

Table A2.1. Parameter settings used for a Common Nighthawk (*Chordeiles minor*) acoustic recognizer built in Song Scope software.

Parameter	Setting
FFT size	256
FFT overlap	1/2
Frequency minimum	30
Frequency range	80
Amplitude gain (dB)	0
Background filter (s)	1
Max syllable (ms)	723
Max syllable gap (ms)	0
Max song (ms)	723
Dynamic range (dB)	26
Algorithm	2.0
Maximum complexity	32
Maximum resolution	8
Score threshold	0
Quality threshold	20

Table A2.2. Parameter settings used for a Common Nighthawk (*Chordeiles minor*) acoustic recognizer built in Kaleidoscope software.

Parameter	Setting
FFT size	256
Max distance from cluster centre to include outputs in cluster.csv	2.0
Max states	12
Max distance to cluster centre for building clusters	1.0
Max clusters	2
Frequency minimum (kHz)	1.0
Frequency maximum (kHz)	7.0
Min song (ms)	100
Max song (ms)	700
Max syllable gap (ms)	0

Table A2.3. Parameter settings used for a Common Nighthawk (*Chordeiles minor*) acoustic recognizer built with the binary point template function in the MonitoR package in R software. Frequency minimum, frequency maximum, and amplitude cutoff were adjusted by hand within the indicated ranges for each of the 100 templates made.

Parameter	Setting
FFT size	512
FFT transformation	Hanning window
FFT overlap	None
Frequency minimum (kHz)	2.1 to 2.8
Frequency maximum (kHz)	5.0 to 5.8
Amplitude cutoff (db)	-53 to -17
Buffer	0
Score threshold	0.1
Min gap between hits (s)	0.1

Table A2.4. Parameter settings used for a Common Nighthawk (*Chordeiles minor*) acoustic recognizer built using a convolutional neural network (CNN) in Tensorflow software.

Parameter	Setting
Spectrogram	Input mel-scaled (96 mel filters)
FFT size	512
FFT overlap	75%
Sample rate (kHz)	16
Layer 1	7x7 conv stride 2. 8 ReLU units
Layer 2	3x3 max-pooling stride 2
Layer 3	24x9 conv. 32 ReLU units
Layer 4	1x1 conv. 1 sigmoid unit
Layer 5	Global max-pooling
Loss	Cross-entropy
Optimizer	Adam
Batch size	64
Learning rate	0.001
Score threshold	0.001
Min gap between hits (s)	0.1

Table A2.5. Parameter settings used for a Common Nighthawk (*Chordeiles minor*) acoustic recognizer built in RavenPro software.

Parameter	Setting
FFT Size	512
Minimum frequency (kHz)	1.8
Maximum frequency (kHz)	6
Minimum duration (s)	0.2
Maximum duration (s)	0.6
Minimum separation (s)	0.096
Minimum occupancy (%)	15
SNR threshold (dB)	10
Block size (s)	0.8
Hop size (s)	0.4
Percentile	20