

Singing silver-haired bats

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What?

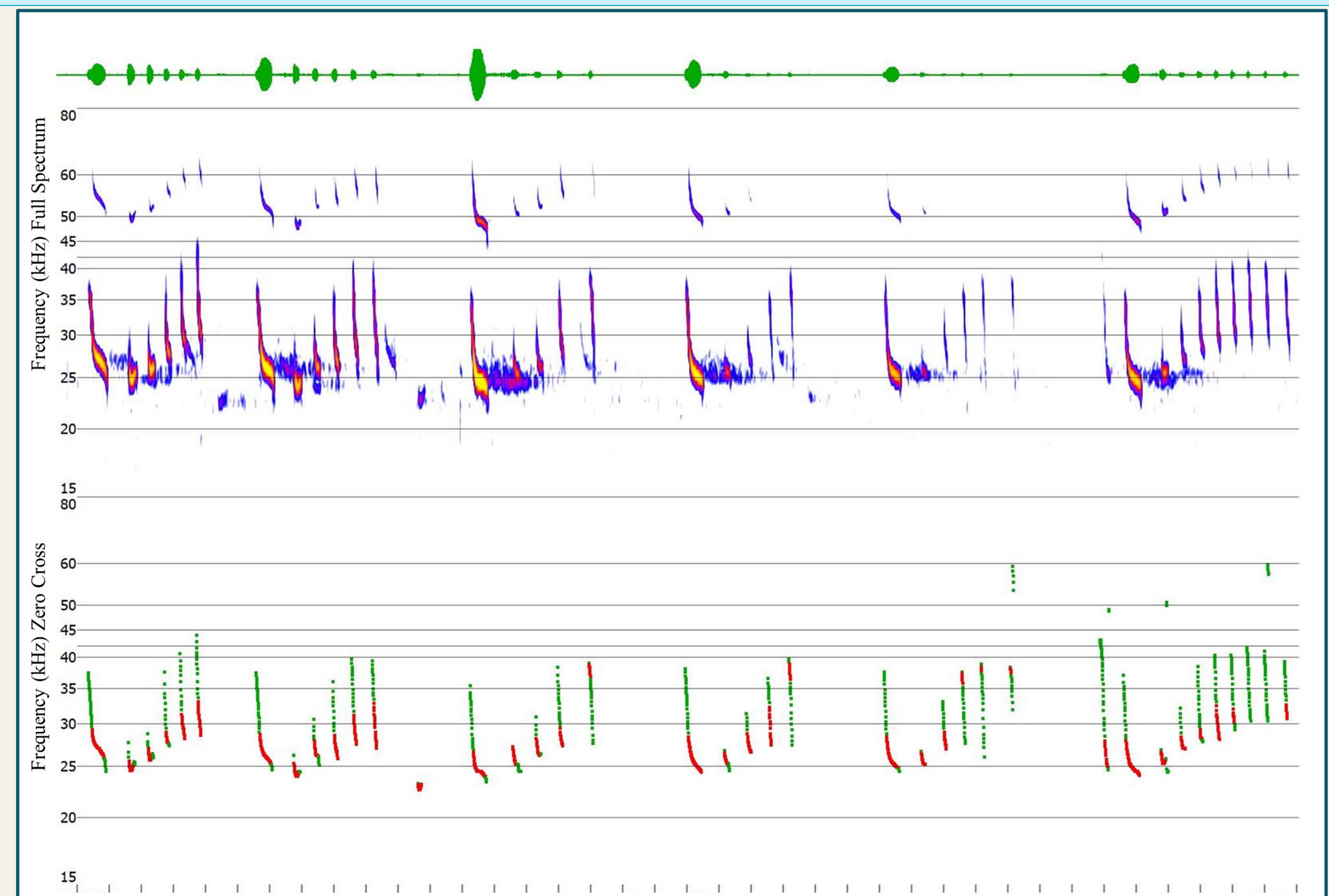
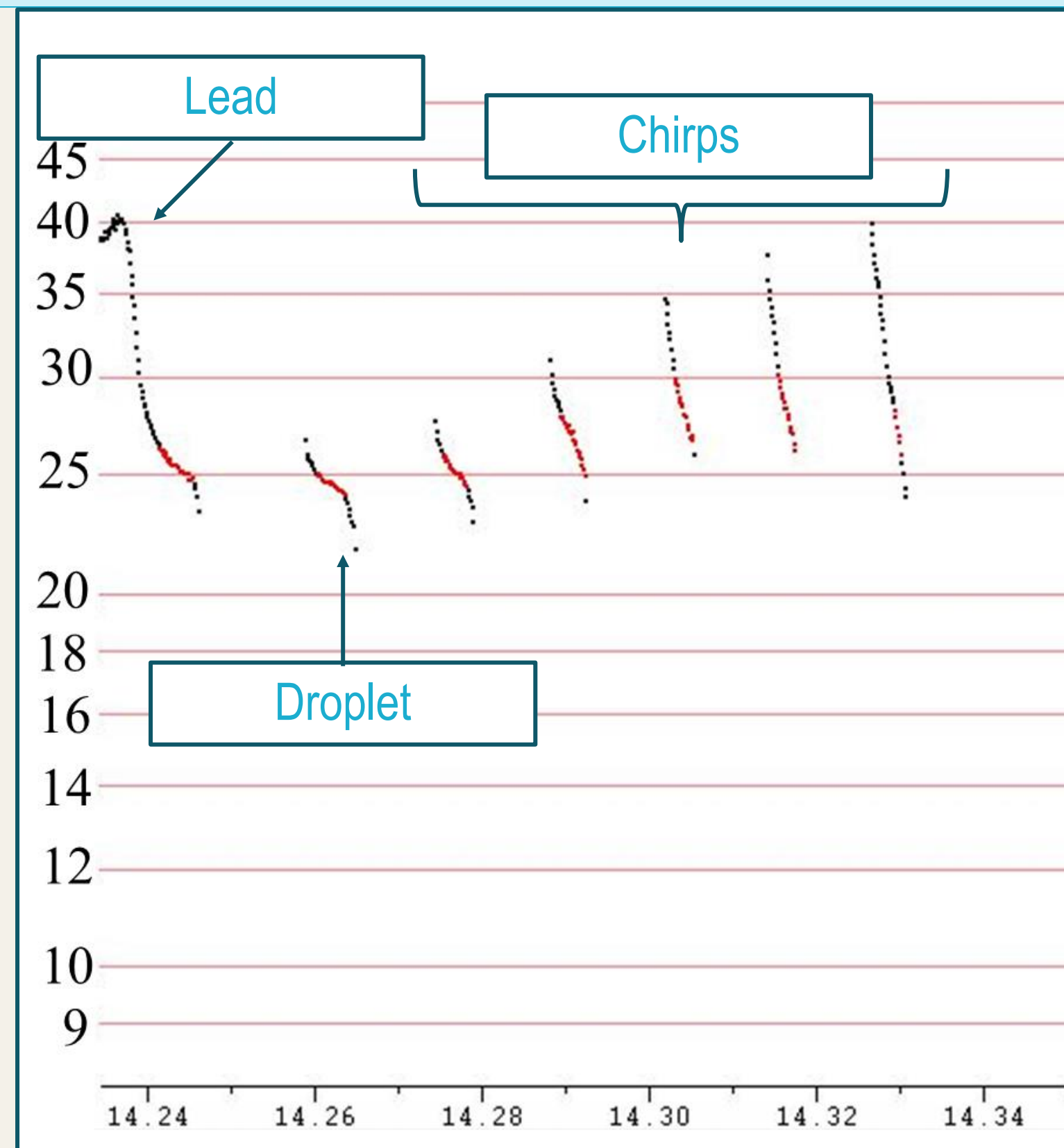
Songs are produced by flying silver-haired bats

We found 1,857 songs of 82,149 files examined

Songs are repeated phrases of 4-8 pulses consisting of 1 Lead, 1 Droplet, and 2-6 ascending Chirps

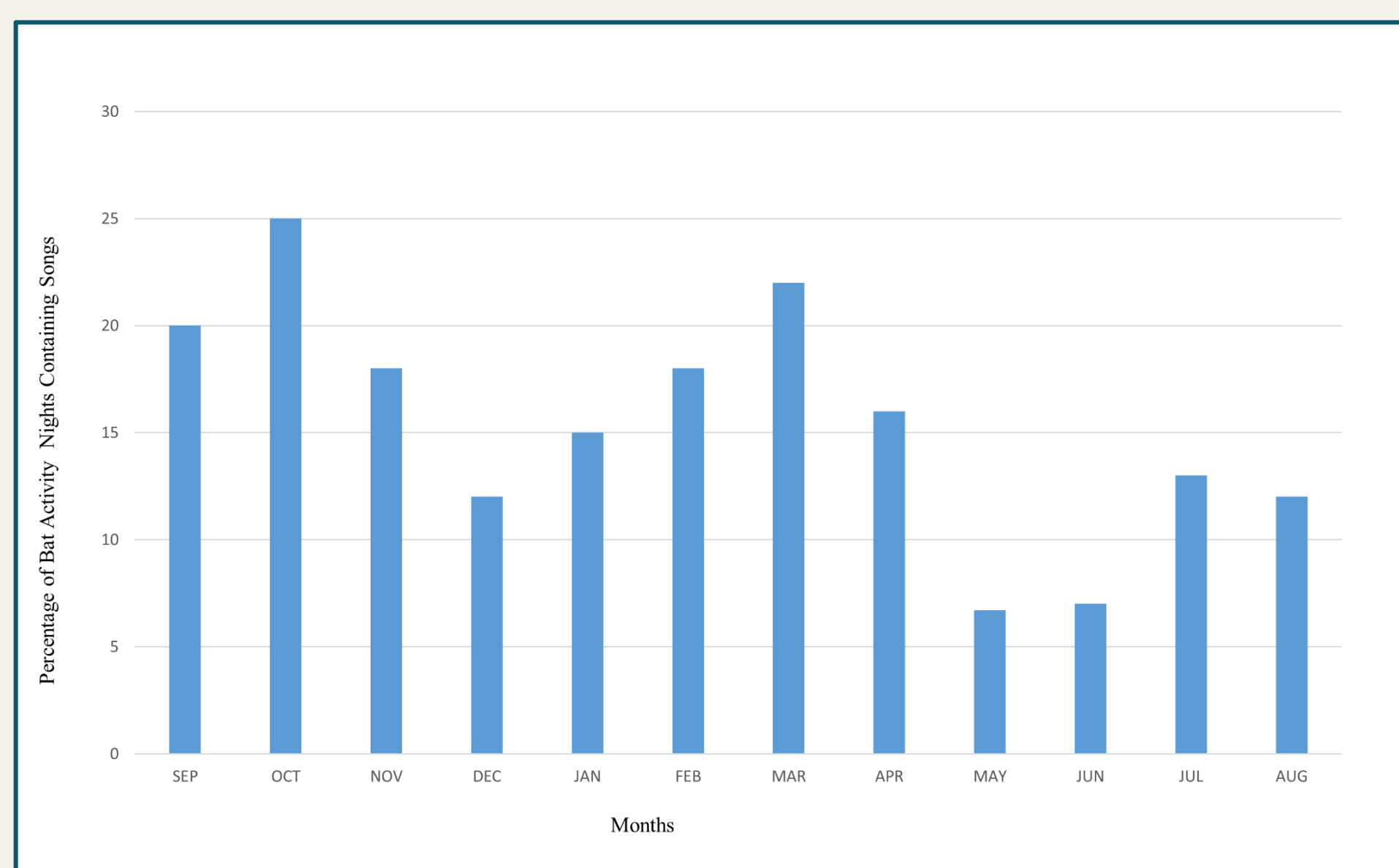
Low intensity, with minimum frequency ~22-34 kHz

Diagnostic for silver-haired bat. Brazilian free-tailed bats (*Tadarida brasiliensis*) produce similar songs, but are less regular and chirps do not ascend in pitch (Bohn & Gillam 2018).



LEFT: Typical phrase of a silver-haired bat song, illustrating Lead, Droplet, and Chirp pulses. Zero-cross data in AnabatW. Time on x-axis is 0.01 ms per tick mark. RIGHT: A spectrogram of repeated song phrases displayed in real time in both full spectrum (top) and zero-cross (bottom) in Anabat Insight software. Time on x axis is 25 ms per tick mark.

When?



Songs have been recorded every month of the year

How?

(do we know these are silver-haired bats)

We recorded songs outside of winter hibernacula in Canada that are only occupied by silver-haired bats

Why?

Unknown

Low intensity, high frequency sounds suggest close proximity to the intended audience

Most other species that sing use songs for courtship, but silver-haired bats songs are recorded year-round

Do silver-haired bats mate year-round? Or practice?

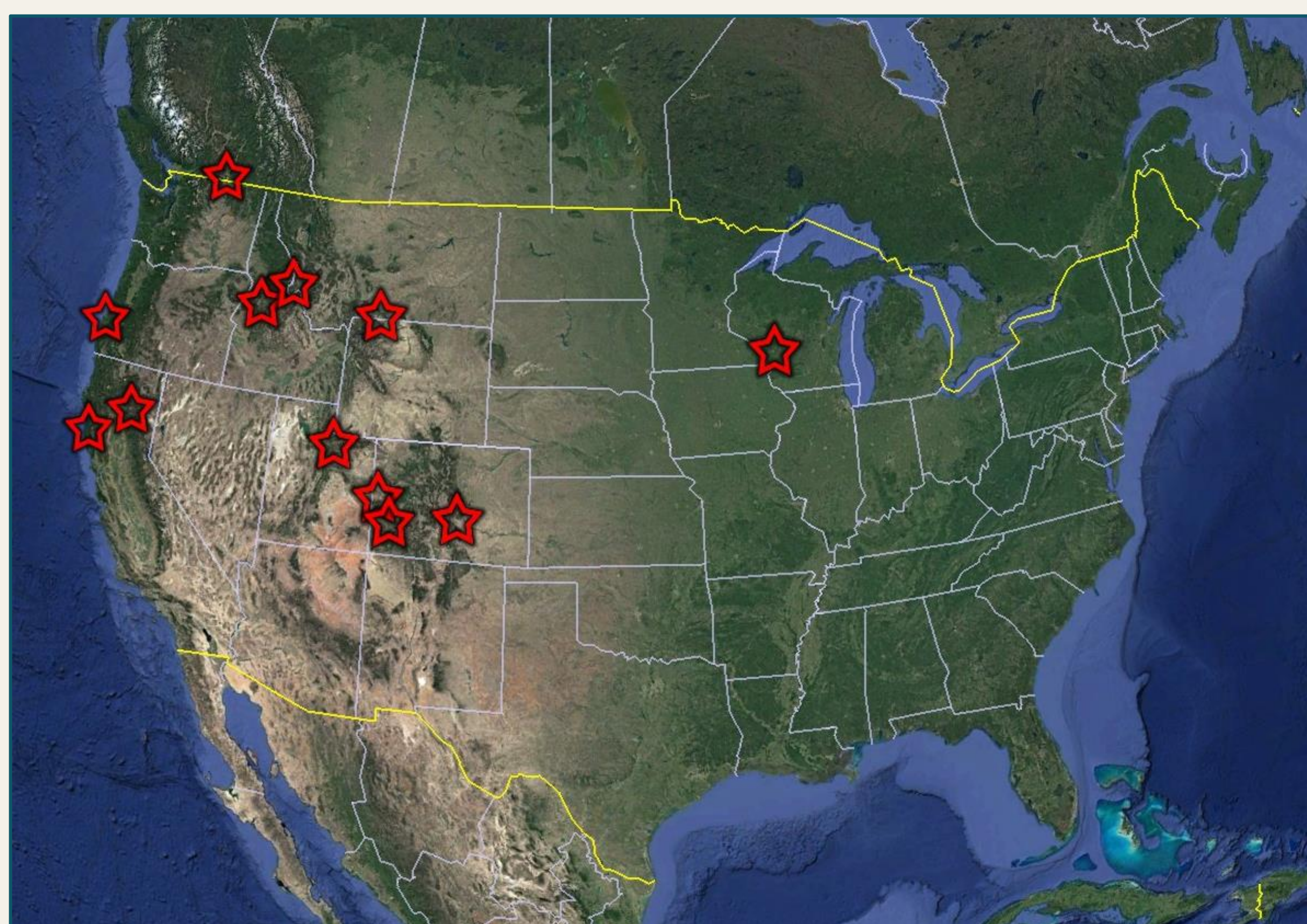
Or are songs produced for another function, like group cohesion?

Literature Cited

Bohn and Gillam 2018. In-flight social calls: a primer for biologists and managers studying echolocation. *Canadian Journal of Zoology* 96: 77-800.

Nagel 2022. Informing conservation of threatened bat species using genomics and acoustics. PhD Dissertation, University of Maryland.

Where?



Locations that songs of silver-haired bats were recorded. All 22 locations are not plotted. Surveys were biased towards western states and provinces..

We examined recordings from 165 detectors at 22 locations

Habitats included coastal redwood forest, Ponderosa pine forest, wetland, and rocky cliffs

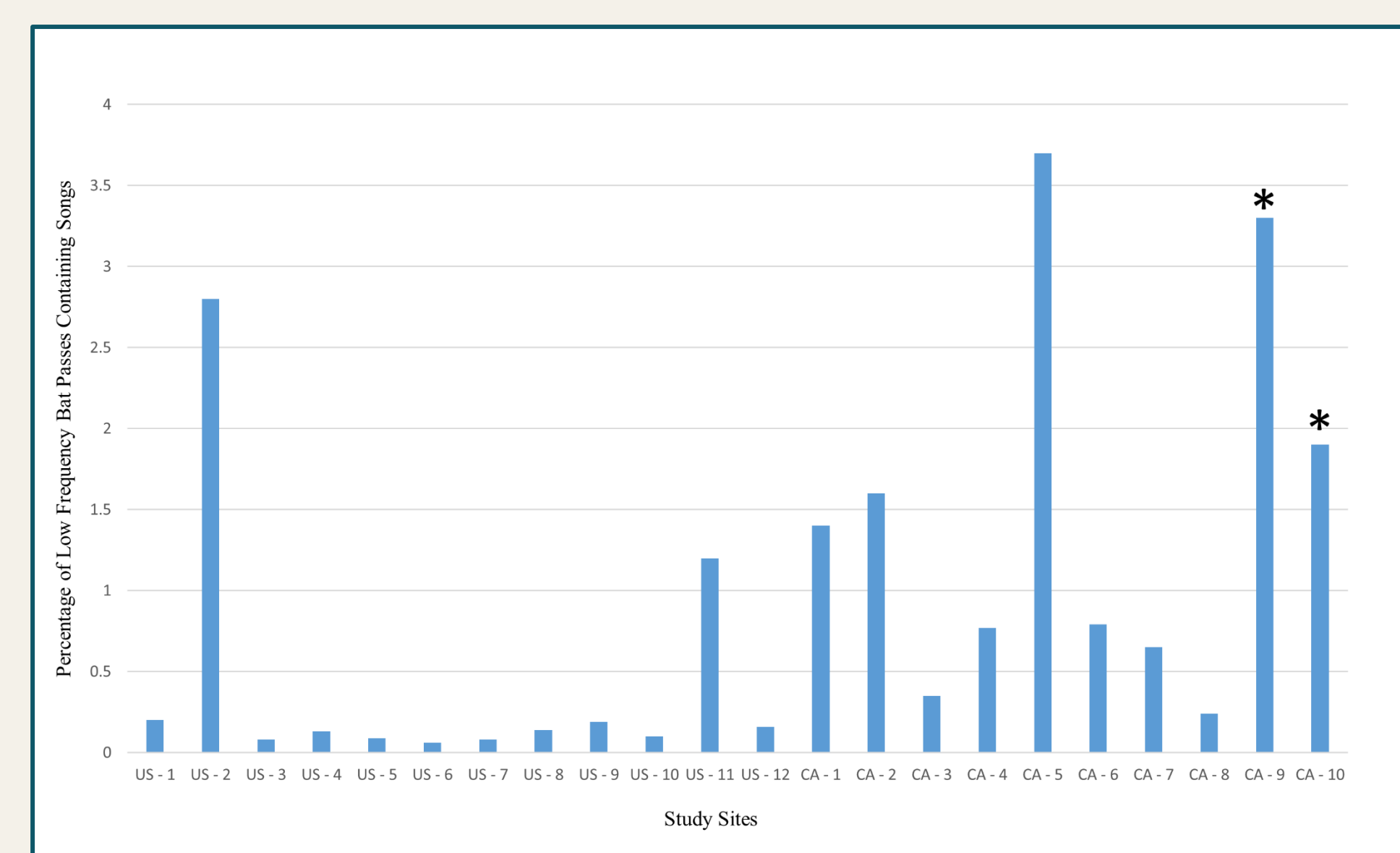
Data was collected for summer North American Bat Monitoring program surveys, year-round statewide inventories, winter hibernation surveys, and research projects

Where are the Eastern Songs??

Nagel (2022) found genetic evidence for distinct east and west populations of silver-haired bats. Perhaps singing is a western phenomenon?

However, our surveys were biased towards western states and provinces. It is very possible that silver-haired bats sing in the east, but have so far gone unnoticed.

Eastern bat acoustics researchers: check your data!



Frequency of song production varied across locations. Asterisks indicate the 2 silver-haired bat hibernation locations where the identity of singing bats was confirmed.

LISTEN!

Scan the QRC Code to listen to this silver-haired bat song!



Silver-haired bat song recorded west of Colorado Springs, Colorado. Displayed in SonoBat software.

