# System-wide Bat Monitoring

# OBJECTIVES

1. Bat occurrence and distribution
2. Establish a long-term monitoring protocol
3. Identify threats
4. Protect critical roosts

Bill Williams River NWR

Imperial NWR

# HIGH ABUNDANCE

Yuma myotis

California myotis

Western pipistrelle

Mexican free-tailed bat

# MEDIUM ABUNDANCE

Pallid bat

Pocketed free-tailed bat

Western mastiff bat

# MEDIUM ABUNDANCE

Big brown bat

California leaf-nosed bat

Cave myotis

# LOW ABUNDANCE

Hoary bat

Big free-tailed bat

# LOW ABUNDANCE

Western yellow bat

Western red bat

Townsend’s big-eared bat

# NOT FOUND

Spotted bat

Arizona myotis

# DECLINING SPECIES

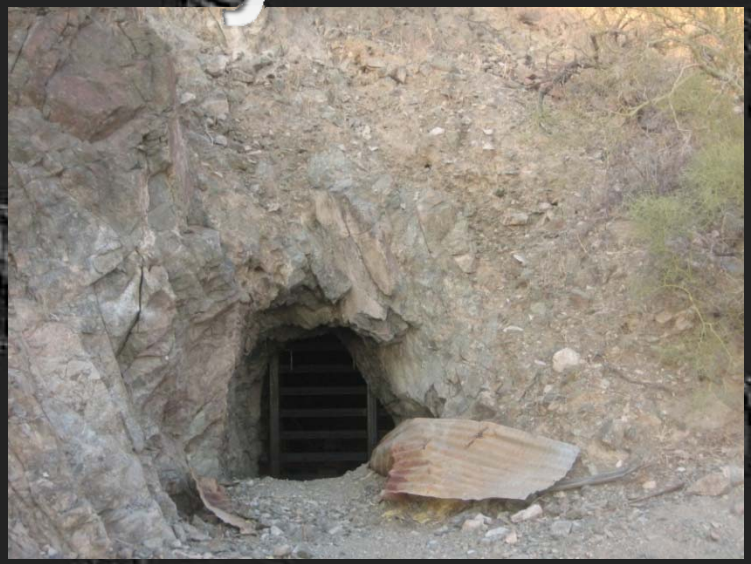
Cave myotis

Townsend's big-eared

# INCREASED SPECIES

# Survey Methods

Roost Surveys

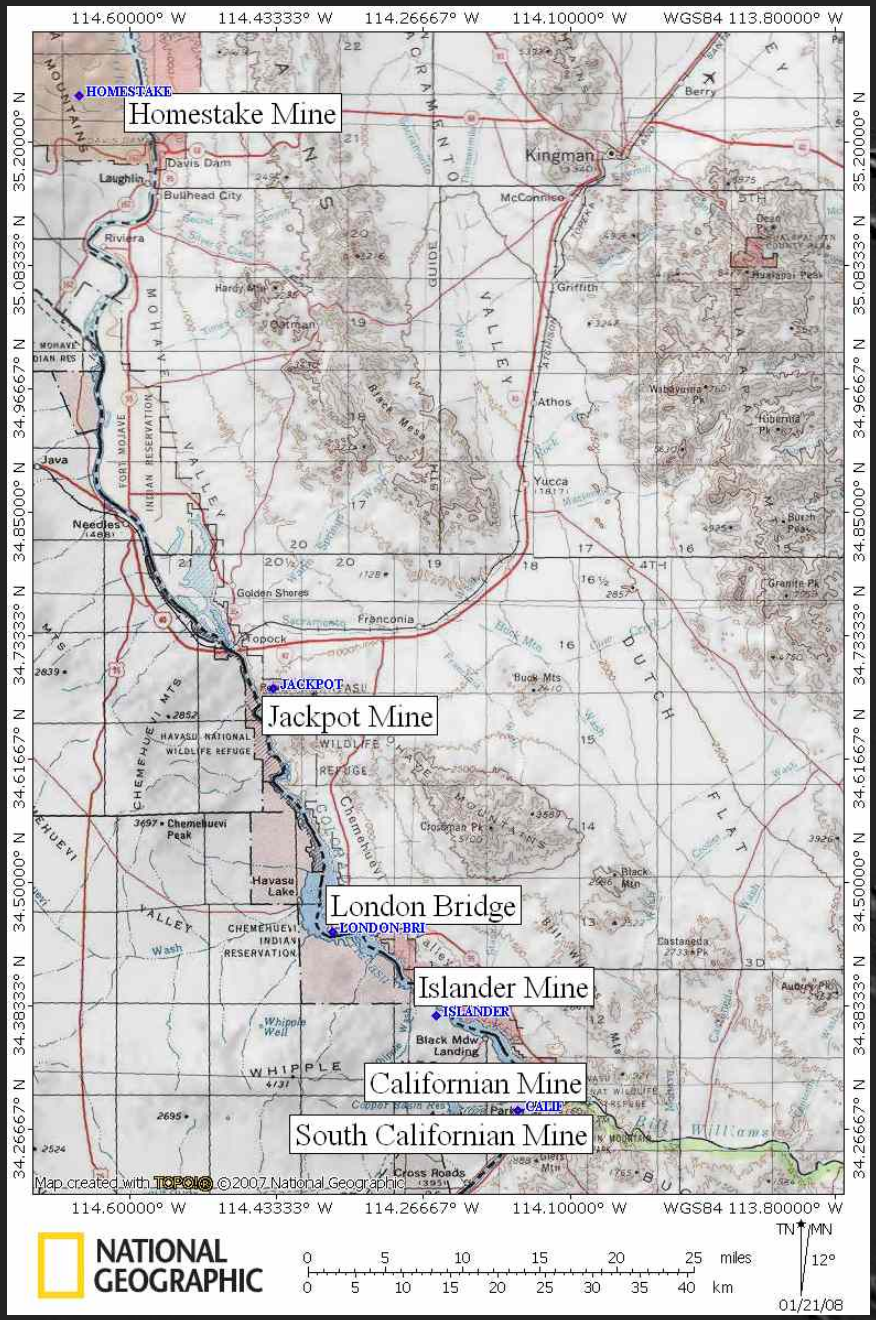


Mist Netting/Harp Trap

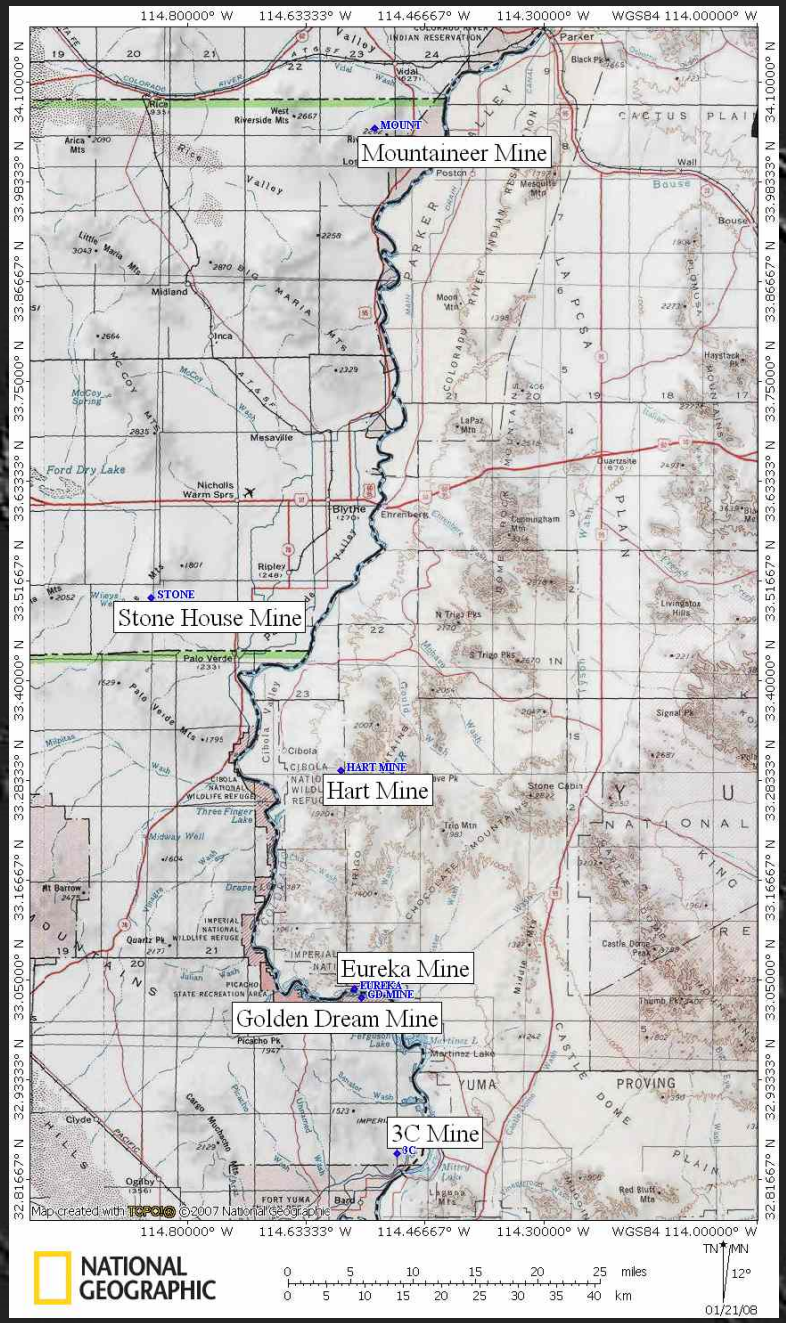
Acoustics

# 1st Method – Roost Surveys

- CA leaf-nosed
- Yuma myotis
- Cave myotis
- Mexican free-tailed




# Major roosts along the LCR (north)




# Major roosts along the LCR (south)

# 2nd Method – Bat Trapping

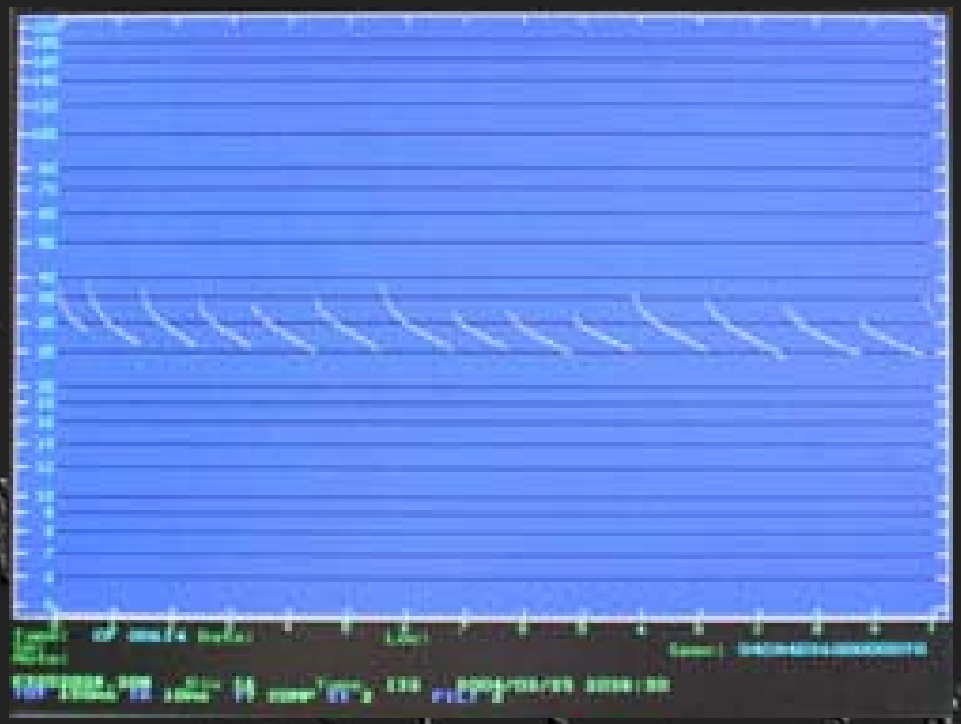
# Species effectively surveyed using mist-nets or harp traps

- CA leaf-nosed
- Yuma myotis
- Cave myotis
- California myotis
- Western pipistrelle
- Big brown bat
- Yellow bat
- Red bat
- Hoary bat
- Pallid bat

# 3rd Method - Acoustic Surveys

# Species Effectively Detected by Acoustics

- Yuma myotis
- Cave myotis
- California myotis
- W. pipistrelle
- Big brown
- Mexican free-tail
- Red bat
- Yellow bat
- Hoary bat



# Difficulties with Acoustic Monitoring

- Over-representation of loud bats
- Under representation of “whispering” bats and visual bats
- Low frequency bats may be filtered out
- Search phase calls may differ from hand-release
- Species confusion

# MSCP Study


ARIZONA GAME & FISH


U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION


# Objectives

1. Determine distribution and habitat use by red, yellow, CA leaf-nosed, and Townsend's big-eared bats

2. Provide recommendations for restoration

3. Coordinate acoustic monitoring along the LCR

4. Create a database for storage of acoustic data

# Temporary Stations

# Permanent Stations

# LCR Long-term Monitoring Plans

- Roost surveys
- Mist-netting.
- Acoustic
- Permanent stations
- Data storage
- Analysis

# Future Monitoring Roost Surveys

- Homestake Mine; LMNRA
- Jackpot Mine; HNWR
- Gold Dome Mine; HNWR
- Californian Mine; BLM-Lake Havasu
- S. Californian Mine; monitoring by Chris Bates, BLM
- Mountaineer Mine; BLM-Palm Springs; monitoring assistance by Angela Gatto (BLM) and Nancy Andrews (CDFG).
- Stonehouse Mine; BLM-Palm Springs; monitoring assistance by Angela Gatto (BLM) and Nancy Andrews (CDFG).
- Hart Mine; monitoring by Lin Piest.
- Eureka Mine; monitoring by AGFD and INWR.
- Golden Dream Mine; INWR
- 3C Mine; monitoring by Pat/Bob, BLM, AGFD.


THANK YOU