applies no processing to the waveform, maintaining its original state.

Filters

**LP Nyquist:** Applies a low-pass filter with a cutoff frequency set near the Nyquist frequency, effectively removing high-frequency content above this threshold. This process ensures a cleaner waveform and reduces aliasing artifacts.

**LP 1/2 Nyquist:** Applies a more aggressive low-pass filter with a cutoff frequency set to half of the Nyquist frequency. This filter removes a broader range of high frequencies, resulting in a smoother waveform with reduced harmonic content.

**LP 1/4 Nyquist:** Applies a more aggressive low-pass filter with a cutoff frequency set to one fourth of the Nyquist frequency. This filter removes an even broader range of high frequencies, resulting in a smoother, rounded waveform with vastly reduced harmonic content.

Shift

**Invert:** Inverts the polarity of the waveform.

**Phase 30deg:** Shifts the waveform phase by 30 degrees.

**Phase 45deg:** Shifts the waveform phase by 45 degrees.

**Phase 90deg:** Shifts the waveform phase by 90 degrees.

## Shapers

**Log:** Applies a logarithmic transformation to the waveform, compressing its dynamic range and making softer parts more prominent while maintaining overall character.

**Exp:** Applies an exponential curve to the waveform, emphasizing louder sections and creating a sharper, more aggressive sound profile.

**Bend Up:** Applies an upward bending to the waveform, emphasizing higher values and creating a more pronounced peak in the positive direction.

**Bend Down:** Applies a downward bending to the waveform, enhancing lower values and creating a pronounced peak in the negative direction.

**Shape Soft:** Applies a subtle shaping to the waveform, enhancing the contour while maintaining the overall shape. It smooths and gently emphasizes certain features.

**Shape Medium:** More pronounced shaping that adds noticeable contour and emphasis to the waveform's structure, resulting in a richer sound.

**Shape Hard:** Aggressive waveform shaping that alters the original signal significantly, creating a bold and uniquely textured sound.

**Fold:** Emphasizes the waveform's peaks by folding them back on themselves, creating a more complex harmonic structure as the amplitude exceeds certain limits.

## Distortions

**Clip Soft:** Softly limits the waveform's amplitude, producing gentle distortion. This processor preserves more of the waveform's dynamics while limiting extreme peaks.

**Clip Medium:** Moderately limits the waveform's amplitude for a more pronounced clipping effect, adding more distortion than the soft variant.

**Clip Hard:** Applies aggressive clipping to the waveform, sharply limiting the amplitude and introducing significant distortion for an intense, gritty sound.

**Tube Soft:** Simulates the warmth of a soft tube saturation, adding subtle harmonic enhancement that enriches the waveform's sound without heavy distortion.

**Tube Medium:** Introduces more pronounced tube saturation, producing a warmer, fuller sound with noticeable harmonic overtones.

**Tube Hard:** Strong tube saturation for a heavily distorted and rich sound, adding significant harmonic content and warmth to the waveform.

## Decimators

**Quantize Soft:** Gently reduces the resolution of the waveform, adding subtle digital artifacts that create a lo-fi effect without overwhelming the original sound.

**Quantize Medium:** Applies a moderate level of quantization, introducing more digital artifacts and a noticeable lo-fi texture.

**Quantize Hard:** Strong quantization that greatly reduces the resolution of the waveform, producing a distinct digital, lo-fi sound.

**Quantize Harsh:** The most aggressive form of quantization, producing an extreme digital effect that may sound glitchy and harsh.

**Crush:** Reduces the bit depth of the waveform to create a classic bit-crushing effect. This adds a gritty, vintage digital sound with pronounced artifacts.

**Blinds 2:** Quantizes the waveform into 2 distinct levels, producing a coarse, binary stepping effect.

**Blinds 4:** Quantizes the waveform into 4 distinct levels, creating a more nuanced stepping effect compared to Blinds 2.

**Blinds 8:** Quantizes the waveform into 8 distinct levels, producing a mild stepped effect.

## Special

**Mirror 1st Half:** Takes the first half of the waveform and mirrors it onto the second half, creating a symmetrical, phase-shifted effect that adds depth and width. This shaper ignores the second half of the original waveform.

**Mirror 2nd Half:** Takes the second half of the waveform and mirrors it onto the first half, creating a symmetrical, phase-shifted effect that adds depth and width. This shaper ignores the first half of the original waveform.

**Mix Mirror 1st Half:** Takes the first half of the waveform and mirrors it onto the second half, creating a symmetrical, phase-shifted effect that adds depth and width. The result is then mixed with the original waveform.

**Mirror 2nd Half:** Takes the second half of the waveform and mirrors it onto the first half, creating a symmetrical, phase-shifted effect that adds depth and width. The result is then mixed with the original waveform.

**Sync 2:** Fits two cycles of the wave shape in the space of one frame, effectively doubling the frequency when played (an octave about)

**Sync 3:** Fits three cycles of the wave shape in the space of one frame.

**Sync 4:** Fits four cycles of the wave shape in the space of one frame.

**Harmonics Soft:** Enhances the waveform by adding subtle harmonic overtones, creating a richer, more complex sound with minimal distortion.

**Harmonics Medium:** Introduces stronger harmonic overtones, giving the waveform a fuller and more textured quality with moderate distortion.

**Harmonics Hard:** Applies significant harmonic enhancement, adding a complex and distorted character to the waveform for a bold, powerful sound.

**Harmonic Warp:** Warps the waveform by applying a harmonic distortion, creating a sine-shaped transformation that enhances harmonic richness, especially on the positive half of the waveform.

**Phase Warp:** Introduces phase warping to the waveform, bending its phase non-linearly to create a complex, phase-shifted effect that adds movement and intrigue.

# Waves Interaction

The Interaction menu selects how Wave 1 and Wave 2 combine or interact across the final wavetable. This feature provides a variety of blending, crossfading, and modulation options to create dynamic and unique sonic textures.

## Interaction Types

### Off

**Off (Wave 1 only):** Uses wave 1 as is and does not use wave 2 in the resulting file.

**Off (Wave 2 only):** Uses wave 2 as is and does not use wave 1 in the resulting file.

### Crossfades

**Crossfade:** Gradually transitions from Wave 1 to Wave 2 across the wavetable, creating a smooth linear blend from one waveform to the other.

**Crossfade Exp:** Applies an exponential curve to the crossfade from Wave 1 to Wave 2, resulting in a faster transition towards Wave 2, adding a more dynamic, accelerating blend.

**Crossfade Log:** Utilizes a logarithmic curve in the crossfade from Wave 1 to Wave 2, creating a slower initial transition that gradually speeds up, offering a unique, decelerating effect for more nuanced blending.

**Fade In 2:** Starts with Wave 1 and progressively mixes in Wave 2 until Wave 2 is fully present at the end, adding Wave 2 gradually.

**Fade Out 2:** Begins with both Wave 1 and Wave 2 fully mixed, then gradually fades out Wave 2, leaving Wave 1 prominent at the end.

**Fade In/Out 2:** Fades in Wave 2 in the first half and fades it out in the second half, creating a dynamic mix that shifts the balance midway through.

**Zigzag Up 2:** Alternates between fading in and fading out Wave 2 across segments, creating a rhythmic, fluctuating effect.

**Zigzag Down 2:** Opposite of Zigzag Up, starting with Wave 2 fading out and ending with it fading in.

**Zig Zag Both:** Alternates between fading Wave 1 out and Wave 2 in, and vice versa, creating an intricate, dynamic interplay between the two waves.

### Mixing

**Mix:** Combines Wave 1 and Wave 2 equally throughout the entire wavetable, producing a mixed sound that includes characteristics of both waves.

**Mix 75/25:** Mixes Wave 1 and Wave 2 in a 75/25 ratio, favoring Wave 1 but adding subtle hints of Wave 2 for texture.

**Mix 65/35:** A mix where Wave 1 and Wave 2 are blended in a 65/35 ratio, providing a balance that still highlights Wave 1 but with more of Wave 2 present than in the 75/25 mix.

**Mix Inverted:** Subtracts Wave 2 from Wave 1, producing a sound that emphasizes the differences between the two waves for a unique effect.

**Mix Inverted 75/25:** A variant of Mix Inverted, with a 75/25 balance between Wave 1 and the inverted version of Wave 2, creating an altered, less balanced mix.

## Modulations

**Ring Modulation 50/50:** Multiplies Wave 1 and Wave 2 to produce complex harmonic content with equal emphasis on both waves.

**Ring Modulation 75/25:** A variation of ring modulation with a 75/25 emphasis, favoring Wave 1 in the modulation.

**Amplitude Modulation 50/50:** Applies amplitude modulation between Wave 1 and Wave 2, producing a modulated, pulsing sound with both waves contributing equally.

**Amplitude Modulation 75/25:** Similar to the 50/50 version but with a stronger presence of Wave 1, creating a more defined, yet modulated sound.

**Morphing Phase Shift:** Modulates the phase of Wave 2 based on a phase shift controlled by Wave 1, resulting in a complex and evolving waveform.

**Phase Mod 1->2:** Uses Wave 1 to modulate the phase of Wave 2, introducing phase-shifted characteristics controlled by Wave 1.

**Phase Mod 2->1:** Reverses the process of Phase Mod 1->2, using Wave 2 to modulate the phase of Wave 1 for a similar but distinct effect.

**Smooth Phase Mod 1->2:** Similar to Phase Mod 1->2 but with smoothed transitions for a gentler phase modulation effect.

**Smooth Phase Mod 2->1:** Applies a smoothed phase modulation where Wave 2 modulates Wave 1, resulting in a smoother, phase-shifted blend.

**Phase Interleaved Mix:** Interleaves segments of Wave 1 and Wave 2 in alternating segments, creating a segmented morph with smooth transitions.

## Special

**Wave Stack:** Creates a rich and dynamic waveform by blending Wave 1 and Wave 2 with additional layers of their reversed versions. This process includes halving the amplitude of the reversed waves to ensure a balanced mix. Ideal for generating harmonically complex and texturally dense waveforms.

**Spectral Morphing:** Transforms the spectral content between Wave 1 and Wave 2, producing a unique effect that shifts the frequency components smoothly.

**Random Cross-Selection:** Randomly selects parts of Wave 1 and Wave 2 for blending, with added smoothing for seamless transitions.

**Add/Sub Mix:** Alternates between adding and subtracting Wave 1 and Wave 2, creating a dynamic and complex waveform.

**Stutter Mix:** Applies a rhythmic stutter effect to Wave 2 during the crossfade, introducing short breaks and creating a rhythmic variation.

**Reverse Cross:** Reverses Wave 2 and blends it into Wave 1 for a unique, backwards crossfade effect with smooth transitions.

**Granular Cross:** Divides each waveform into small grains and randomly pulls grains from Wave 1 or Wave 2 to form the final waveform. This granular approach creates a texture-rich, glitchy crossfade effect that evolves unpredictably.

**Glitch Cross:** Applies a glitch effect during the crossfade by randomly inverting or zeroing out small segments of the waveform. This results in a dynamic crossfade with rhythmic interruptions and "glitches" for a chaotic, digital texture.

**Grain Flow:** Creates a chaotic, granular morph between Wave 1 and Wave 2 by breaking the waveforms into small grains. Each grain is randomly selected from either Wave 1 or Wave 2, and a smooth transition is applied between neighboring grains to produce a smooth and evolving texture.

**Multiband Cross:** Segments the frequency spectrum into multiple bands and applies a crossfade to each band independently. This produces a frequency-split morphing effect, where different parts of the spectrum transition from Wave 1 to Wave 2 at varying rates, creating a complex, layered sound.

**Multiband Zigzag:** Similar to Multiband Cross but adds a zigzagging effect within each frequency band. Each frequency band alternates between Wave 1 and Wave 2 in a zigzag pattern across multiple segments, resulting in intricate, oscillating transitions within the spectrum.

**Noise Blend:** Blends Wave 1 and Wave 2 with a noise component that varies over time, adding randomness and texture to the crossfade.

**Harmonic Blend:** Applies harmonic weights to Wave 2 and combines it with Wave 1, adding harmonic complexity as the waves morph.

**Even 1 + Odd 2:** Combines the even harmonics from Wave 1 with the odd harmonics from Wave 2, producing a unique hybrid waveform that emphasizes contrasting spectral characteristics.

**Odd 1 + Even 2:** Combines the odd harmonics from Wave 1 with the even harmonics from Wave 2, creating a complementary hybrid waveform with an inverted harmonic emphasis compared to "Even 1 + Odd 2."

## Random

The different parameters for both Wave 1 and Wave 2, as well as the shaper stages interaction can be randomized. This is especially powerful in combination with the Create Random Batch feature. Each parameter has a checkbox next to it, when this checkbox is on the parameter will be randomized - both when clicking the **Random** button or when batch creating wavetables.

Holding SHIFT while toggling one of the random checkboxes for one of the wave shapes will toggle all of the random checkboxes for that respective wave.

Holding SHIFT while clicking the random button will toggle all the random checkboxes in the application.

# Wavetable Creation

## Export Settings

Typically wavetable synths each expect a certain combination of frame size and cycle count (there are those who can work with multiple combinations).

The app can export three types of files: .wav, .wt and .h2p. The .wav export will cover the vast majority of synths and modules and will be exported for all export cases. The .wt format is compatible with Synapse Audio Dune 2 and 3. The .h2p format is compatible with U-He Zebra 2 and Zebra HZ.

**Frame Size:** Selects the number of samples per cycle. Different wavetable synths require different sizes. When selecting “All Sizes”, a file will be created for every frame size possible (in combination with the Cycles selection). When selecting “Modern”, a file will be created for each of 256, 512, 1024, 2048 frame sizes (in combination with the Cycles and Bit Depth selections). For absolute maximum compatibility select “All Sizes”. For all intents and purposes, selecting “Modern” will cover virtually all use cases. When selecting “Zebra 2”, the frame size is set internally to 128 and a .h2p file is created along with the .wav file. Zebra h2p files will also be created for the “All Sizes” and “Modern” selections. When selecting “Dune”, the frame size is set internally to 2048 and a .wt file is created along with the .wav file. Dune .wt files will also be created for the “All Sizes” and “Modern” selections.

**Cycles:** Selects the number of cycles present in the wavetable. When selecting “All Cycles” a file will be created for every cycle count possible (in combination with the Frame Size selection). When selecting “Modern”, a file will be created for each of 64, 100, 256 cycle counts (in combination with the Frame Size and Bit Depth selections). For absolute maximum compatibility select “All Cycles”. For all intents and purposes, selecting “Modern” will cover virtually all use cases. When “Zebra 2” is selected in the Frame Size menu the cycle count is locked to 16.

**Sample Rate:** Selects the sample rate of the exported .wav file. Note that sample rate has little relevance in the wavetable context, unless a synth needs a specific sample rate, there is no need to go with higher rates.

**Bit Depth:** Selects the bit depth of the exported .wav file. It is recommended to export at 16 bit for maximum compatibility, unless a synth needs a specific bit depth (e.g. Phase Plant requires 32 bit). When “All” is selected, files will be created for all possible bit depths (in combination with the Frame Size and Cycles selections).

## Creation

It is possible to create either a single wavetable file from the current selected parameters, or a random batch of files where each wavetable’s randomized parameters depend on the selected

options in the Random section. When creating wavetables, a progress bar will be displayed indicating file progress as a percentage of files created out of the total.

**Folder:** Wavetables are created by default in the user Documents folder, in the Ocean Swift Wavetable Creator\Wavetables subfolder. Selecting a different folder will use the selected folder for export. When tooltips are enabled, hovering over the folder button will display the current selected export folder. When changing the export folder, make sure the application has write permissions to that folder.

**Name:** Entry for the base file name from which the created wavetable files will be created.

**Create Wavetable:** This will create a wavetable file based on the selected settings. When Frame Size is set to process all sizes, wavetable files will be created for each frame size. Similarly, when Cycles is set to process all cycles, wavetable files will be created for each cycle count. When both Frame Size and Cycles are set to all, wavetable files will be created for all possible combinations.

**Create Random Batch:** This will create a batch of wavetables. Each wavetable in the batch will randomize the settings based on which parameter groups are enabled for randomizing. After clicking, a popup window will display asking for a folder name. Leaving this empty will generate a folder name based on a timestamp. Next, an option to select how many batch wavetables to create will come up. When batch creating, it is best practice to ensure all possible frame sizes and cycle counts are created by selecting “All Sizes” in the Frame Size menu and “All Cycles” in the Cycles menu. Each cycle count will generate a subfolder, and each frame size will be generated in its own subfolder of the relevant cycle count folder. Each Frame Size subfolder will also contain a FileInfo.txt that ensures compatibility with Serum when importing from that folder.

**Singles:** When singles is enabled, exporting wavetables will also create files for every single cycle in the wavetable, and account for any batch operations as well.

**Cancel:** When creating wavetable files, the Cancel button will be shown on screen. Clicking it will stop the file creation operation.

## Player

The audio player provides a preview of what the wavetable will sound like, giving an indication as to the tonal character of the wavetable and flow of the morph.

**Driver:** Selects the sound driver for the audio preview.

**Frequency:** Selects the set frequency for the audio preview.

**Volume:** Sets the volume for the audio preview.

**Play:** Turns the audio preview on or off.

## Visualizer

The visualizer gives a rough overview of how the resulting wavetable will look like with the current selected settings. When Frame Size is set to process all sizes, the visualizer applies the



64 frame size to the visualization. Similarly, when Cycles is set to process all cycles, the visualizer applies the 16 cycles count to the visualization.

## Presets

On first launch, an init.json preset is created in the Presets subfolder of the application files. Overwriting this preset will launch the application with the values saved with this init preset. It is otherwise possible to both save and load presets, retaining the currently selected parameter settings.

**Save Preset:** Saves a preset to file.

**Load Preset:** Loads a preset from file.

## Extra

**About:** Opens the application about screen.

**Tooltips:** When enabled, hovering over any control will display a tooltip with information about the control.

## Compatibility

The created wavetables are compatible with a wide range of Wavetable applications. This includes software and hardware synths, Eurorack modules, iOS/Android apps, plugin/instrument development platforms and scientific tools.

The list below gathers some of the known compatible products, if a product does not appear on this list, as long as it can load custom wavetables, with one or more of the available Frame Size and Cycle Count combinations then it is fully compatible.

Synth or Module	Frame Size	Cycle Count
1010 Music Bitbox	2048	Up to 256
1010 Music Synthbox	2048	Up to 256
Akai - MPC Key 61	2048	256
ALM046 - MCO (Eurorack)	256	64
ALM046 - MCO (VCV)	256	64
Ableton - Wavetable	1024	64

Arturia - Pigments	2048	256
AudioMulch	Varies	Varies
AudioKit - Synth One	2048	64
Axoloti	Varies	Varies
Bespoke Synth	Varies	Varies
Bitwig Studio	256	Varies
Caustic 3	2048	64
DSP Robotics - Flowstone	Varies	Varies
Elektron - Digitone	256	Varies
Expert Sleepers Disting EX	256	Varies
FMOD Studio	Varies	Varies
GNU Octave	Varies	Varies
Groove Synthesis - 3rd Wave	Varies	Varies
HISE	2048	100
IK Multimedia - Syntronik 2	512	64
JUCE	Varies	Varies
Kilohearts - Phase Plant	2048	256
Korg - Modwave	2048	64
KV331 Audio - SynthMaster	1024/2048	64/256
LabVIEW	Any	Any
MATLAB	Any	Any
Max for Live	Varies	Varies
Moog Model 15	1024/2048	100
MUX Modular	256-2048	Varies
Nano Studio 2 (Eden Synth)	Varies	Varies
Native Instruments - Kontakt	2048	100
Native Instruments - Reaktor	2048	100

Novation - Peak	256	5
Novation - Summit	256	5
Ocean Swift - Defiant WT	2048	100
Ocean Swift - OSS Enterprise	2048	100
Ocean Swift - Pathfinder WT	2048	100
Ocean Swift - Porphyra Hybrid	2048	100
Osiris - Wavetable Oscillator	256/512	64
Parawave - Rapid	2048	256
Piston Honda MkIII	256	Varies
Pure Data	Varies	Varies
Python (SciPy, NumPy)	Varies	Varies
Reason - Europa	1024	Varies
Sonic Academy - ANA 2	2048	256
Sonic Core - Vectron	128	1
Steinberg - Halion	2048	100
SunVox	2048	100
Supercollider	Varies	Varies
SurgeXT	8-4096	Up to 512
Symbolic Sound - Kyma	Varies	Varies
Synapse Audio - Dune 2	2048	Up to 256
Synapse Audio - Dune 3	1024/2048	Varies
Synth Edit	Varies	Varies
Synthesis Technology - E352	256/512	64
Synthesis Technology - E370	256/512	64
Synthesis Technology - Wave Edit	256	64
Tiptop Audio Vortex	256	64
Tone2 - Icarus	1024-2048	64-256

Tracktion - BioTek 2	2048	Varies
Tranzwave (Kontakt)	2048	100
U-He - Hive 2	2048	256
U-He - Zebra 2	128	16
U-He - ZebraHZ	128	16
U-He Zebralette 3	2048	Varies
UVI - Falcon	2048	256
Vital	2048	256
VCV Rack - Seven Seas	2048	100
VPS Avenger 2	2048	Up to 256
Waldorf - Blofeld	128	Varies
Waldorf - M	128	Varies
Waldorf - Nave	256	128-256
Waldorf - NW1	32-1024	Varies
Waldorf - Quantum / Iridium	2048	256
Waves - Codex	512	64
Wwise	Varies	Varies
Xfer - Serum	2048	256
Ziqal - Dimension	2048	64

## Changelog

### 1.4.6

**ADDED** Apple builds are now notarized

### 1.4.5

**ADDED** Linux Support (ARM and Intel)

## 1.4.4

**ADDED** Intel Mac Support

## 1.4.3

**ADDED** Synapse Audio Dune 3/2 .wt file export format

**ADDED** U-He Zebra2 and ZebraHZ .h2p file export format

**IMPROVED** Holding shift while selecting a wave shape sets that shape for all the steps of the respective wave

**IMPROVED** Holding shift while toggling the random checkbox for a wave shape step toggles the random checkbox for all the steps of the respective wave

**IMPROVED** Holding shift while clicking the random button toggles all the random checkboxes

**IMPROVED** Batch export folder structure is organized better

**FIXED** Sync 3 shaper calculation was incorrect for certain frame sizes

**FIXED** Progress bar could glitch under certain conditions

**FIXED** Visualizer was not fully displaying the complete last cycle

## 1.3.2

**ADDED** Individual single cycles export option

**ADDED** Progress bar indicating file creation progress on export

**ADDED** All bit depths at once export option

**ADDED** Export base folder can now be selected by the user

**ADDED** File creation operation can now be canceled while in progress

**ADDED** Additional wave shapes: Sine Self FM 1, Sine Self FM 2, Sine Self FM 3, Partial 3->1 FM, Partial 4->1 FM, Partial 5->1 FM, Partial 6->1 FM, Partial 7->1 FM, Partial 8->1 FM, Partial 3->1 AM, Partial 4->1 AM, Partial 5->1 AM, Partial 6->1 AM, Partial 7->1 AM, Partial 8->1 AM, Double Impulse

**ADDED** Additional Shapers: Invert, Phase 30deg, Phase 45deg, Phase 90deg, Sync 4, Mirror Second Half, Mix Mirror 1st Half, Mix Mirror 2nd Half

**ADDED** Additional Interactions: Wave Stack, Grain Flow, Even 1 + Odd 2, Odd 1 + Even 2

**IMPROVED** Interface look, feel and behaviour

**FIXED** Empty file name was still creating files instead of displaying error

**FIXED** Potential crash with the Impulse wave shape

## 1.2.2

**ADDED** Morphable audio preview of the wavetable

**ADDED** Band limited versions of wave shapes

**ADDED** 32bit float export option (e.g. for Phase Plant)

**ADDED** 8bit export option

**ADDED** Loop point is marked in each wave file to ease loading on certain synths (Surge, VAZ Modular)

**ADDED** 5 cycles export option (e.g. for Peak/Summit)  
**ADDED** 8 cycles export option  
**ADDED** 600 frame size option (e.g. for Disting)  
**ADDED** Option to export all "modern" cycle/frame combinations  
**ADDED** Tooltips  
**ADDED** About screen  
**IMPROVED** Reordered menus for more logical browsing  
**FIXED** Visualizer was not fully displaying the complete last cycle  
**KNOWN ISSUE** App takes a long time to launch on Mac

## 1.1.0

**FIXED** Issue loading the app on Mac  
**ADDED** Second shaper stage for each wave  
**ADDED** Main shaper stage for the final wave  
**ADDED** 2 new wave shapes  
**ADDED** 3 new shapers  
**ADDED** 1 new interaction  
**IMPROVED** Every wave shape stage can be individually randomized  
**IMPROVED** Visualizer is much wider

## 1.0.10

**ADDED** Initial release

