**Data from:**

**LaBarbera K, Nelson PB, Bee MA. 2020. Mate choice and the "opposite miss" to Weber's Law: proportional processing governs signal preferences in a treefrog. *Animal Behaviour.***

**Suggested citation for the data**

LaBarbera, Katie; Nelson, Peggy B; Bee, Mark A. (2020). Advertisement call length preferences of female Cope's gray treefrogs (Hyla chrysoscelis) in two-alternative choice tests. Retrieved from the Data Repository for the University of Minnesota, https://doi.org/10.13020/csvf-0w22.

**Experimental design**

(This is a brief summary; please see the paper for full details.)

We collected females of the western mtDNA lineage (Ptacek et al. 1994) of *Hyla chrysoscelis* during May, June and July of 2019 from ponds in the Carver Park Reserve (Carver County, MN, USA, 44°53’49.08” N, 93°43’03.11” W) and the Tamarack Nature Center (Ramsey County, MN, USA, 45°06’08.50” N, 93°02’28.89” W).

In a series of two-alternative choice tests, we gave subjects a choice between two synthetic advertisement calls with different numbers of pulses. We generated synthetic calls using SynSing (Tanner et al. 2019) and modelled them after an average advertisement call recorded at 20 °C (Ward et al. 2013) in all attributes except the number of pulses per call, which we experimentally varied. The shorter and longer alternatives were repeated within separate sequences at rates of 11 calls/min. The two sequences were interleaved so that shorter and longer calls alternated in time with equal durations of silence preceding and following each call. Interleaved sequences were initiated with the shorter call, as stimulus presentation order has no impact on female preferences (Bee et al. 2012).

Choice tests were performed under infrared (IR) illumination in an acoustically transparent, circular test arena (2.0 m × 0.6 m, diameter × height) that was constructed from hardware cloth and covered with black fabric. The two speakers used to broadcast the two alternative stimuli were placed on the chamber floor, positioned 90° apart just outside the arena wall, and directed toward the centre of the arena, where an acoustically transparent, circular release cage (9 cm × 2 cm, diameter × height) was located. The IR source (Tracksys, Ltd., Nottingham, UK) was suspended from the ceiling of the sound chamber over the centre of the test arena. Acoustic stimuli were broadcast using Adobe Audition v3.0 (Adobe Corporation, San Jose, CA, USA) running on a Dell Optiplex 5050 computer (Dell Inc., Round Rock TX, USA), amplified with Crown XLS1000 high-density power amplifiers (HARMAN Professional, Northridge, CA, USA), and output through two Mod1 speakers (Orb Audio, Sherman Oaks, CA, USA) using a MOTU 16A sound card (MOTU, Inc., Cambridge, MA, USA). The frequency response of the playback system was determined to be ±1.5 dB across the frequency range of interest (1.25 - 2.5 kHz) using a SR780 dynamic signal analyzer (Stanford Research Systems, Sunnyvale, CA, USA). The sound pressure level of each stimulus was calibrated to a level of 85 dB SPL (re 20 µPa, LCF) at a distance of 1 m to approximate the amplitude of natural calls (Gerhardt 1975). Calibrations were performed using a Brüel and Kjær Type 2250-L sound level meter (Brüel and Kjær, Nærum, Denmark) by placing a Brüel and Kjær Type 4950 microphone at the approximate position of a frog’s head sitting in the release cage 1 m away.

At the beginning of each choice test, a single subject was placed in the release cage, allowed to acclimate for 60 s of silence prior to the onset of the stimuli, and then allowed to hear three instances of each stimulus alternative prior to being remotely released using a pulley mechanism operated from outside the chamber. We observed tests and scored responses in real time from outside the chamber via a closed-circuit television system with an IR-sensitive video camera (Panasonic WV-BP334; Panasonic Corporation of North America, Secaucus, NJ, USA) mounted on the ceiling above the release cage. We scored a choice of a particular stimulus when the subject entered a response zone in front of a playback speaker consisting of a 10-cm diameter semicircle and remained there for at least 5 s (Gerhardt 1995). We considered a subject to have exhibited “no response” if one of the following three conditions were true: it did not exit the release cage within 2 min after being released; it failed to make a choice within 5 min after being released; or its first physical encounter with the arena wall occurred in the hemifield opposite the playback speakers. Additionally, a “no response” was recorded only if the subject responded in a subsequent test. This latter condition was required to confirm that each “no response” was legitimate in that it was exhibited by a subject that was still capable of exhibiting a response and motivated to do so in response to other stimuli.

**Data column headings**

ID: individual identifier for the test subject.

Leading\_spkr: which of the two speakers (numbered 1 and 2) played the leading call stimulus.

Leading: the number of pulses in the call stimulus that was played first (i.e. leading)

Lagging: the number of pulses in the call stimulus that was played second (i.e. lagging)

AbsDiff: the difference in number of pulses between the lagging and leading call alternatives

PercDiff: the difference in number of pulses between the lagging and leading call alternatives, as a percentage of the number of pulses in the leading call

Choice: which call alternative the subject chose

Response: whether the subject responded to the choice test (Y=yes, N=no)

Trial\_order: when in the order of 15 trials this particular trial fell ("1" is the first trial, "2" the second, etc.)