

Movements and Demography of a US Endangered Bat at the Edge of its Range

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Figure 1. Photograph of clustering juvenile *L. yerbabuena* at study sites in Baja California Sur, Mexico.



Figure 2. Map of *L. yerbabuena* range

Introduction

Long-term studies on population demography and seasonal movements on migratory bats are lacking and represent a critical data gap in understanding the potential impacts of climate change on vulnerable ecological systems. We've initiated a long-term study on demography and seasonal movements of an endangered nectar-feeding bat (*Leptonycteris yerbabuena*) on the Baja California peninsula, Mexico.

Methods



Figure 3: Study sites on Isla Carmen and in Chivato

- In April 2013, we installed a fixed-framed Biomark antennae and HPR reader at the entrance of a maternity cave of *Leptonycteris yerbabuena* on Isla Carmen near Loreto, Baja California Sur.
- The system was replaced by a flexible cord antennae and IS1001 reader in April 2015.
- In January 2015, we installed a Biomark flexible cord antennae and IS1001 reader at the entrance of a mine in Sierra Cacachilas (Chivato) in the east cape of Baja California Sur.
- From April 2013-July 2015, we've tagged 443 *L. yerbabuena*: 258 at Carmen, 74 Chivato, 112 other locations.

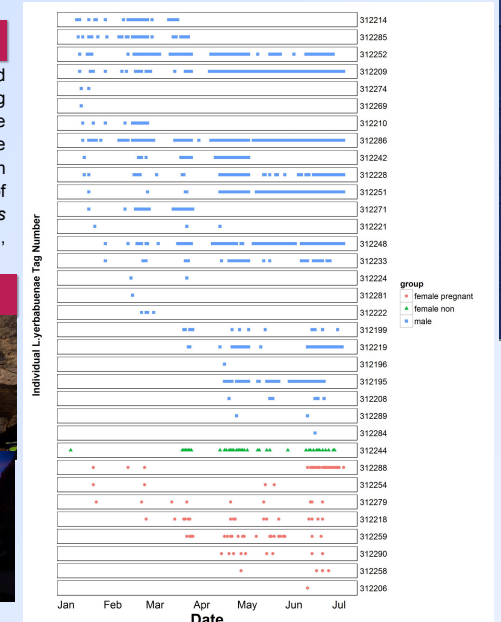


Figure 4: *L. yerbabuena* daily detections at the Chivato site

Results

- Isla Carmen roost is used solely as a seasonal maternity colony and bat presence roughly coincides with flowering and fruiting of the cardón cactus (*Pachycereus pringlei*).
- A small over-wintering population of both males and females was present at the southern mine (Chivato) and we observed pregnant females in January, providing the first evidence of a winter breeding deme on the Baja peninsula.
- We detected movements of male bats between winter roosts > 60 km apart.



Figure 5. *L. yerbabuena* range and study sites

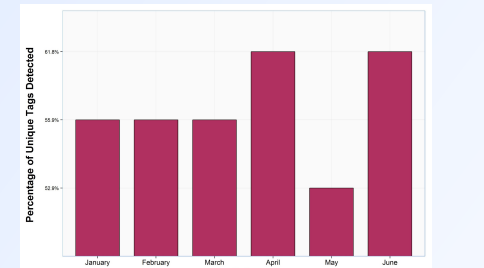


Figure 6: Unique *L. yerbabuena* detections at Chivato site each month

To Be Continued...



Figure 7. Deploying cactus phenology camera traps in Baja California Sur



Figure 8. Photograph of *L. yerbabuena* feeding from a cardon cactus flower in Baja California Sur

- Our study confirms the presence of a small residential winter breeding population of *L. yerbabuena* in southern Baja and provides future opportunities to assess long-term population dynamics of a US endangered species at the edge of their range.

- Monitoring phenology of the flowering cardon cacti using camera traps to assess the relationship between migration of Lesser long-nosed bats and the availability of their primary food source: cactus nectar. To more thoroughly, efficiently and affordably monitor seasonal patterns, we plan to tag photos using an automated detection-classification machine learning technique involving deep neural network models developed by Conservation Metrics, Inc.

References

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