

Mononoke

Bram Bos

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MONONOKE

version 1.0.2

Version history

1.0	16 January, 2020	Initial publication
1.0.2	19 January, 2020	Updated section about legacy MIDI CC control

Introduction

Mononoke is a word from Japanese folklore, literally meaning “being without shape”. It refers to a sort of ghost or spirit without a physical appearance; a haunting manifestation which can not be seen. This eerily matches the amorphous textures and aural atmospheres that can be created with the Mononoke drone synthesizer.

Mononoke comes with 8 expressive, playable performance pads and two separate 4-voice synth engines (8 voices total) crafted for conjuring haunting wintery landscapes and melancholic drones wailing as if emanating from long abandoned derelict machinery.

What sets Mononoke apart from other polyphonic synths (other than the performance pads) is the feedback mechanism. Mononoke lets you feed the sounds from its voices back into the channels of the other voices for unpredictable, ever-changing interaction between them. Sometimes screeching, sometimes wailing, sometimes not more than a subtle background buzz, Mononoke’s soundscapes are as ephemeral as a landscape that morphs under fresh snow and freezing gusts.

Standalone vs AU Plugin

Mononoke is primarily an AU plugin, meant to be run inside one of iOS’ many flavors of plugin hosts. The playable pads are built-into the plugin, and their tuning is saved inside the presets you create (and the factory presets). Load a new preset, and you’ll also change to the tuning that comes with the preset.

A very basic standalone app is also included. This app runs a single instance of the plugin, so you can jam without having to boot up a host app; e.g. if all you want to do is create some presets or jump on a long trans-atlantic flight. The standalone app does not offer any connectivity however, so if you want to run Mononoke as part of a multi-app setup, use MIDI to control it, or add more effects you’ll need to load it in a host.

The AU plugin also sends out AU MIDI to compatible host (even in MPE mode) so you can record your performance as MIDI data for later editing and playback.

Note: the AU plugin - when loaded inside a host - supports MPE and regular MIDI control. You’ll need an MPE hardware controller to replicate the full expressiveness of the built-in pads.



Sculpting sounds

Mononoke consists of two main panels:

- the synth panel for manipulating the basic sound of both synth engines
- the pads panel for playing the synth and controlling the feedback between all voices

Let's go through all sections of the synth engine

Note: any knob in Mononoke can be reset by double-tapping it

Left Section, Right Section

Mononoke's synth has two (almost) identical engines - each capable of 4 voices polyphony. One is called "Left Section", the other "Right Section". The only difference between both sections is that Left Section can go an octave lower than Right Section.

Voice parameters (voice)

This part of the engine controls the oscillators of each of the four voices of this section. It has 3 parameters, each of which can be modulated using its own LFO

shape this controls the shape of the oscillator's waveform (and, consequently, its frequency build-up). It ranges smoothly from a soft triangle wave to a square-like shape and everything in between.

shape rate the LFO-rate of modulation back-and-forth between triangle and the shape set by the shape knob. Set to its minimum value keeps the wave shape constant (no LFO).

- tremolo** specifies the amount of tremolo LFO applied to the voice. At its minimum value (0) there will be no tremolo. At its maximum value the LFO effect will pulsate between maximum amplitude and near-silence.
- tremolo rate** the rate (speed) of the tremolo effect - ranging from very slow to moderately fast
- vibrato** use this knob to set the depth of vibrato applied to each voice. 0 means no vibrato.
- vibrato rate** the rate of the vibrato effect.
- LFO shape** lets you choose the shape of all three voice-LFOs. You can switch between a smooth sine and a pulse which alternates between minimum and maximum values.

Envelope parameters (env)

This controls the amp envelope of the voices. The envelope of the synth is a basic string-style attack-hold-release (AHR) envelope.

- attack** this setting determines how long it takes for a voice to reach its maximum amplitude.
- release** this controls the release time of a voice (how long the sound takes to die down)

Note: each section also has one filter envelope. The filter envelope uses the same settings as the amp envelope, but will not release until the last voice of the section has been released.

Filter parameters (filter)

This part of the engine controls the built-in lowpass filter (VCF). There is one lowpass filter per section, so it is applied to all 4 voices at once.

- cut** sets the cutoff frequency of the lowpass filter
- mod** determines the envelope modulation amount for both the filter LFO and the filter envelope. At maximum value the range will be from almost fully closed to fully open.
- rate** sets the rate of the filter LFO. This LFO is always a smooth sine wave. At minimum value (0) the LFO will be disabled and the filter will be set to a fixed value.

Effect parameters (fx)

This controls the post-processing effects. Both synth sections are first mixed together, then saturated and finally fed through the effects.

mood the mood parameter changes the character of the feedback sound between voices. In its central position (0) there is no audible effect. When moved counter-clockwise (negative, green LED will light up) the mood will be warm and harmonious. When moved clockwise (positive, red LED will light up) the sound will become cold and agitated.

ambiance ambience is a miniature version of Kosmonaut. It intelligently combines multiple mechanisms for creating a wide spatial sound stage. The further the effect is increased, the bigger the soundscape.



Playing Mononoke

Playing the synthesizer engines in Mononoke can be a very interactive experience. The performance pads allow for many expressive modulations of each voice independent of the others. Although you can use a MIDI sequencer to drive the Mononoke synth, this is not what it was designed for: manual interaction (either using the screen or an external MPE controller) is where it really shines.

Additionally, the unique feedback mechanism feeds part of each voice into the other voices, so that they start interfering and modulating and never sound the same way twice, even when played exactly the same way. In other words, all voices are part of the bigger soundscape and can be intertwined in ways that other synthesizers can not.

Understanding feedback

Mononoke's feedback system routes adjustable amounts of one or more voices into other voices. When fed back into a voice it will be used for phase modulation (a kind of FM) of the voice.

How this sounds depends on multiple factors, such as the strength of the feedback signal, the volume levels of source and destination voices, and the ratios of all the fundamental frequencies involved in the phase distortion. It can range from some subtle additional harmonics, via metallic distortions all the way to wailing electric guitar-like sounds.

Generally, when you feed two consonant voices into each other, the feedback will sound pleasant and harmonic. If you mix lots of voices and feed those into multiple other voices the feedback will be more chaotic and dissonant.

Also, the feedback (and a bit of cross-talk between voices) will become more apparent if you push the velocity/volume of the voices to their max.



Mononoke offers two different feedback algorithms:

Growl

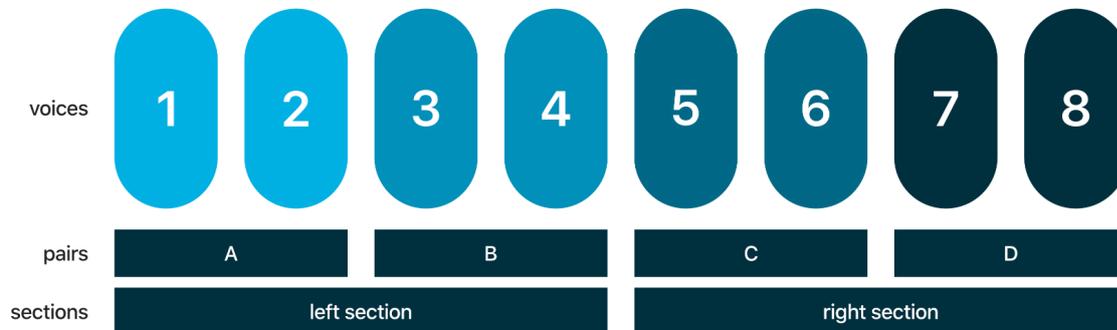
This is the default feedback setting. It tends to add overtones to the base frequencies of the voices. The louder the voices are played, the more audible high-frequency content will be generated. Generally the base frequencies of the voices will remain intact at low-moderate feedback settings, so tuning of your oscillators will be fairly stable.

Warp

The warp feedback system will whack the individual oscillators with the incoming feedback signal. At high frequencies this will sound fairly similar to the 'growl' algorithm, but at low frequencies it will destabilize the oscillator and can cause wild changes in the main frequency (ranging from 'out of tune' effects to alien whale chatter). The stronger the incoming signal, the stronger the effect on the stability of the oscillators.

Three feedback routings

Mononoke sports three different ways to route feedback signals, each controlled with a knob. To understand how they work, you need to know how Mononoke's 8 voices are wired internally:



Essentially, the 8 voices are grouped into 4 pairs (A, B, C, D), which are subsequently grouped into 2 sections (left section, right section). Feedback signals can be routed as follows:

- I > I Adjacent voices within each pair are fed into each other (e.g. 1 and 2, 3 and 4, etc.)
- II > II Both pairs within each section are cross-fed (A and B, C and D)
- III > III The combined signal from an entire section is fed into the other section

The setting of each knob determines the how much of the feedback signal will be received. So the left-hand "III > III" knob sets how much signal from the right section will reach the left section.



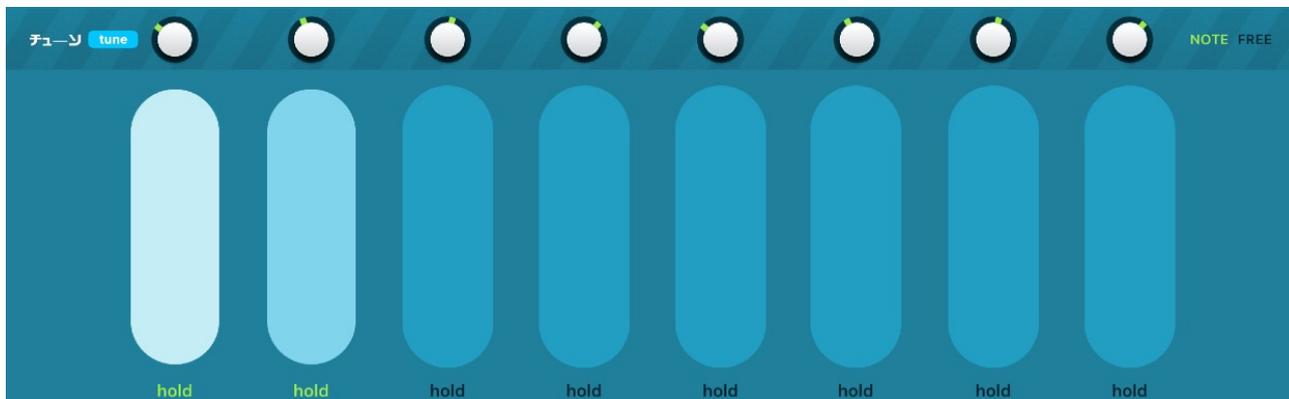
Tuning the pads

Each of the 8 pads (voices) can be tuned to its own frequency. The fine tuning knob affects all voices together. This way you can prepare the contents of your soundscape. You can't play voices outside of the 8 selected ones (this also applies to using MIDI input).

- There are two ways of tuning the performance pads:
- quantized to semitones (the "NOTE" switch is active)
 - free, unquantized tuning (the "FREE" switch is active)

In “NOTE” mode, all notes are quantized to a semitone. The left section is tuned one octave lower than the right section.

In “FREE” mode, all notes can be set to an unquantized frequency over a 2-octave range. Each pair is tuned one octave higher than the last, so the total range of frequencies available is very wide (and using the fine tuning feature you can shift the entire range up or down an extra octave further).

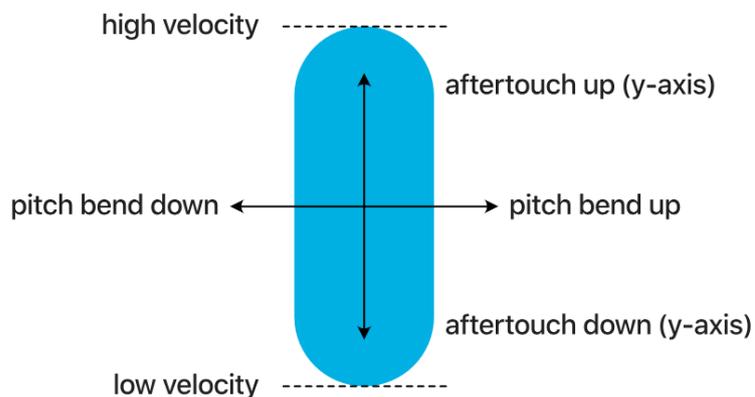


Playing the pads

Mononoke’s performance pads allow for different kinds of expressiveness. Depending on where you touch them, they trigger your voices with different levels of velocity.

When you hold them, you can move your fingers in all directions to change pitch and polyphonic aftertouch - per voice separately.

The ‘hold’ toggle-button allows for a per-voice latching mechanism. If the ‘hold’ button is lit up, latch is enabled. Tap it again to disable ‘hold’ and release the voice (if there was still a note held).



Controlling Mononoke via MIDI

When playing Mononoke via MIDI, you can trigger the same 8 frequencies as assigned to the pads in the UI. If you want to play different notes, you'll have to reassign them in the synth's user interface.

All MIDI notes are assigned to one of the 8 pads, sequentially. Mapping can change per MIDI controller, depending on how notes/octaves are numbered on it. Try for yourself where the 8 pads are on your own MIDI controller.

Note: the MPE/MIDI implementation of Mononoke essentially replicates the experience of the onscreen pads. This means you can't play Mononoke via external keys like a conventional synth!

MPE versus MIDI

There are two ways to control Mononoke with an external controller: via MPE and using MIDI. MPE (MIDI Polyphonic Expression) is an extension to the regular MIDI standard, which allows individual notes to be modulated independently. For example: you can change the aftertouch on one note, while you're simultaneously pitchbending another. Regular MIDI can't do this.

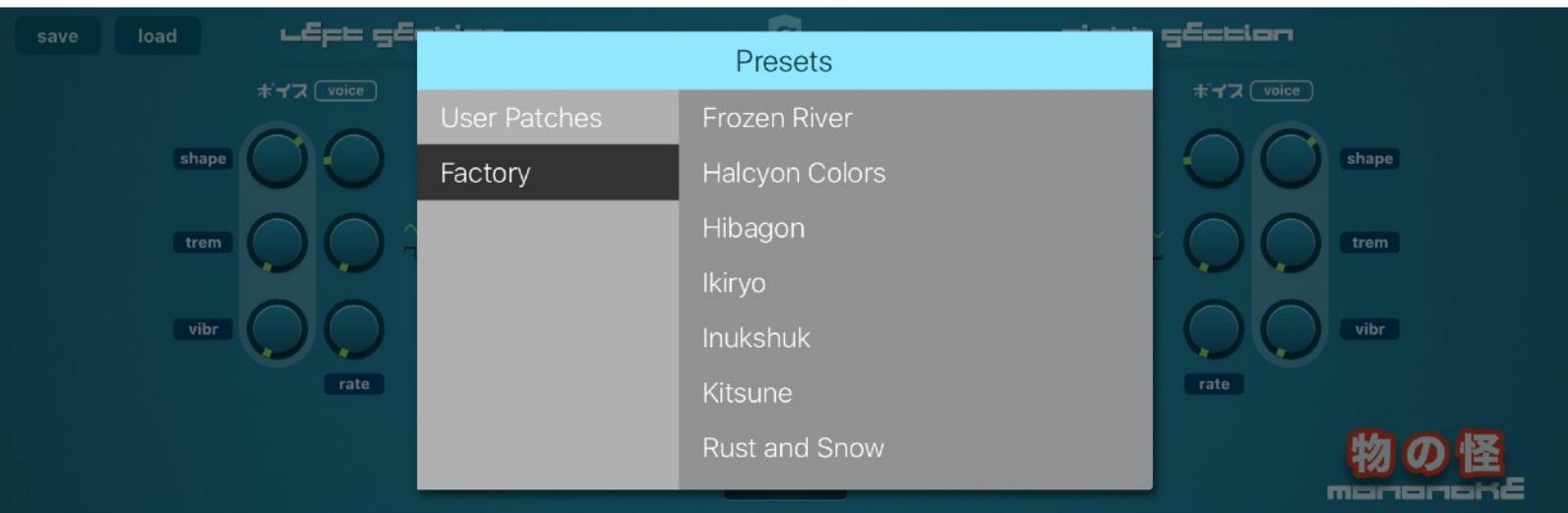
If you want to control Mononoke using MPE, you'll have to use a controller which sends MPE control data. If you don't have one you can switch to 'regular' MIDI control. Simply tap the MIDI toggle in the user interface to switch to MIDI mode.



MPE dimensions

Modulations controlled with MPE are usually defined as 'dimensions'. Mononoke interprets MPE dimension controls as follows:

- Initial velocity:** the strength you initially hit the key/pad. Determines the initial volume of the voice
- Pressure:** increases the rate of the shape LFO (when pressed over a threshold of 50%)
- Y-axis:** moving up/down changes the velocity/volume of the voice relative to the initial velocity strength
- X-axis:** pitch bend, with a range limited to +/- 24 semitones (MPE standard)



Preset Management

Loading a user preset or factory preset

To retrieve a previously saved user preset, or open a factory preset supplied with the plugin, simply press the “load” button in the top-left corner.

Saving a user preset

To add the current settings to the list of user presets, hit the “save” button in the top-left corner of the plugin window. You can then choose a new name for your preset

Deleting a user preset

If you want to delete a previously saved user-preset, simply look it up in the preset list and swipe it to the left (like in most other iOS apps that present lists of documents).

Backup: exporting all user presets (standalone mode only)

To export all your user presets, in order to back them up or move them to another device, start the app in standalone mode. Press the “export presets” button in the top-right corner. A pop-over will appear which will let you send the resulting zip-file anywhere you like.

Restoring backup: importing user presets (standalone mode only)

To import previously exported zip-file with user presets, simply send or open the zip-file on the iOS device. A list of apps will appear which can handle zip-files. Choose “Mononoke”, and all presets will be imported automatically. Occasionally, you may need to restart the app to see the imported presets.

Note: only zip-files with the name “mononoke_presets.zip” will be imported by Mononoke.

Recording your performance (AUv3 MIDI OUT)



If you host Mononoke as an Audio Unit plugin in a compatible host, you can capture your performance on the pads using AU MIDI. Mononoke will send whatever you play on the pads out as MIDI:

- If MPE mode is selected, MPE MIDI data will be sent out
- If MIDI mode is selected, standard MIDI data will be sent out (some details of your performance may be lost in this mode)

When you toggle between MIDI and MPE modes, Mononoke will automatically send out the required MPE Configuration Message (MCM), with the master channel set to 0 and the zone size set to 15.

Note: if you send out MPE MIDI data, please make sure that the sequencer you're using to capture the data also supports MPE. Otherwise you can fall back on regular MIDI.



AU & MIDI Parameters

When the plugin is hosted in an AU host, all aspects of the synth engine can be controlled using AU Parameters and as a fallback: via legacy MIDI CC controls. Obviously, it is recommended to use AU Parameters where possible, since those have a much higher resolution than old-fashioned MIDI CC (which are limited to values from 0 - 127).

Legacy MIDI CC codes are linked to fixed parameter destinations; which are listed in the tables below. All regular CC values are 0-127. For bipolar knobs 64 represents the center/0-value. AU Parameter values are in the 0-1 range.

IMPORTANT: legacy MIDI CC is only supported on MIDI Channels 2-16. Channel 1 is reserved for direct input. This avoids conflicts when an external keyboard/MPE controller is used to play Mononoke, while AU Parameters are used to change parameters. Any input sent via channel 1 would otherwise be received twice: once as a MIDI CC parameter and again as an AU Parameter.

Note: in summary... if you want to use MIDI CC for changing settings (seriously: only do this when AU parameters are not an option) then send them on MIDI Channels 2-16 only!

	ATTACK LEFT	ATTACK RIGHT	RELEASE LEFT	RELEASE RIGHT		
CC#	13	14	15	16		

	SHAPE LEFT	SHAPE RIGHT	SHAPE RATE LEFT	SHAPE RATE RIGHT	TREMOLO LEFT	TREMOLO RIGHT
CC#	17	18	19	20	21	22

	TREM RATE LEFT	TREM RATE RIGHT	VIBRATO LEFT	VIBRATO RIGHT	VIBR RATE LEFT	VIBR RATE RIGHT
CC#	23	24	25	26	27	28

	LFO SHAPE LEFT	LFO SHAPE RIGHT	CUTOFF LEFT	CUTOFF RIGHT	ENVMOD LEFT	ENVMOD RIGHT
CC#	29	30	31	32	33	34

	FILTER RATE LEFT	FILTER RATE RIGHT	AMBIANCE	MOOD	FINETUNE	
CC#	35	36	37	38	39	

	TUNE 1	TUNE 2	TUNE 3	TUNE 4		
CC#	46	47	48	49		

	TUNE 5	TUNE 6	TUNE 7	TUNE 8		FREE TUNE
CC#	50	51	52	53		63

	LATCH 1	LATCH 2	LATCH 3	LATCH 4		WARP
CC#	54	55	56	57		70

	LATCH 5	LATCH 6	LATCH 7	LATCH 8		MPE MODE
CC#	58	59	60	61		62

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