

Supplementary Material

Supplementary Material Datasheet 1: Acoustic Monitoring And Semi-Automatic Call Analysis

Settings For Bat Recordings

Device: Batlogger A (Elekon AG, Luzern, Switzerland)

Pre-Trigger time (ms): 100

Post-Trigger time (ms): 800

Auto Trigger max time (ms): 20,000

Manual Trigger max time (ms): 53,500

Record: automatically

Mode: CrestAdv

Min.CrestFactor: 7

Lowest frequency (kHz): 16

Highest frequency (kHz): 155

Recordings were triggered automatically from 16 kHz to 155 kHz and with Crest Factor 7 (triggered when quotient from loudest frequency and background noise is bigger than Crest Factor). Once triggered, one recorded sequence consisted of 100 ms before the trigger event until 800 ms after the last one, however to a maximum length of 20 seconds.

Semi-Automatic Call Analysis Approach

Software: Batexplorer (Elekon AG, Luzern, Switzerland)

Semi-automatic analysis was used for identifying bat sequences on the level of pre-defined species/sonotypes (Supplementary Table S1) for each recording night.

The following steps in Batexplorer were taken:

STEP 1

- Check in library that expected bat species are activated

STEP 2

- Load recordings into project and run following self-defined tasks:
 - Analyzing non-analyzed recordings, finding bat calls and measuring parameters
 - Search in calls and assign *Pipistrellus pipistrellus* when in suggested species and:
 - o Not classified yet
 - o At least 2 matching calls
 - o Peak frequency 43.1-50.9 kHz

- o Plausibility >50%
- o Quality >10%
- o Call shapes: Cf-e, cf-n, fm-d

- Search in calls and assign *Pipistrellus pygmaeus* when in suggested species and :
 - o Not classified yet
 - o At least 2 matching calls
 - o Peak frequency 52.1-63 kHz
 - o Plausibility >50%
 - o Quality >10%
 - o Call shapes: Cf-e, cf-n, fm-d

- Search in calls assign *Pipistrellus nathusii* when in suggested species and:
 - o Not classified yet
 - o At least 2 matching calls
 - o Peak frequency 36-41.9 kHz
 - o Plausibility >50%
 - o Quality >10%
 - o Call shapes: Cf-e, cf-n, fm-d

- Search for calls and assign *Pipistrellus_high* when:
 - o Not yet classified
 - o *Pipistrellus* in suggested species
 - o Peak frequency 51 – 52 kHz
 - o Call shapes: Cf-e, cf-n, fm-d

- Search in calls and assign *Pipistrellus_low* when:
 - o Not yet classified
 - o *Pipistrellus* in suggested species
 - o Peak frequency 42-43 kHz
 - o Call shapes: Cf-e, cf-n, fm-d

- Search in calls and assign *Nyctalus noctula* when in suggested species and:
 - o Not classified yet
 - o At least 2 matching calls
 - o Peak frequency 17-21 kHz
 - o Plausibility >50%
 - o Quality >10%
 - o Call shapes: Cf-e, cf-n

STEP 3 Check assigned recordings

- Check automatically assigned recordings and correct false classifications if necessary
- Check for feeding buzzes and copy recordings marked with an “F” for foraging activity

STEP 4 Assign remaining recordings

- Go through remaining sequences

- Assign bat recordings to other species/sonotypes in accordance with identification criteria (Supplementary Table S1)
- Check for feeding buzzes and copy recordings marked with an “F” for foraging activity
- Assign pure social call recordings to “Bat calls”
- Assign unidentifiable bat calls to “NA” (not assignable)
- Assign non-bat recordings to “no-bat call”

The identified recordings can later be assigned and grouped to functional guilds.

The following settings in Batexplorer were used:

Spectrogram: FFT size: 1,024; Windowing function: Hanning; Overlap: 80%, Overview: Compact, Use frequency guides; Max. calls in overview: 10

Advanced settings: Crest Factor: 7; Lower Freq limit: 16 kHz; Hysteresis: 0.95; Intens. Tolerance: 0.20; Species separation (Hz): 3,000; Min. call length (ms): 1.0; Upper freq. limit: 155 kHz; Min call intensity (%): 10; Freq tolerance: 7 kHz