

# Distribution and Roost Site Habitat Requirements of Western Yellow (*Lasiurus xanthinus*) and Western Red (*Lasiurus blossevillii*) Bats

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# Multi-Species Conservation Plan

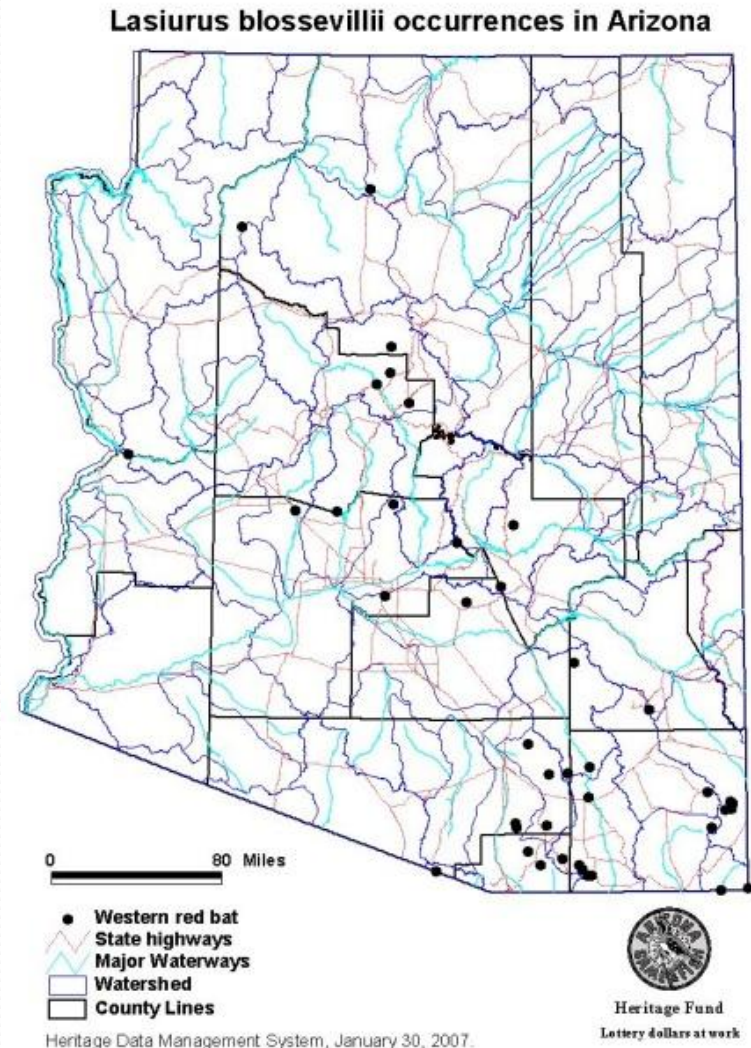
- Habitat Conservation
  - Threatened and endangered species
  - Covered species
- Conservation Need
  - Western red bat
  - Western yellow bat





# Western Red Bat Ecology

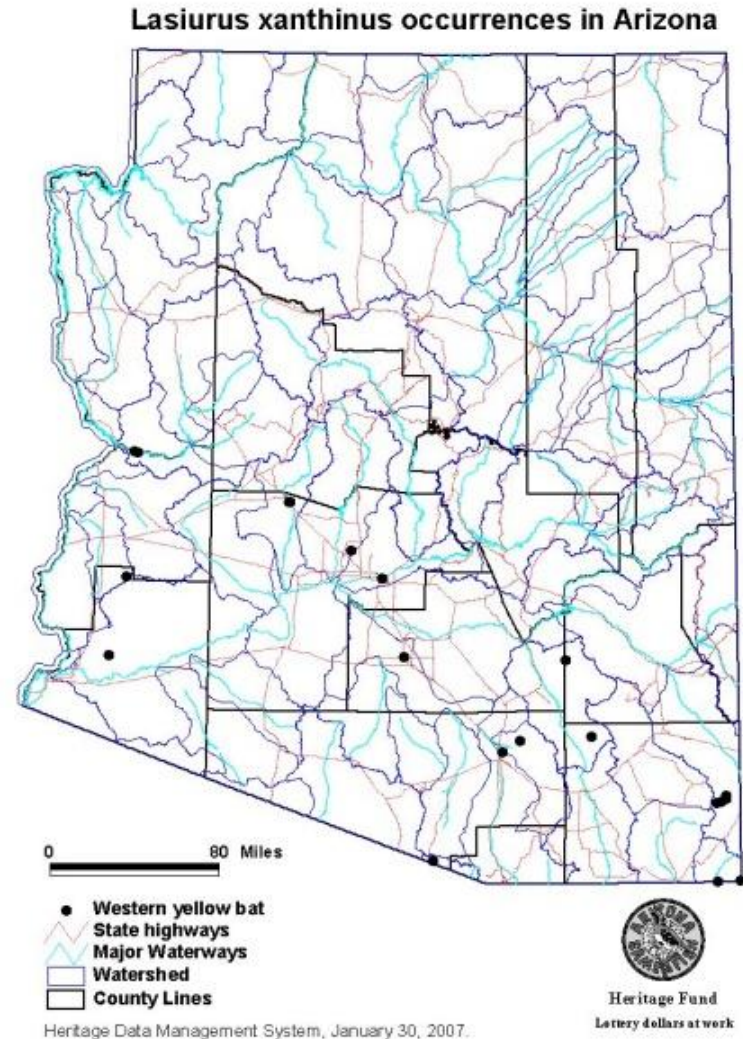
- Riparian
  - cottonwood, oak and sycamore communities
- Foraging
  - Lepidoptera
  - Canopy and understory
- Roosting
  - Foliage
- Distribution
- Migratory
  - Warm season
  - Resident?





# Western Yellow Bat Ecology

- Riparian
  - Palm trees
- Foraging
  - Beetles
- Roosting
  - Foliage (Palm)
- Distribution
- Migratory
  - Warm season





# Research Objectives

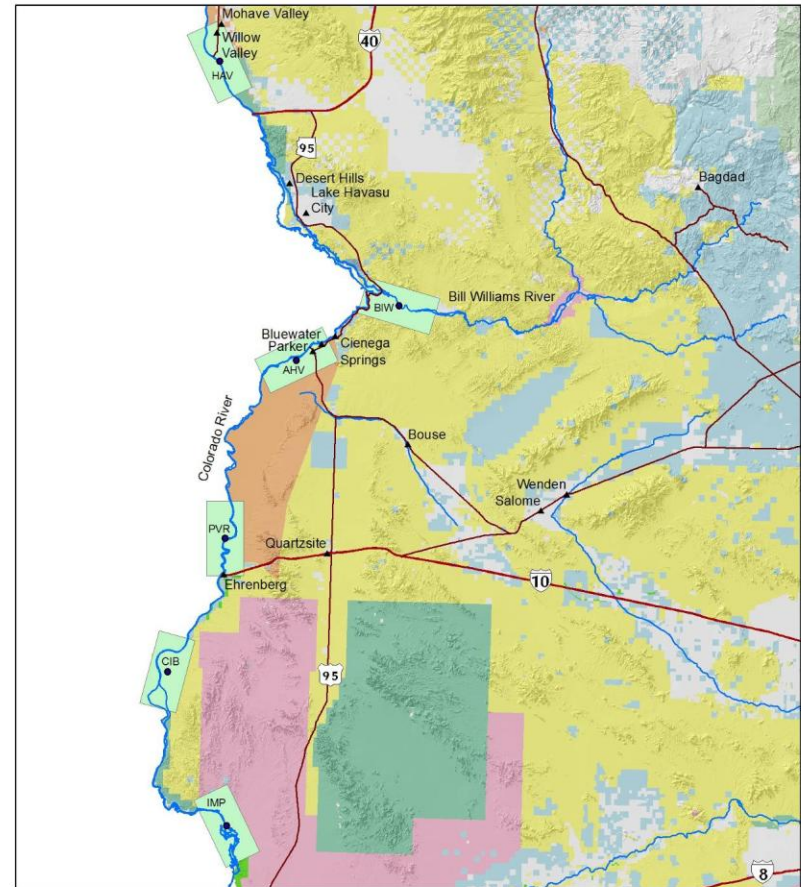
- Locate roosts
- Describe roost
- Estimate distribution
- Management Guidelines





# Study Area (Treatment)

- 5 treatment plots
  - Riparian habitat
    - Cottonwood canopy
    - Even-aged stand
    - Little or no understory



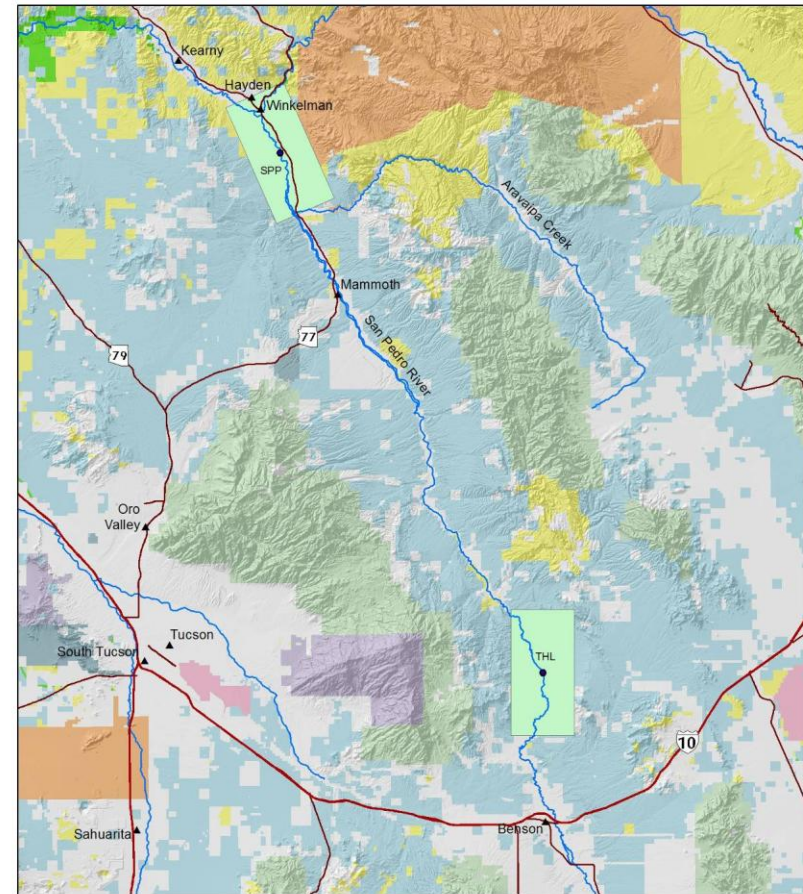
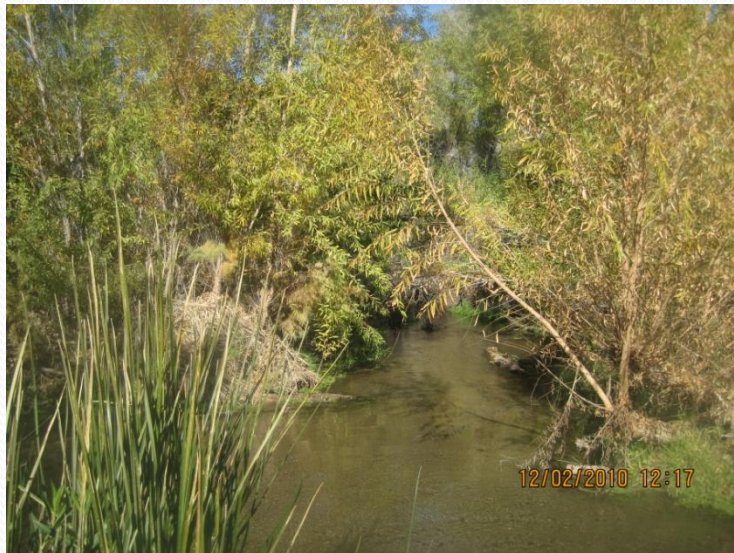
Red Bat Survey Areas along the Colorado River and Bill Williams River in Western Arizona



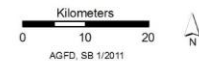


# Study Area (Control)

- 3 Control plots
  - Riparian habitat
    - Cottonwood canopy
    - Mixed understory
      - Native
      - Invasive



Red Bat Survey Areas along the San Pedro River in Southern Arizona





# Locate Roosts

- **Western red bat**

- Sampling period
  - Cold season
  - Warm season
- Telemetry
  - 5/20 individuals
- Sampling methods
  - 27m by 7.5m



- **Western yellow bat**

- Sampling period
  - Warm season
- Telemetry
  - 20 individuals
- Sampling methods
  - 27m by 7.5m





# Describe Roost

- **Patch**

- MSCP vegetation monitoring field protocol



- **Roost**

- tree heights
- Dbh
- canopy cover
- canopy height
- slope
- aspect
- tree roost species
- number of live branches
- live crown ratio
- foliage condition
- bat roost height
- distance from trunk



# Estimate Distribution

- Presence/ absence
- 3 scales
  - Roost tree
  - Patch
  - Sample cell (spatially derived)
    - SW-ReGAP land cover and land form
    - physiographic characteristics
    - geologic distributions
    - BIOCLIM derived climatic trends
- Logistic Regression
  - Generalized linear model (PROC GLM) SAS
  - A Priori models
  - AIC
  - Descriptive/Predictive





# Management Guidelines

- Predictive model
- Maintain existing habitat
- Create potential habitat

