This README\_ WoodFrogs\_Bioacoustics.txt file was generated on 2021-02-23 by Ryan Calsbeek

GENERAL INFORMATION

1. Title of Dataset: Data from: Individual contributions to group chorus-dynamics influence access to mating opportunities in wood frogs.

2. Author Information

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3. Date of data collection: 2017-2018

4. Geographic location of data collection: Hanover, New Hampshire & Norwich, Vermont USA

5. Funding sources that supported the collection of the data: US National Science Foundation

6. Recommended citation for this dataset: Calsbeek et al., Data from: Individual contributions to group chorus-dynamics influence access to mating opportunities in wood frogs.

Dryad, Dataset

DATA & FILE OVERVIEW

1. Description of dataset

These data were generated to investigate how individual wood frogs calls influence chorus properties, and how variation influences mating opportunities. We use a novel application of an acoustic camera (<http://www.acoustic-camera.com>) to parse individual calls from within the larger context of group choruses of calling frogs.

2. File List:

File 1 Name: Wodfrogs\_master\_ponds.xlsx

File 1 Description: summary of peak frequency and call duration with associated egg mass counts for each of 11 study ponds.

File 2 Name: Chorus choice chamber.xlsx

File 2 Description: time spent near alternative chorus types with associate choice data for male and female wood frogs.

METHODOLOGICAL INFORMATION

To evaluate female choice between choruses, we combined recordings of individual males to construct three chorus types: 1) LFLV choruses had low peak frequency (e.g., PF ~1542 Hz) with low variation in peak frequency (measured as the interval above and below PF before the amplitude dropped 20dB below the peak e.g., 1329-1937 Hz). 2) HFLV choruses had high peak frequency (e.g., 1808 Hz) with low variation (e.g., ±20 dB range= 1413-2037 Hz) and 3) HV choruses had both high and low frequency calls (PF 1807 and 1542 Hz) and thus high variance in call frequency. Two versions of each chorus-type were produced and were used in alternating order between trials. Each frog heard the HFLV and LFLV choruses, LFLV and HV choruses, or HFLV and HV choruses from two of four speakers. Choruses were played through alternate pairs of speakers in each consecutive trial. The other two speakers served as silent controls. Trials lasted ten minutes or until the focal frog had moved to within 5cm of a speaker and remained at that speaker for at least one minute. Trials in which the focal frog did not move towards a chorus or did not make a definitive choice (14, 10, and 13 trials in the three treatments respectively) were recorded ‘NA’.

We recorded natural choruses at each of 11 ponds using an acoustic camera mounted to a tripod. All recordings were made between 8:00 a.m. and 1:00 p.m. Acoustic cameras integrate a digital video-camera with a microphone array to map sound onto acoustic still or video images. Frog choruses were recorded using a Ring48 AC Pro Polytech acoustic camera. This configuration consisted of a 0.75-meter rigid carbon fiber ring with 48 calibrated microphones (+/- 0.5 dB sensitivity) and a centrally located video camera. Data were aggregated in a Polytech Multi Channel Data Recorder (mcdRec). Data were extracted using the NoiseImage software v. 4.11 (Gfai tech). The NoiseImage software uses time of arrival differences among microphones to reconstruct sound sources on the video of the scene, producing a video with an overlaid heatmap of sound sources. All videos were reconstructed with a framerate of 25 frames/second and an overlap of 3 frames. This process resulted in one WAV file per frog that contained all calls of that individual. To extract acoustic measurements from these recordings, we compiled all of the WAV files into a multichannel file, with one channel per frog. We then converted the video frame numbers into time stamps using the frame rate of the video and used a custom script to build a selection table for the Raven Pro sound analysis software. To maximize the precision of the measurements, we used two different sets of spectrogram parameters. We exported peak frequency values using an FFT (Hanning) size of 4096 samples to facilitate frequency resolution, giving a 3 dB filter bandwidth of 33.7 Hz. We exported 90% duration values using an FFT of 256 samples, resulting in FFT bins of 0.0027 sec. All spectrograms were computed with 50% overlap.

DATA-SPECIFIC INFORMATION FOR: Woodfrogs\_master\_ponds.xlsx

1. Number of variables: 13

2. Number of cases/rows: 11

3. Variable List:

Pond: Pond ID

N Rows: Number of individual WAV files per pond

N (Frog): Number of individual male frogs per pond (same as N Rows)

Mean (Dur): Mean frog call duration at each pond

Variance (Dur): Variance in frog call duration at each pond

Mean (PF): Average Peak Frequency in frog calls at each pond

Variance (PF): Variance in Peak Freqeuncy of frog calls at each pond

Mean (Egg Mass): Number of frog egg masses counted at each pond

Call masking: Average temporation separation (measured in seconds) between frog calls at each pond.

**Variance (Residual PF): Residuals from the regression of (Variance PF) on N (Frog) to correct for variation in pond population size.**

**Mean(Residual PF): Residuals from the regression of (Mean PF) on N (Frog) to correct for variation in pond population size.**

**Residual Mean(Eggmass): Residuals from the regression of (Eggmass) on N (Frog) to correct for variation in pond population size.**

4. Missing data codes:

NA

DATA-SPECIFIC INFORMATION FOR: chorus choice chamber.xlsx

1. Number of variables: 19

2. Number of cases/rows: 42

3. Variable List:

ID: Individual wood frog id

Sex: Sex of the individual frog (M/F)

Mass: Mass (grams) of individual frog

Svl: Body size (mm) measured as snout to vent length of individual frog

HFLV-HV: chorus choice option High Frequency Low Variance vs. High Variance

File0: artificial chorus file used in the HFLV-HV playback trial

Time0: time (seconds) spent in choice trial (maximum of ten mintues)

Seconds0: time converted to seconds

Side0: Side of the choice chamber to which the focal frog moved

LFLV-HFLV: chorus choice option Low Frequency Low Variance vs. High Frequency Low Variance.

File1: artificial chorus file used in the LFLV-HFLV playback trial

Time1: time (seconds) spent in choice trial (maximum of ten mintues)

Seconds1: time converted to seconds

Side1: Side of the choice chamber to which the focal frog moved

HV-LFLV: chorus choice option High Variance vs. Low Frequency Low Variance.

File2: artificial chorus file used in the HV-LFLV playback trial

Time2: time (seconds) spent in choice trial (maximum of ten mintues)

Seconds2: time converted to seconds

Side2: Side of the choice chamber to which the focal frog moved

4. Missing data codes:

NA

5. Abbreviations used:

M: male; F: female, svl: snout to vent length, HFLV-HV: High Frequency Low Variance vs. High Variance, LFLV-HFLV: Low Frequency Low Variance vs. High Frequency Low Variance, HV-LFLV: High Variance vs. Low Frequency Low Variance, L: left, R: right,