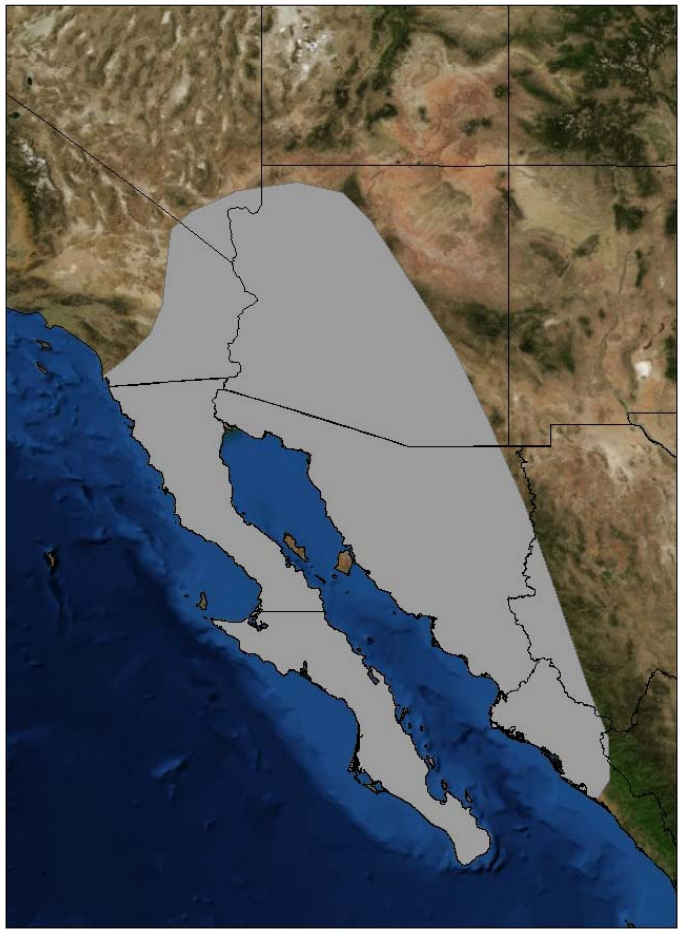
Determining space use and population demographics of the California leaf-nosed bat (*Macrotus californicus)*: a population genetics approach

J. Hill, A. Calvert, and S. A. Neiswenter

Lower Colorado River Multi-Species Conservation Program

Background

- MSCP evaluation species
- Non-migratory, colonial, cave roosting bat
- SW Deserts



Background

- Maternity colonies
- Males maintain harem groups of females
- Single young born in mid summer
- Forage on insects within 10 km of their roost

Stop being difficult, bat.

- Not readily detected using acoustic surveys
  - Low intensity calls
  - Similar to other species
- Low capture rate in mist netting
  - Makes gathering demographic data difficult

A different approach

- Natural history via molecular genetics

- Microsatellites
  - Identifying population structure
  - Gene flow
  - *M. waterhousii*
  - Relatively inexpensive

Purpose

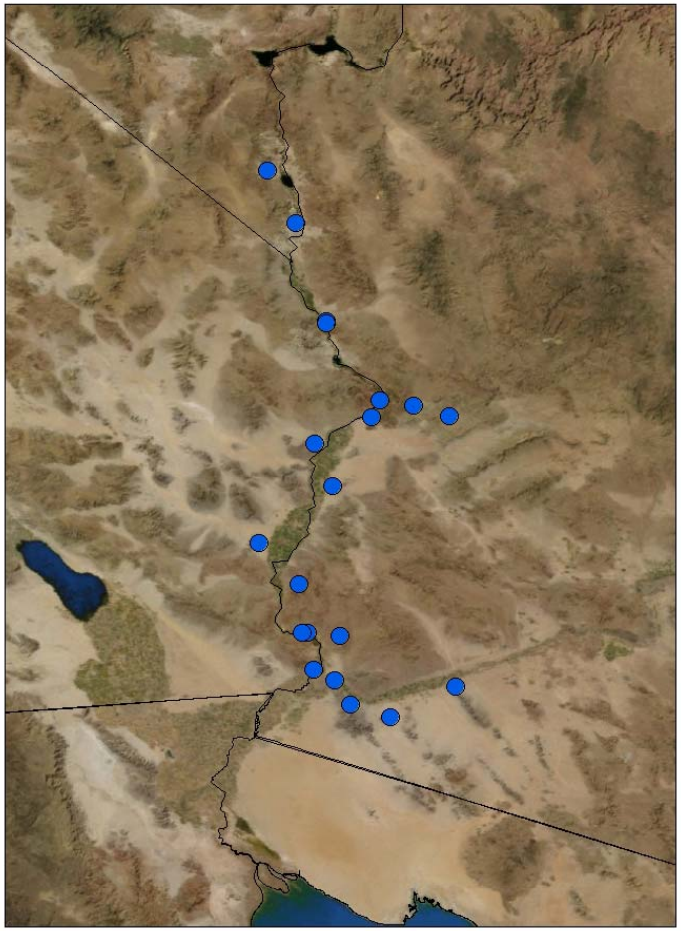
- Develop a conservation strategy for the LCR population

Goals

1. Demographic data along LCR
   - Population structuring
   - Genetic diversity
   - N_e
2. Space use and foraging habits
   - Document movement patterns and site preferences
   - Identify differences between sexes in roosting, foraging, and gene flow

Sampling

- 15 ind/cave along LCR
- Sample during post restoration monitoring
- “Outgroups” from Mexico and off LCR



Sequencing

- Control region of mtDNA
  - Maternal
  - Moderately variable
- Microsatellites
  - Biparental
  - Highly variable

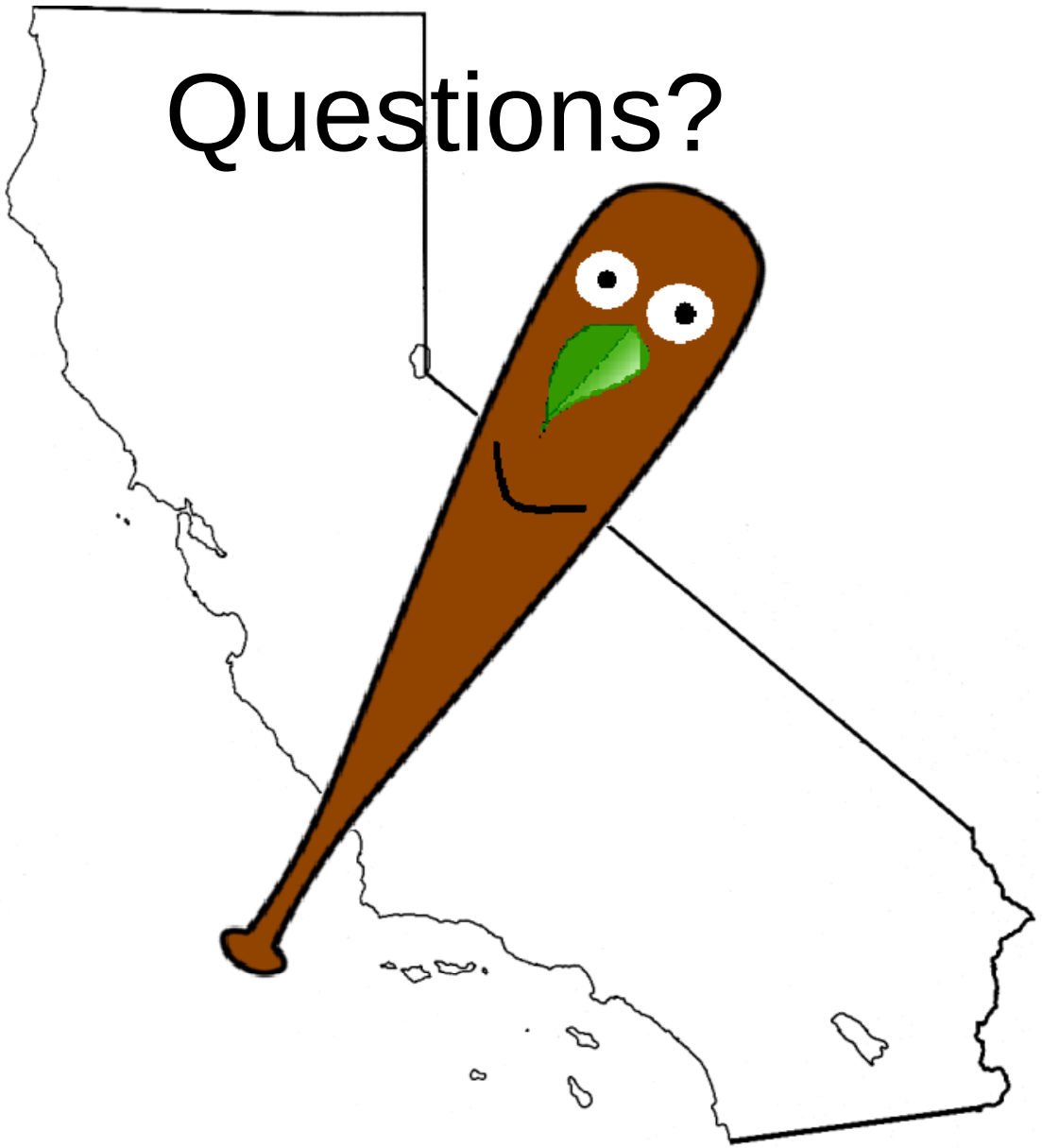
Analyses

- Demographic data along LCR (Goal 1)
  - Population structuring among caves
  - Phylogenetic networks
  - F_{st} and F_{is}
  - AMOVA
  - N_e
  - Baysian Skyline plot

Analyses

- Space use and Foraging Habits (Goal 2)
  - Assignment of foraging bats to caves
    - Program Structure
  - Document movement patterns and site preferences
    - Between roosts
    - From roost to habitat
  - Identify differences between sexes
    - Compare mtDNA to Microsat

Questions?



Macrotus californicus