

The Songs of Mice: Ultrasonic Vocalizations in Rodents

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What is a rodent?



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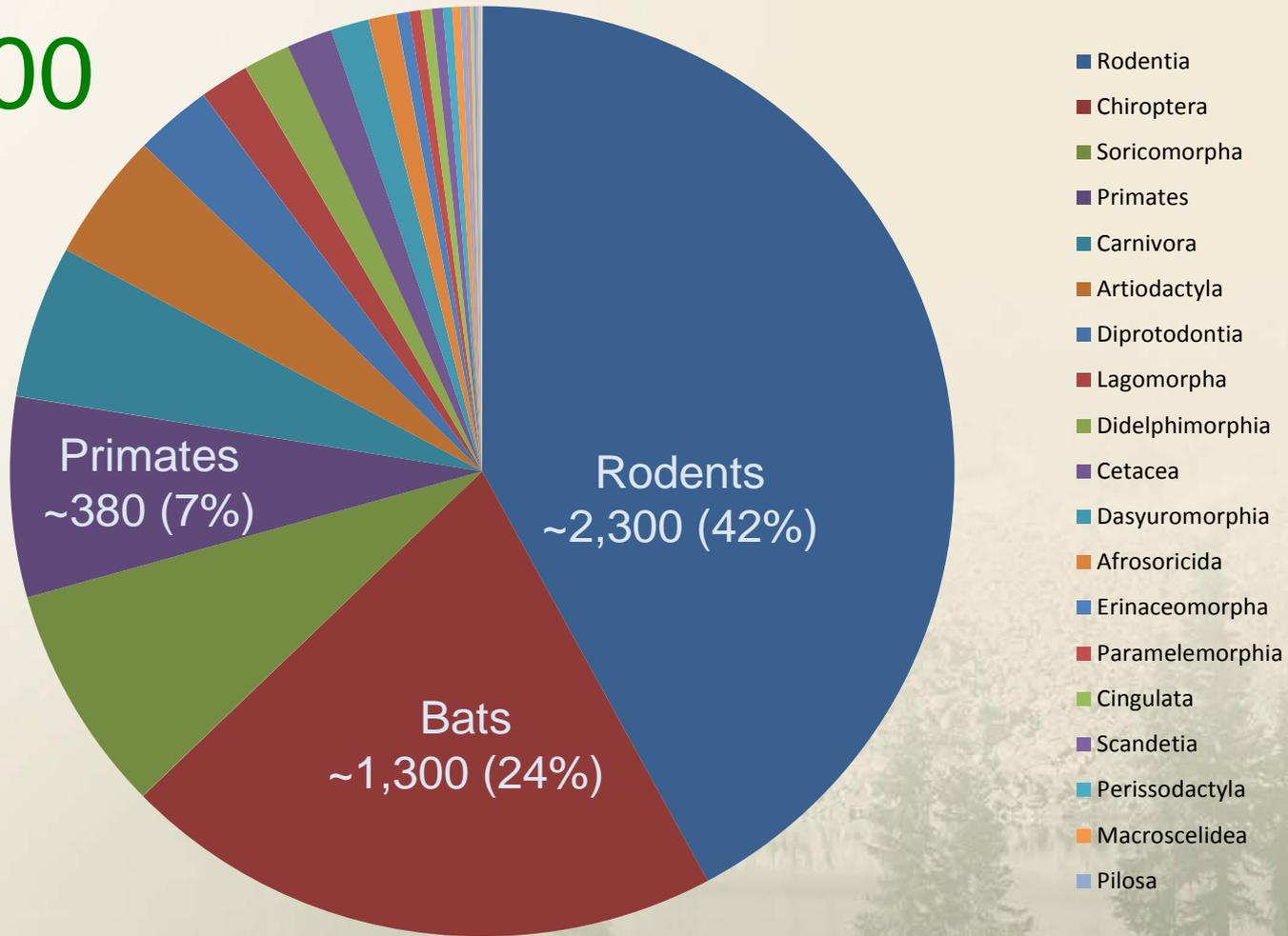
Was this your image?



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Mammals

~5,500



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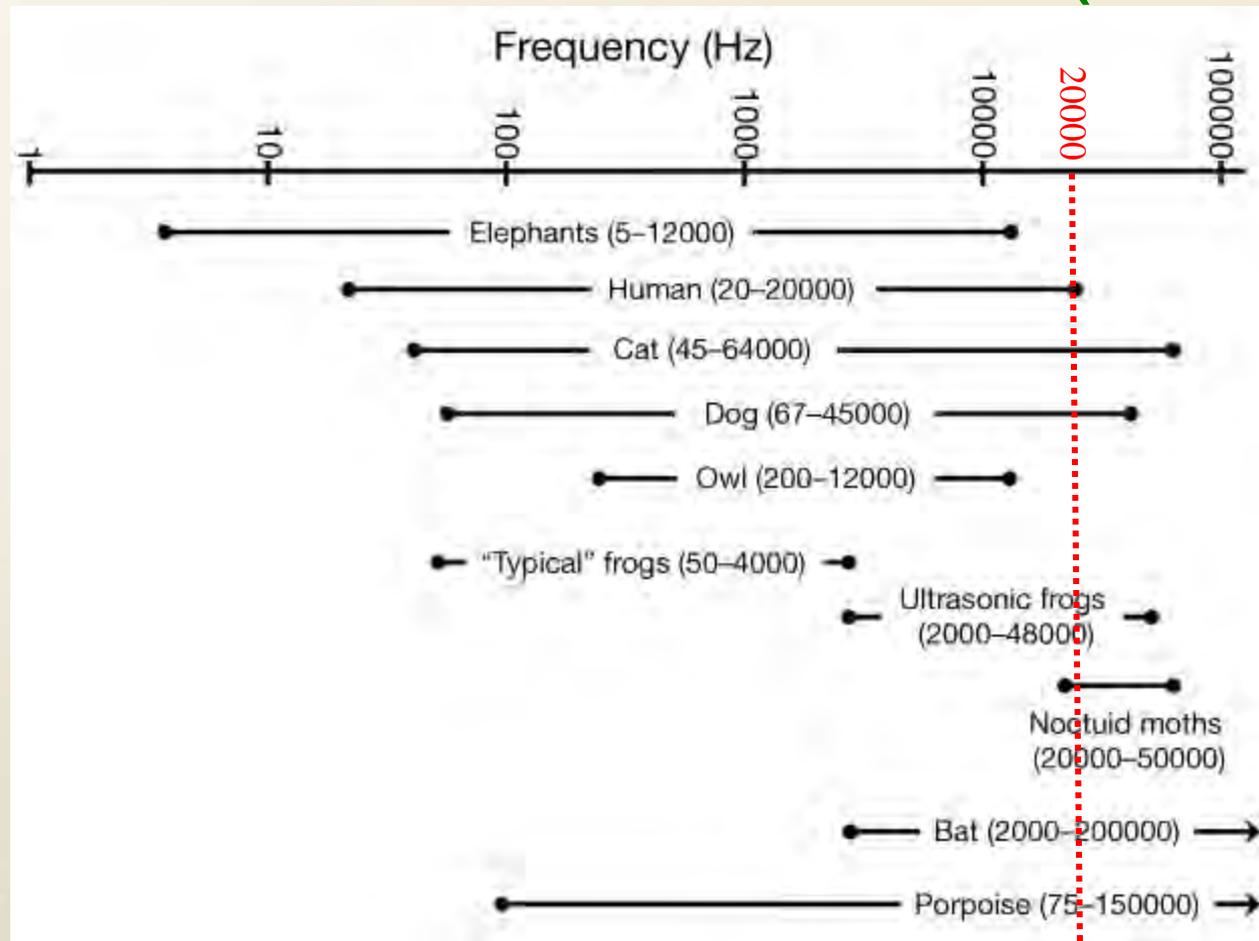
Are you talking to me?

Communication involves the provision of information by a sender to a receiver, in turn changing the probability of the receiver's behavior.



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Ultrasonic Vocalizations (USVs)



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Ultrasonic Vocalizations (USVs)



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Don't become dinner

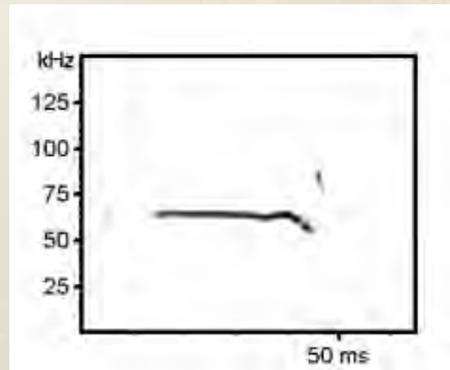


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USVs in Rodents

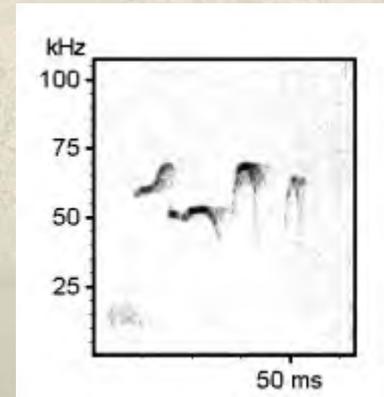
Mice

- Facilitate or inhibit social interactions
- Residents produce USVs in the presence of an intruder
- USVs increase during estrous
- Coordinate reproductive behavior



Rats

- Advertise rank/status
- Establish subordinate/dominant relationships
- Convey affective state
- Coordinate reproductive behavior

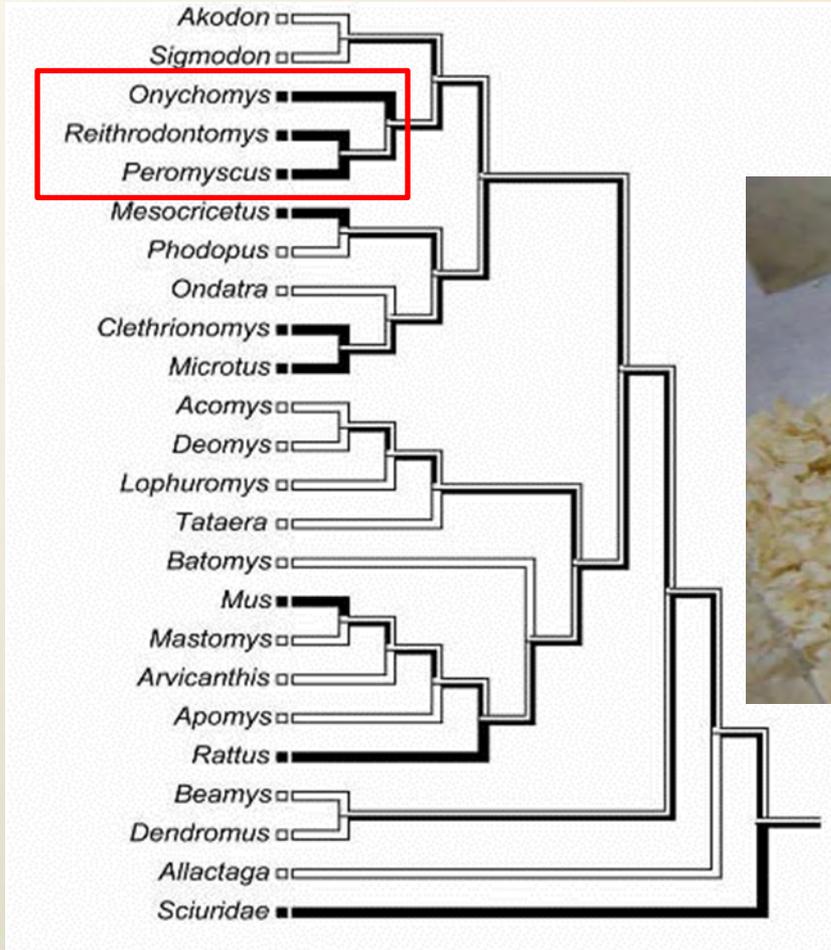


A wolf in mouse clothing

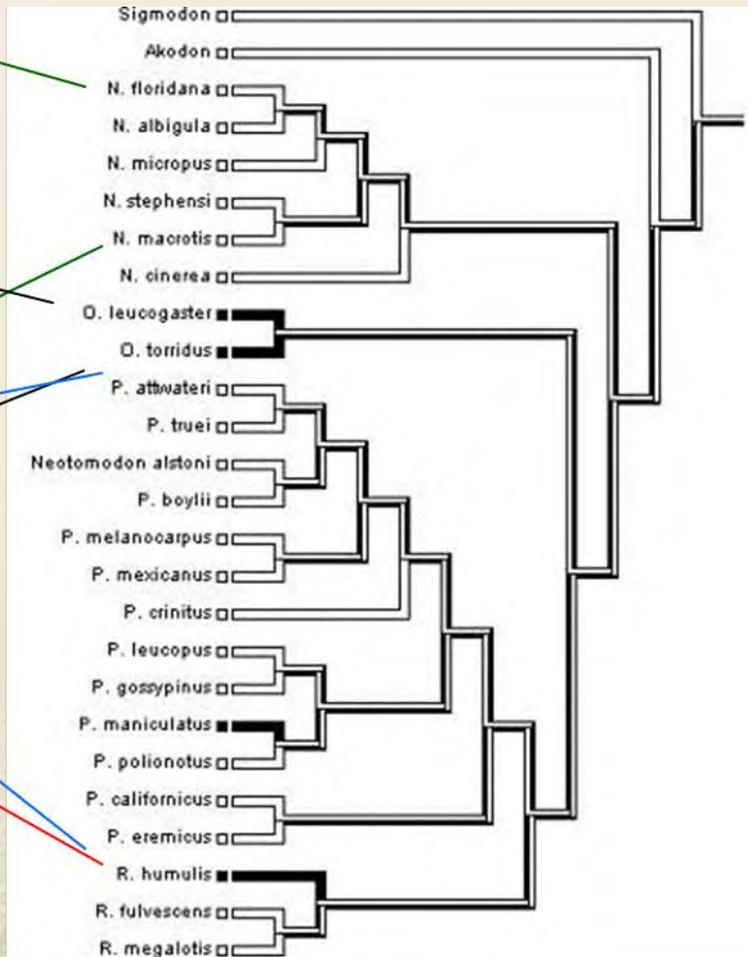


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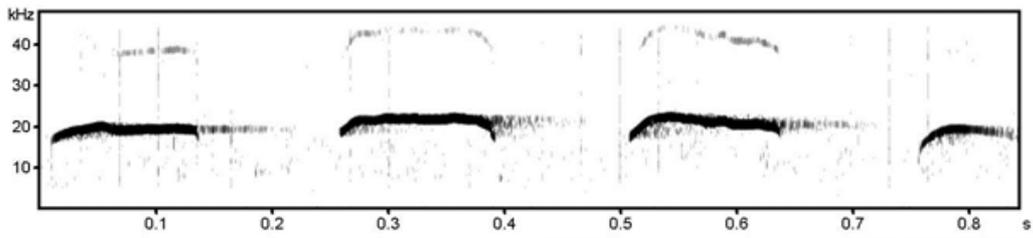
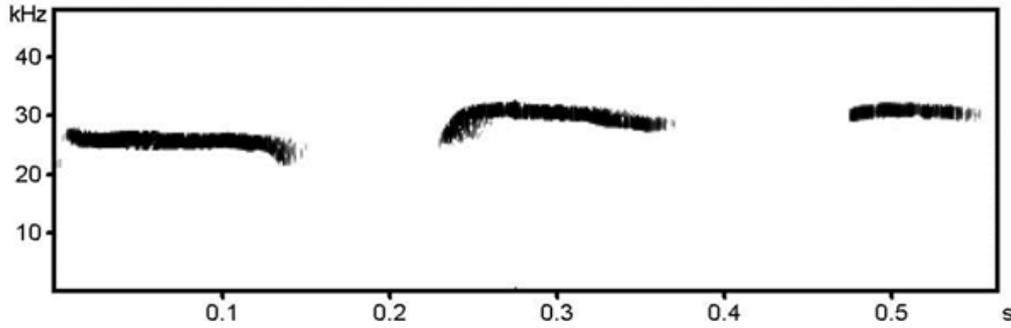
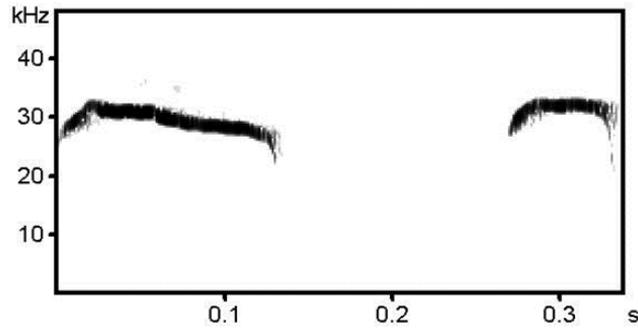
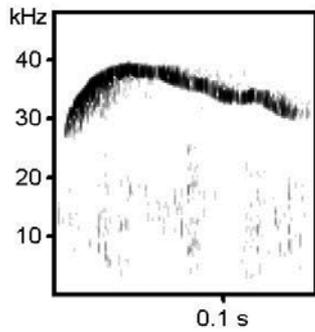
Look who's talking



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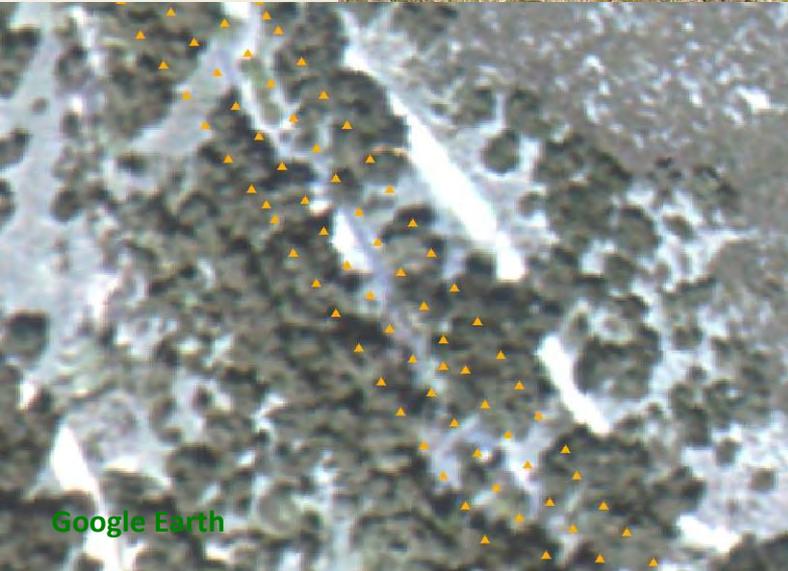
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P. californicus

- Largest species of *Peromyscus*
 - 35g-60g
- Monogamous
- Bi-parental care
- Sexually monomorphic
- Prefer live-oak woodland riparian habitat



Hastings Natural History Reservation 2008

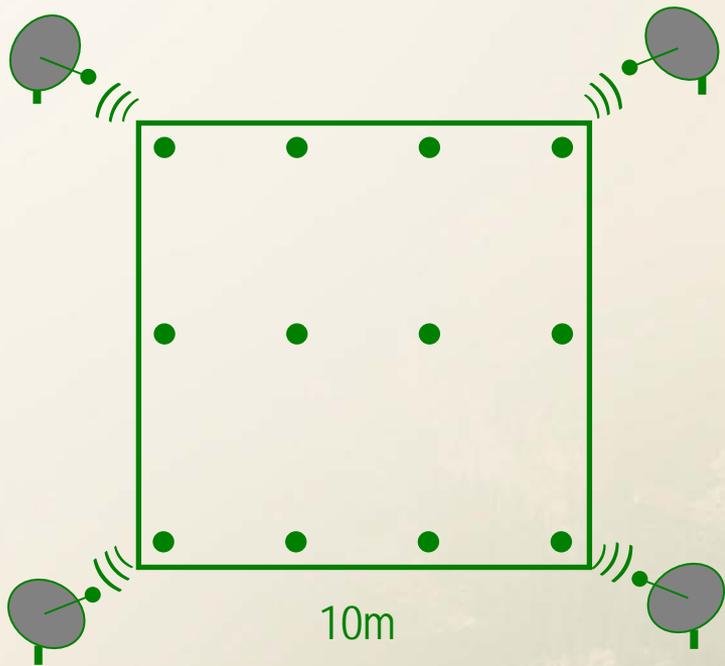


Google Earth

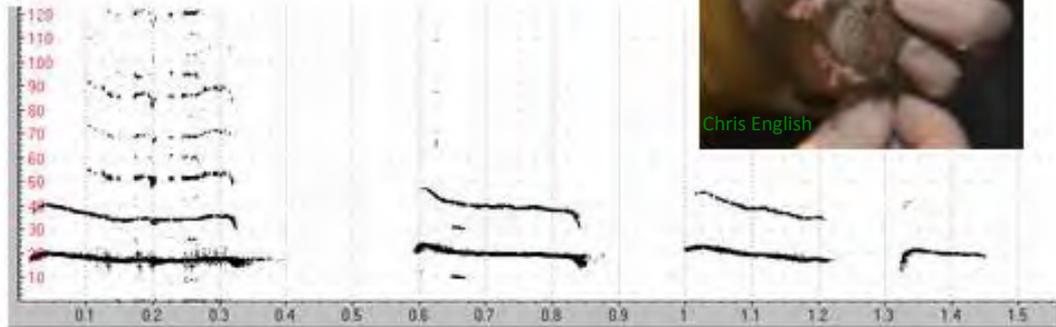
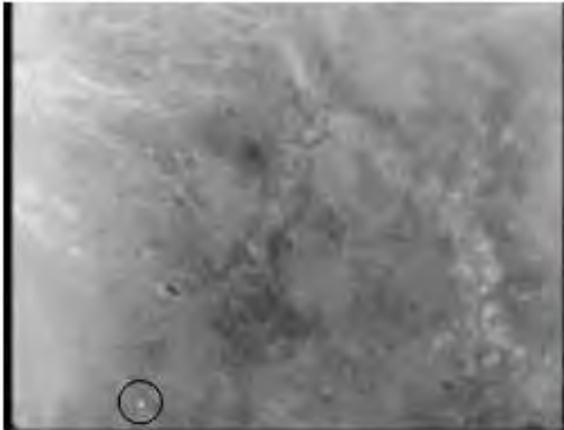
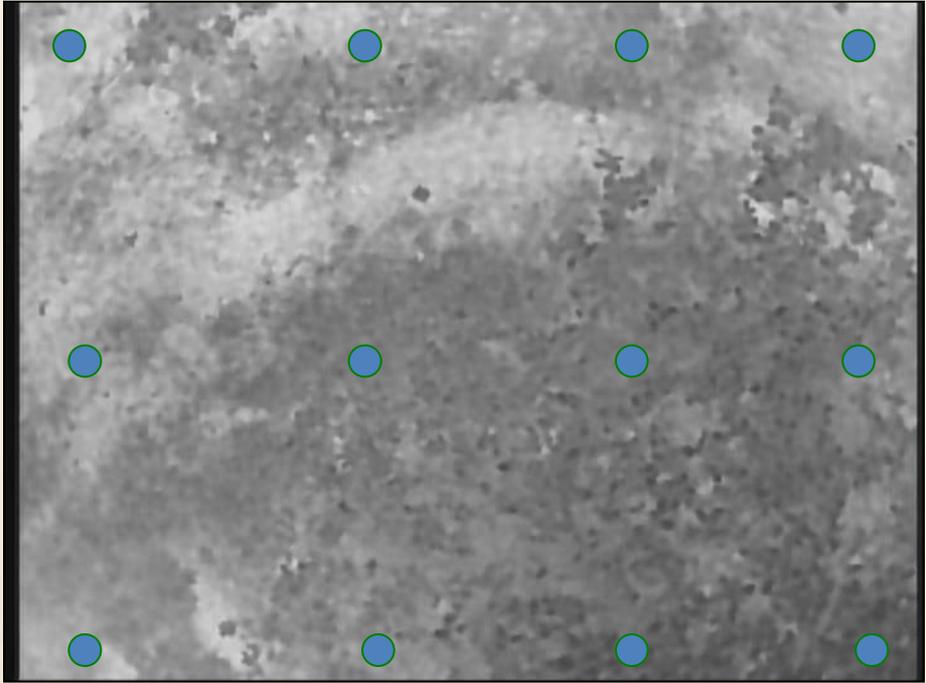




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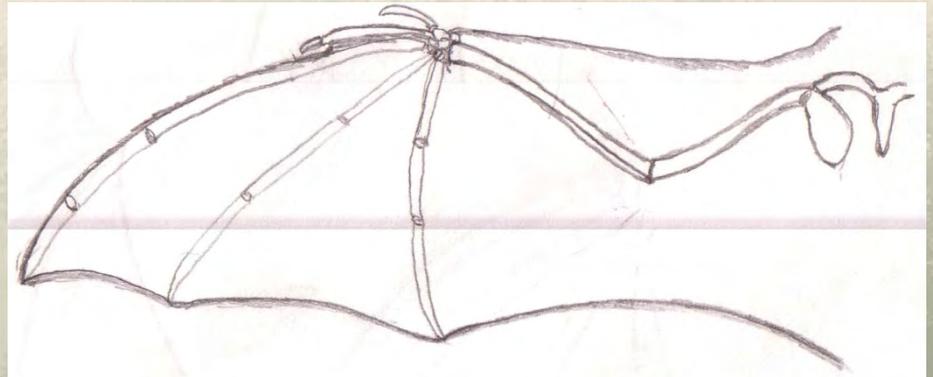
Conclusion

- Results suggest a contact and territorial function
- All motifs are commonly used regardless of situation or state
- No difference between males and females
- USVs are produced when mates are apart



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A flying rodent?



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A million roommates



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Echo-location



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What big ears you have

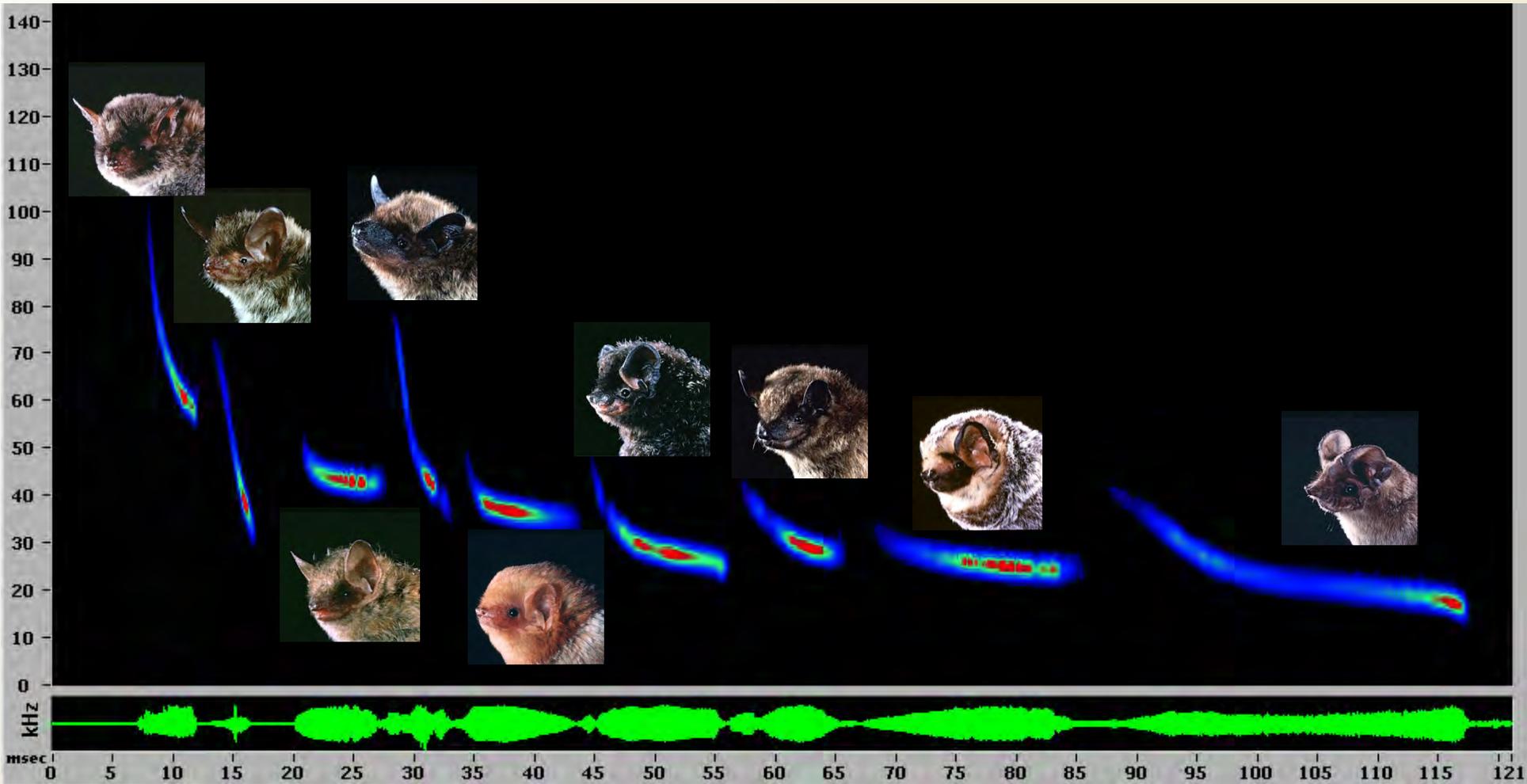


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Fast food dinner



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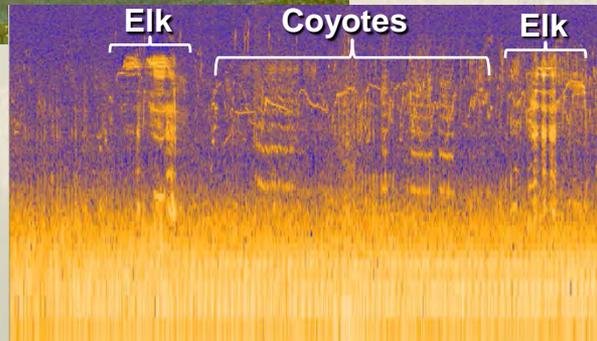
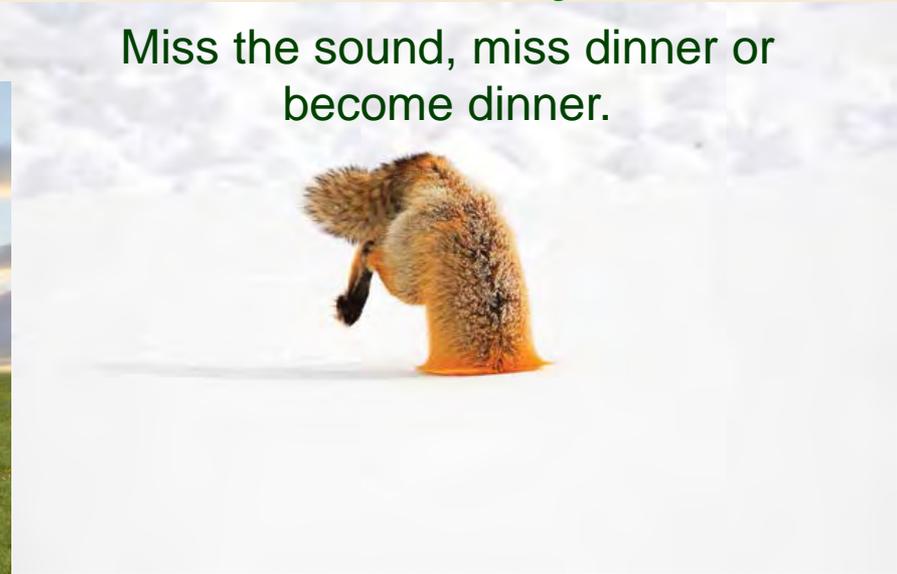
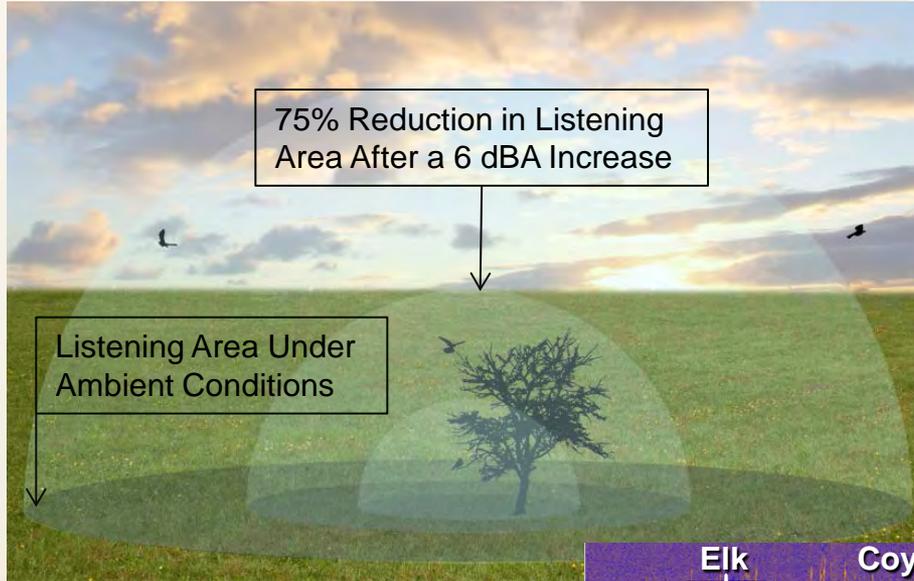
Are you my mom?



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What you don't hear can kill you

Miss the sound, miss dinner or become dinner.

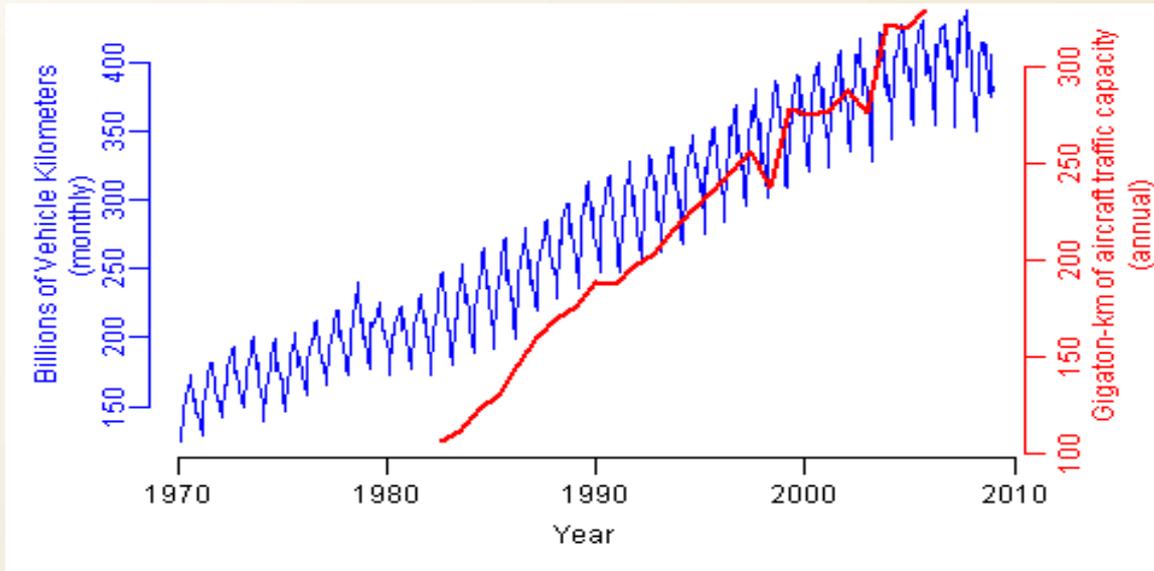


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Hearing is critical for finding food and avoiding predation.



“We have met the enemy and he is
us”



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The cost of noise

- Compromised physiological function
- Diversion of time and energy
- Failure to detect important cues
- Degraded acoustical advertisement and communication
- Reduced utilization of important habitats or resources



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The Natural Sounds and Night Skies Division

The Natural Sounds & Night Skies Division (NS2D) works to restore, maintain, and protect acoustical environments and natural dark skies throughout the National Park System. We work in partnership with parks and others to increase scientific understanding and inspire public appreciation of the value and character of undiminished soundscapes and outstanding night skies.



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How we do it



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When Nature Calls



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How can you help?

- Turn off cell phones
- Talk quietly
- Use the quietest & least impactful way to view National Parks
- Teach children to appreciate natural sounds
- Know & abide by quiet hours
- Silence shutter on camera



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“It requires a very unusual mind to undertake the analysis of the obvious.”

-Alfred North Whitehead



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Natural Sounds and Night Skies Division

Natural Resource Stewardship and Science Directorate

www.nature.nps.gov/sound/

970-267-7204



National Park Service
U.S. Department of the Interior



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