



Ultrasonic pulse bouts of a blind fast-climbing rodent (*Typhlomys chapensis*): similarities and differences with echolocation calls of bats



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Experiments

Two adult males
13 trials (7 & 6 per male), each 2-12 min

Audio records with Pettersson D 1000X (768 kHz, 16 bit)

Total 62 min of audio recordings (30 & 32 min per male)



Spectrographic analysis of 1481 bouts and 540 ultrasonic pulses (325 & 215 per male) from 234 high-quality bouts

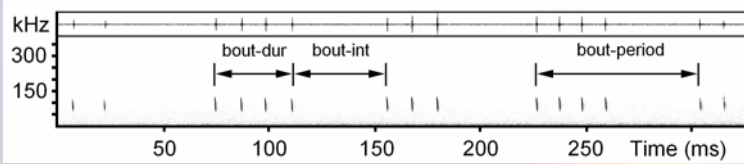


Ultrasonic echolocation in small mammals

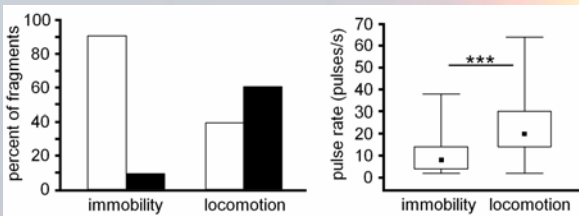


Vietnamese pygmy dormouse *Typhlomys chapensis*

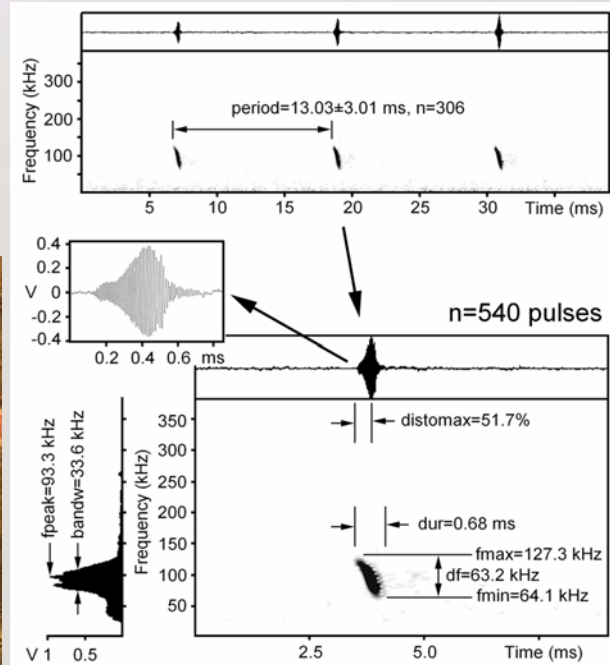
Structure of ultrasonic vocalizations of *Typhlomys chapensis*



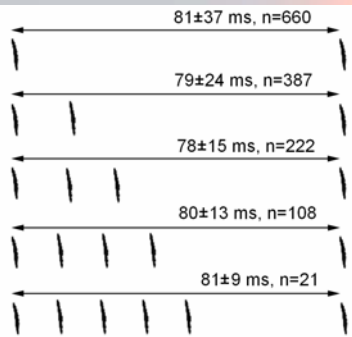
Echolocation pulses are organized in bouts and further in series, separated with intervals over 0.3 s. Bouts consist of 1-6 pulses; 51.3% of bouts contain more than one pulse.



Typhlomys emit US pulses 6 times more often at locomotion than at rest. During vocalizing, pulse rate is 2 times higher at locomotion than at rest.

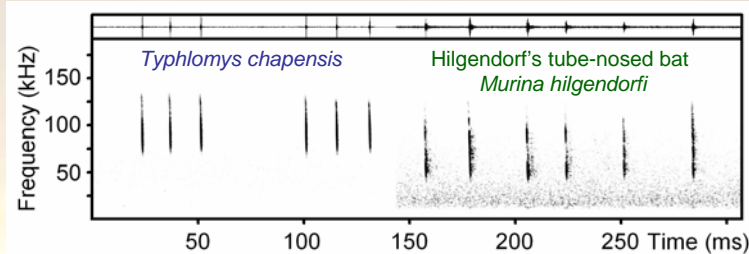
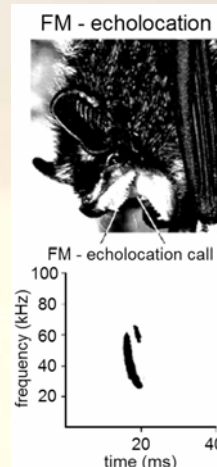


Pulses of single-pulse bouts and start pulses of multi-pulse bouts were lower *fmax* and less *df* than other pulses, whereas all other pulses within bouts were undistinguishable from each other. *Duration*, *fmin*, *fpeak*, *bandw* were independent on pulse position within bout.



Bout period was constant (80.0±2.9 ms) in spite of the number of pulses per bout.

Rodent vs bat ultrasonic calls



Typhlomys nasal ultrasonic pulses are remarkable similar with FM echolocation calls of *Murina* and *Myotis* bats. However, bat oral pulses are lower in frequency, longer in duration, louder and have not convex but concave contour.

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ORIGINAL ARTICLE

A blind climber: The first evidence of ultrasonic echolocation in arboreal mammals

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Ultrasonic bouts of a blind climbing rodent (*Typhlomys chapensis*): acoustic analysis

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