

# Developing a Public Web Map for the Lower Colorado River Multi-Species Conservation Program



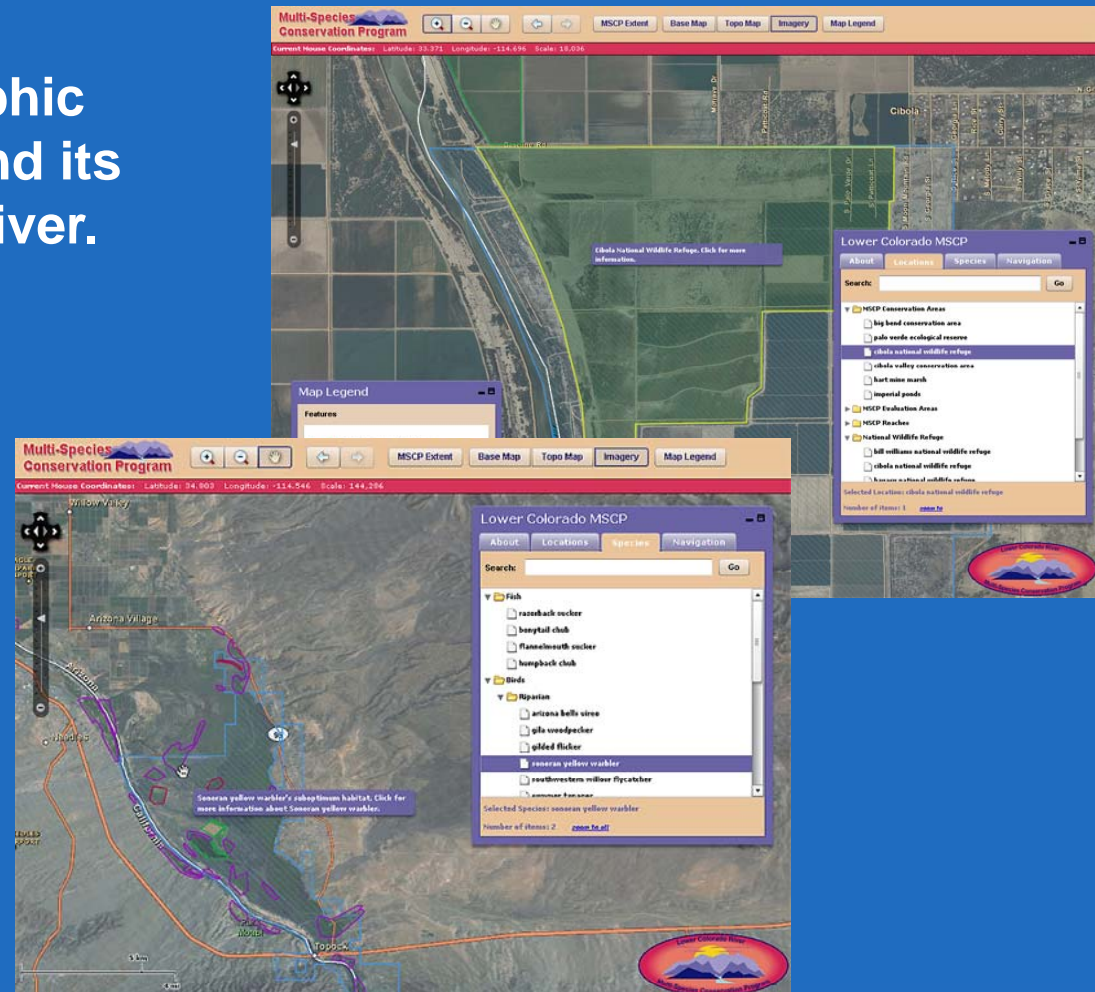
# Public Web Map - Purpose

To visually display geographic information about MSCP and its work along the Colorado River.

Conservation Areas

Species Research

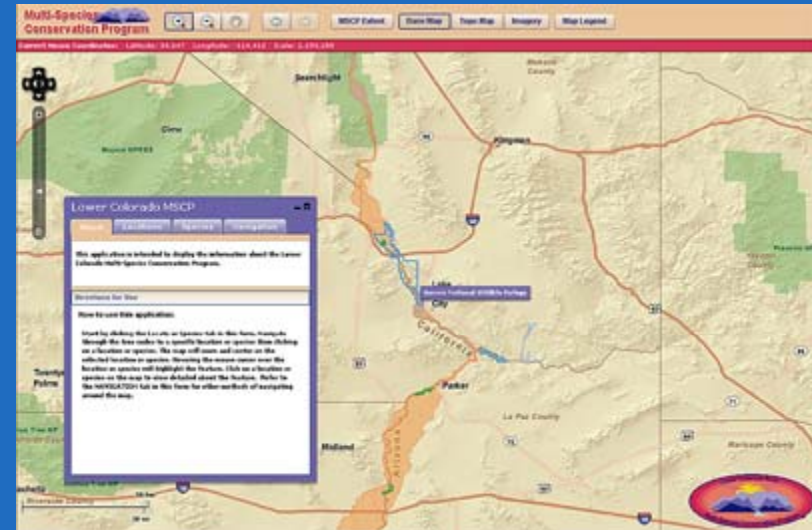
Species Monitoring



# RECLAMATION

# Base Maps

## Three base options



Shaded Relief with places and streets

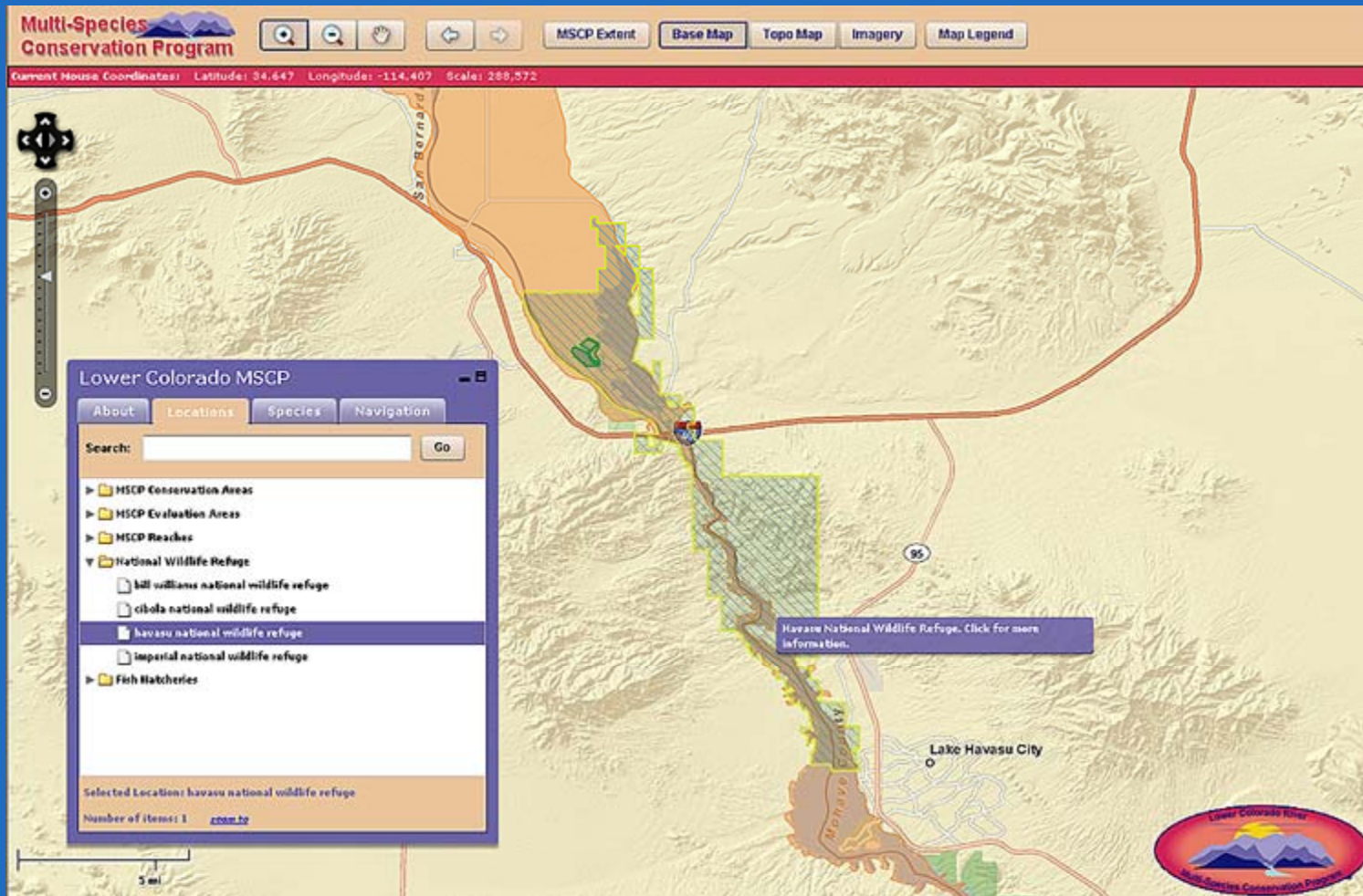
USGS Topographic Maps

Multi-scale Aerial Imagery with places and streets

RECLAMATION



# Base Maps – Shaded Relief with places and streets



# RECLAMATION

# Base Maps – USGS Topographic Maps

**Multi-Species Conservation Program**

Current Mouse Coordinates: Latitude: 32.028 Longitude: -114.431 Scale: 72,143

MSP Extent Base Map Topo Map Imagery Map Legend

**Lower Colorado MSCP**

About Locations Species Navigation

Search:  Go

- MSCP Conservation Areas
- MSCP Evaluation Areas
- MSCP Reaches
- National Wildlife Refuge
  - bill williams national wildlife refuge
  - cibola national wildlife refuge
  - havasai national wildlife refuge
  - imperial national wildlife refuge
- Fish Hatcheries

Selected Location: null  
Number of items: 0 [view full](#)

Imperial National Wildlife Refuge  
Lower Colorado River  
Multi-Species Conservation Program

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# Base Maps – Multi-scale Aerial Imagery with places and streets

Multi-Species Conservation Program

Current Mouse Coordinates: Latitude: 33.371 Longitude: -114.696 Scale: 18,036

MSCP Extent Base Map Topo Map Imagery Map Legend

Cibola National Wildlife Refuge. Click for more information.

Map Legend

Features

- MSCP Conservation Areas
- MSCP Boundary with Reaches
- National Wildlife Refuges

Lower Colorado MSCP

About Locations Species Navigation

Search:  Go

- MSCP Conservation Areas
  - big bend conservation area
  - palo verde ecological reserve
  - cibola national wildlife refuge
  - cibola valley conservation area
  - hart mine marsh
  - imperial ponds
- MSCP Evaluation Areas
- MSCP Reaches
- National Wildlife Refuge
  - bill williams national wildlife refuge
  - cibola national wildlife refuge
  - harriman national wildlife refuge

Selected Location: cibola national wildlife refuge

Number of Items: 1 [view full](#)

Lower Colorado River Multi-Species Conservation Program

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# Current Base Maps

Base Maps are provide by ESRI – GIS Software Company

# Base Maps - Future

MSCP Imagery

MSCP Base Maps



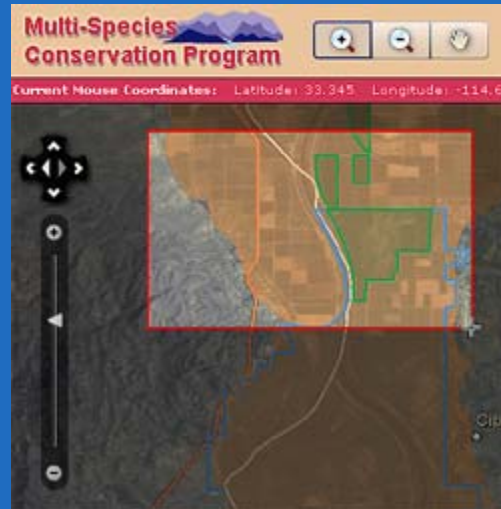
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# Navigation – General

## Zoom Slider - Google Style



## Tool Bar - ESRI Style



## Mouse - Computer Style

Lower Colorado MSCP

About Locations Species Navigation

### Map Navigation Tips

**Map Navigation Using Zoom Slider:**  
Zoom in or out by moving the slider  
Or by clicking the +/- buttons on the slider  
Pan the map by clicking one of the four pan arrows.  
Use the extent arrows to go to previous and next map extents.

**Map Navigation Using Toolbar:**  
Click the Full Extent button to zoom to the full map extent.  
To zoom in, click the Zoom In tool then drag a box on the map.  
To zoom out, click the Zoom Out tool then drag a box on the map.

**Map Navigation Using Mouse:**  
Use mouse scroll forward to zoom in.  
Use mouse scroll backward to zoom out.

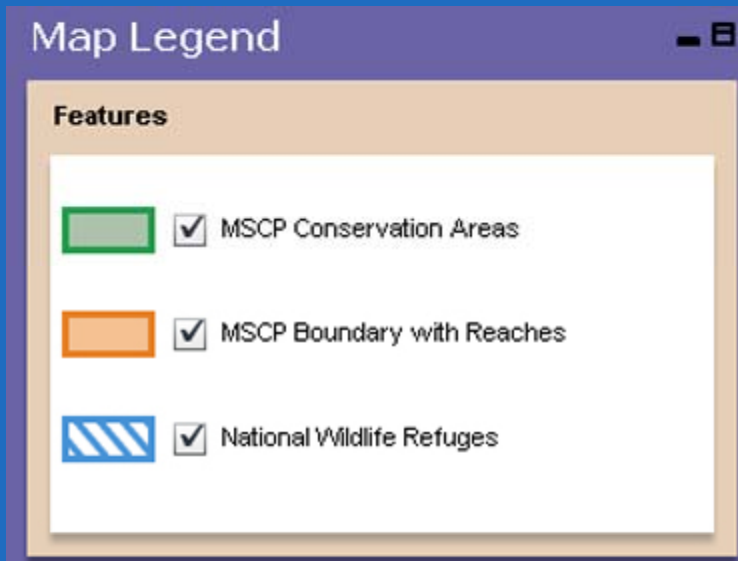


# Legend

Click button to show or hide Map Legend



## Map Legend



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# Navigation – MSCP Data

It is all about the **trees** on the Navigation form.

## Tree Nodes

- ▶ MSCP Conservation Areas
- ▶ MSCP Evaluation Areas
- ▶ MSCP Reaches
- ▶ National Wildlife Refuge
- ▶ Fish Hatcheries

- ▶ Birds
- ▼ Mammals
  - ▼ Bats
    - western red bat
    - western yellow bat**
    - california leaf-nosed bat
    - pale townsend's big-eared bat
  - ▶ Rodents
- ▶ Amphibians
- ▶ Reptiles
- ▶ Insects
- ▶ Plants

Lower Colorado MSCP

About Locations Species Navigation

This application is intended to display the information about the Lower Colorado Multi-Species Conservation Program.

[Directions for Use](#)

How to use this application:

Start by clicking the Locate or Species tab in this form. Navigate through the tree nodes to a specific location or species then clicking on a location or species. The map will zoom and center on the selected location or species. Hovering the mouse cursor over the location or species will highlight the feature. Click on a location or species on the map to view detailed about the feature. Refer to the NAVIGATION tab in this form for other methods of navigating around the map.

# Navigation – Locations

## MSCP – Conservation Areas

Examples

Big Bend CA  
Imperial Ponds

## MSCP – Evaluation Areas

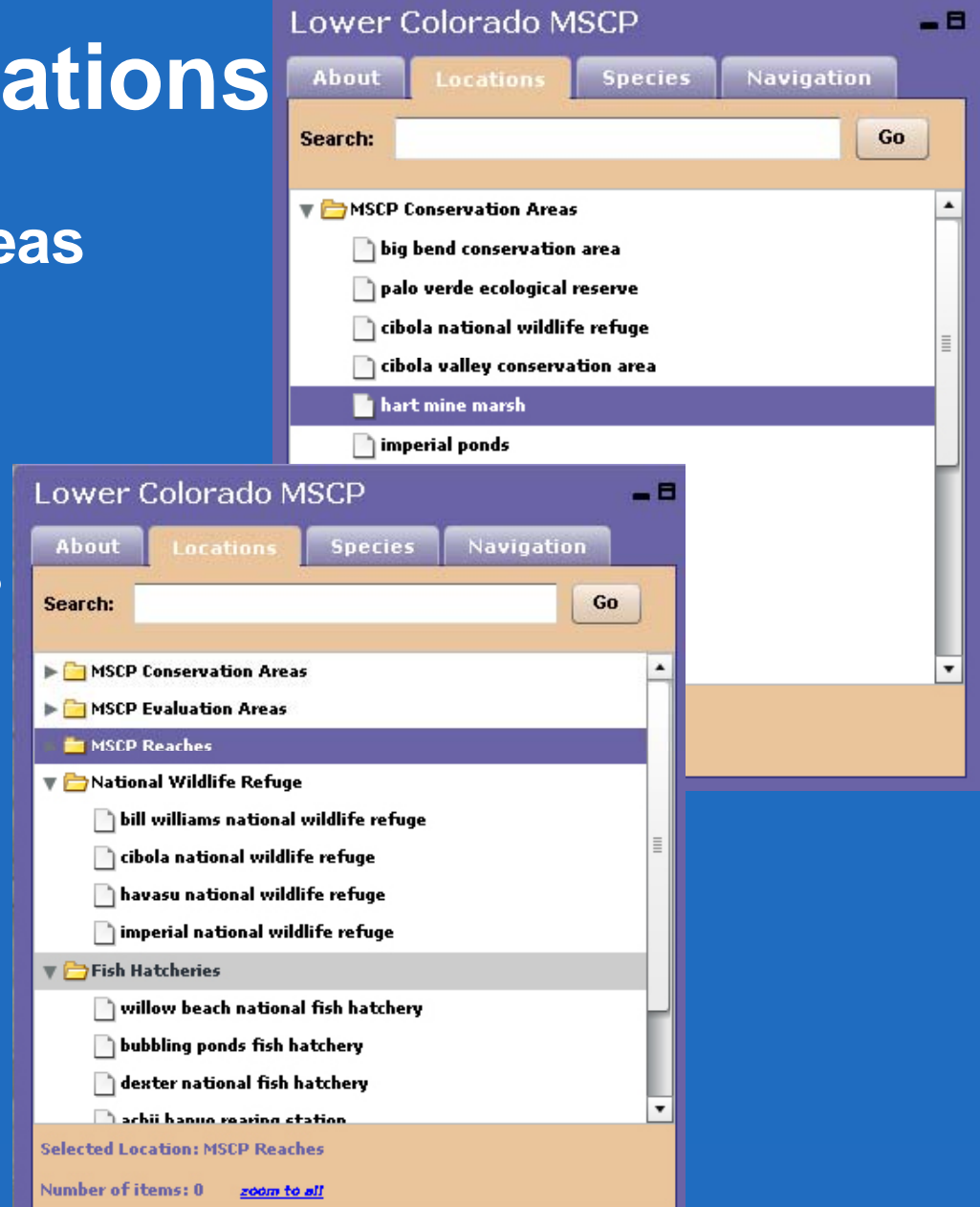
Examples

Beal Lake CA  
Desert Tortoise

## MSCP Reaches

## National Wildlife Refuges

## Fish Hatcheries



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# Navigation – Zoom and Highlight

The screenshot displays the Multi-Species Conservation Program web application interface. At the top, the title "Multi-Species Conservation Program" is visible alongside navigation icons for zooming and panning. Below the title, the current mouse coordinates are shown: Latitude: 33.710, Longitude: -114.502, and Scale: 36,072. The main map area shows an aerial view of a river system with various conservation areas highlighted in green and orange. A "Map Legend" panel on the right lists features: "MSCP Conservation Areas" (checked), "MSCP Boundary with Reaches" (unchecked), and "National Wildlife Refuges" (checked). A "Lower Colorado MSCP" panel on the left provides a search bar and a list of conservation areas, with "palo verde ecological reserve" selected. A tooltip over the map reads "Palo Verde Ecological Reserve. Click for more information." The bottom right corner features the "Lower Colorado River Multi-Species Conservation Program" logo. A scale bar at the bottom left indicates 1 km and 1 mi.

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# Navigation – Mouse over and Click

Multi-Species Conservation Program

Current Mouse Coordinates: Latitude: 34.775 Longitude: -114.532 Scale: 18,036

MSCP Extent Base Map Topo Map Imagery Map Legend

Beal Lake Conservation Area. Click for more information.

Lower Colorado MSCP

About Locations Species Navigation

Search:  Go

- MSCP Conservation Areas
- MSCP Evaluation Areas
  - beal lake conservation area
  - ahshai tribal preserve
  - laguna division conservation area
  - yuma east wetlands
  - desert tortoise
  - topock marsh
- MSCP Reaches
- National Wildlife Refuge
- Fish Hatcheries

Selected Location: beal lake conservation area

Number of Items: 1 [view](#)

Beal Lake Conservation Area

Beal Lake Conservation Area serves two purposes to improve and maintain the backwater for the bonytail and razorback sucker species, while conducting aquatic habitat research, and to research the success, cost effectiveness, and process of planting native vegetation in a mixture of existing soil and dredge material

0.5 km 0.5 mi

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# Navigation – Species

-Fish

-Birds

Riparian  
Marsh

-Mammals

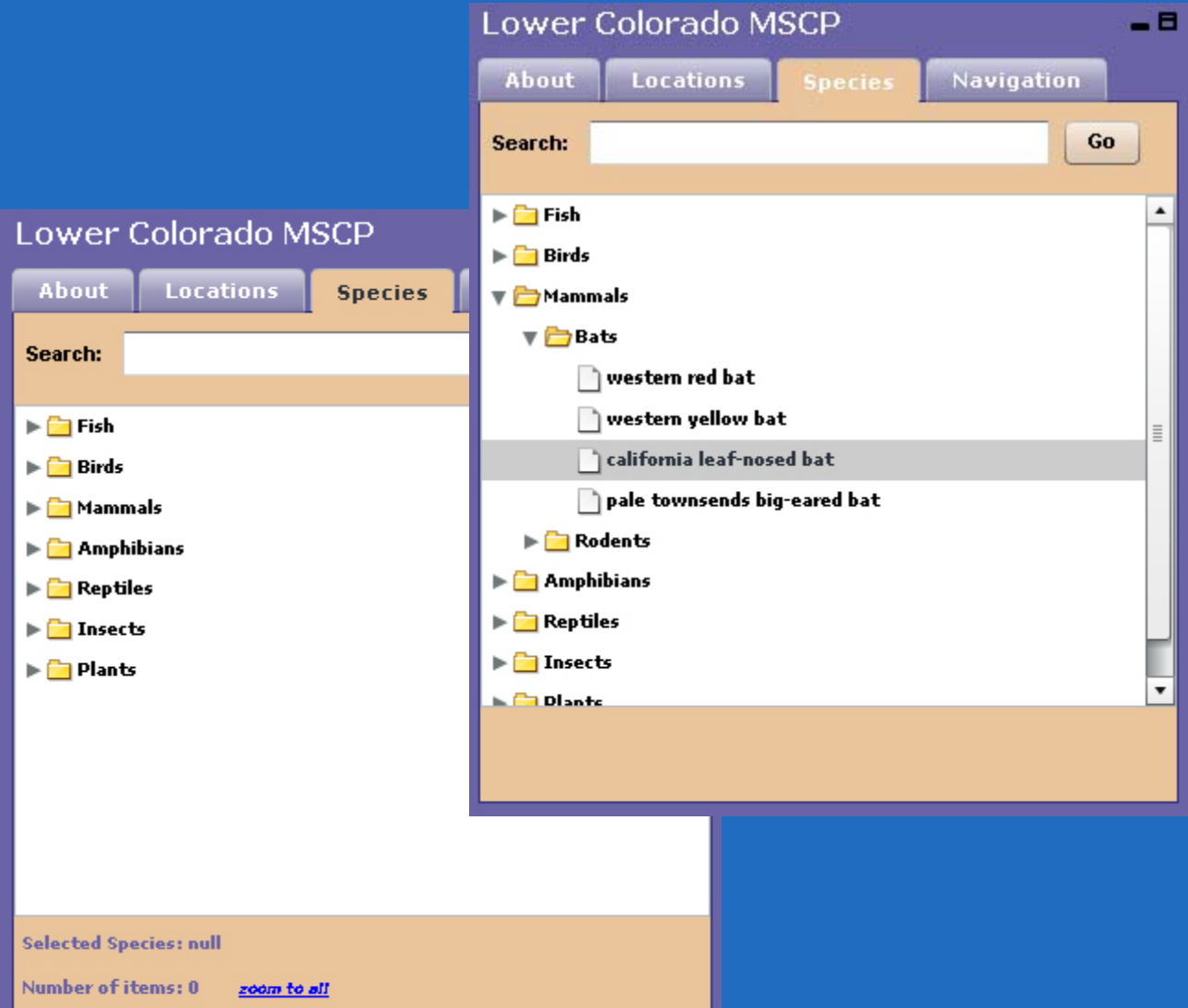
Bats  
Rodents

-Amphibians

-Reptiles

-Insects

-Plants



RECLAMATION



# Navigation – Zoom and Highlight

The screenshot displays the Multi-Species Conservation Program web application interface. At the top, the logo for the Multi-Species Conservation Program is visible, along with navigation icons for zooming and panning. The current mouse coordinates are Latitude: 34.218 and Longitude: -113.924, with a scale of 1,154,288. The map shows the Lower Colorado MSCP area, with a red box highlighting a location near Parker, California. A tooltip indicates that a Western yellow bat was captured at this location. A search window titled "Lower Colorado MSCP" is open, showing a search bar and a list of species categories. The "Bats" category is expanded, and the "western yellow bat" is selected. The search window also shows the number of items (1) and a link to zoom to the location.

Multi-Species Conservation Program

Current Mouse Coordinates: Latitude: 34.218 Longitude: -113.924 Scale: 1,154,288

Western yellow bat is captured in location. Click for more information about Western yellow bat.

Lower Colorado MSCP

About Locations Species Navigation

Search:  Go

- Fish
- Birds
- Mammals
  - Bats
    - western red bat
    - western yellow bat
    - california leaf-nosed bat
    - pale townsend's big-eared bat
  - Rodents
  - Amphibians
  - Reptiles
  - Insects
  - Plants

Selected Species: western yellow bat

Number of Items: 1 [zoom to it](#)

Lower Colorado River Multi-Species Conservation Program

# RECLAMATION

# Navigation – Mouse over and Click

**Multi-Species Conservation Program**

Current Mouse Coordinates: Latitude: 35.202 Longitude: -114.543 Scale: 2,308,575

MSCP Extent Base Map Topo Map Imagery Map Legend

California leaf-nosed bat's roost(s) found in mountain range. Click for more information about California leaf-nosed bat.

**Lower Colorado MSCP**

About Locations Species Navigation

Search:  Go

- Fish
- Birds
- Mammals
  - Bats
    - western red bat
    - western yellow bat
    - california leaf-nosed bat
    - pale townsend's big-eared bat
  - Rodents
  - Amphibians
  - Reptiles
  - Insects
  - Plants

Selected Species: california leaf-nosed bat

Number of Items: 2 [view full list](#)

**California leaf-nosed bat**

Scientific Name: *Macrotus californicus*



The most diagnostic character of the California leaf-nosed bat, a gray-furred medium-sized bat, is the leaf-shaped structure on its nose. Their ears are large and are joined near their base. They roost in mines and caves that can maintain high temperatures year-round. Because of the restricted roosting requirements and their limited distribution they form a small number of large colonies. California leaf-nosed bats forage during the entire year. Leaf-nosed bats feed by capturing prey during flight and by gleaning insects from vegetation. They primarily feed on large night flying beetles, grasshoppers, moths, and insect larvae.

Lower Colorado River Multi-Species Conservation Program

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# Navigation – Arizona Bells Vireo

The screenshot displays a web-based map interface for the Multi-Species Conservation Program. At the top, the program name is shown with a logo, and navigation controls include zoom in/out, pan, and map style selection (MSCP Extent, Base Map, Topo Map, Imagery, Map Legend). The current mouse coordinates are Latitude: 36.112, Longitude: -113.968, and Scale: 4,617,150.

The map shows the Lower Colorado MSCP area in Arizona, with a red line indicating the MSCP Boundary with Reaches. A tooltip points to the Arizona Bells Vireo's suboptimum habitat, stating: "Arizona Bells Vireo's suboptimum habitat. Click for more information about Arizona Bells Vireo." A "Map Legend" window is open, showing the following features:

- MSCP Conservation Areas
- MSCP Boundary with Reaches
- National Wildlife Refuges

A "Lower Colorado MSCP" window is also open, showing a search bar and a list of species under the "Riparian" category. The selected species is "arizona bells vireo".

Species list:

- arizona bells vireo
- gila woodpecker
- gilded flicker
- sonoran yellow warbler
- southwestern willow flycatcher
- summer tanager
- vermillion flycatcher
- yellow-billed cuckoo
- elf owl

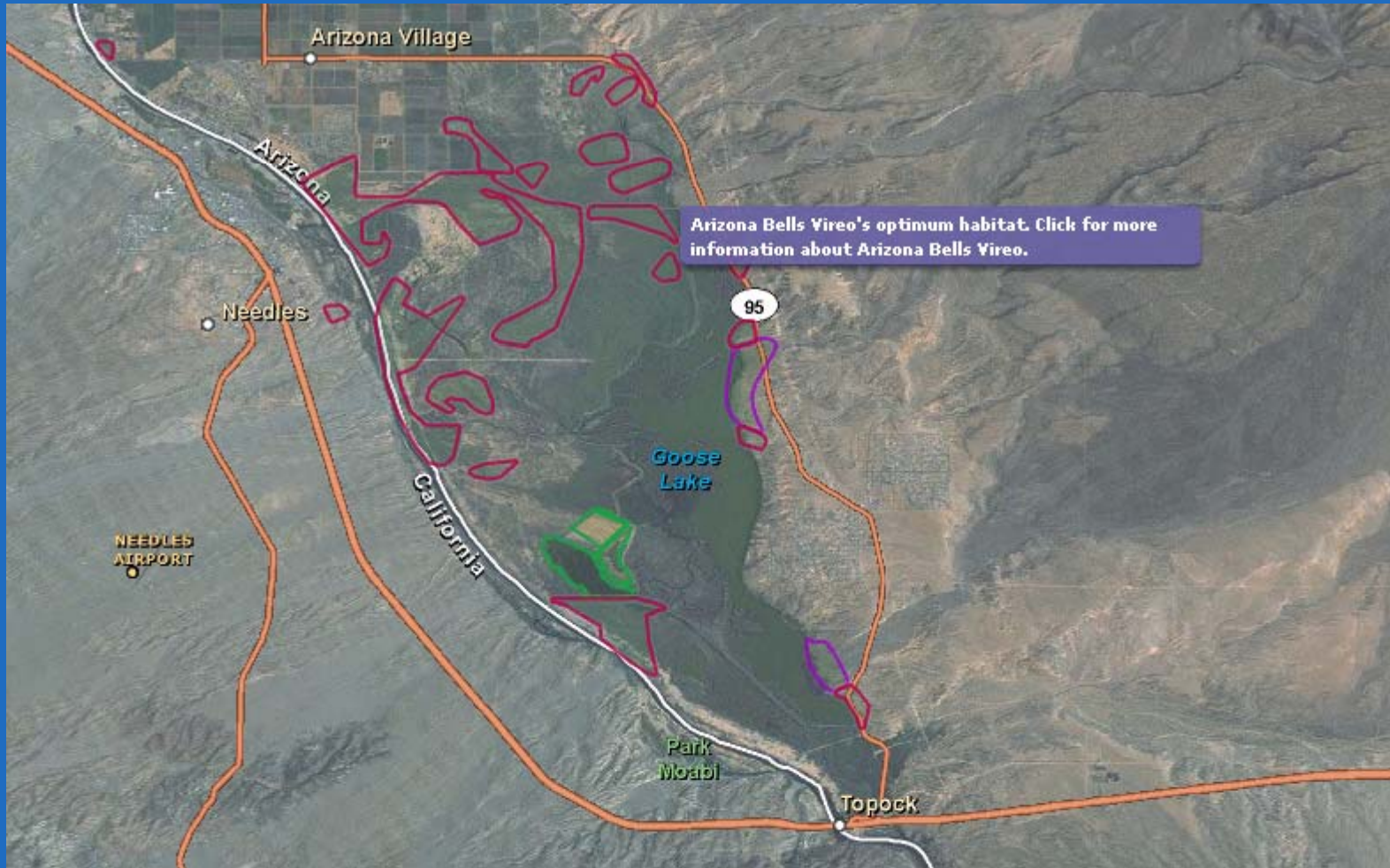
Selected Species: arizona bells vireo  
Number of items: 2 [zoom to all](#)

The map includes a scale bar for 100 miles and a logo for the Lower Colorado River Multi-Species Conservation Program in the bottom right corner.

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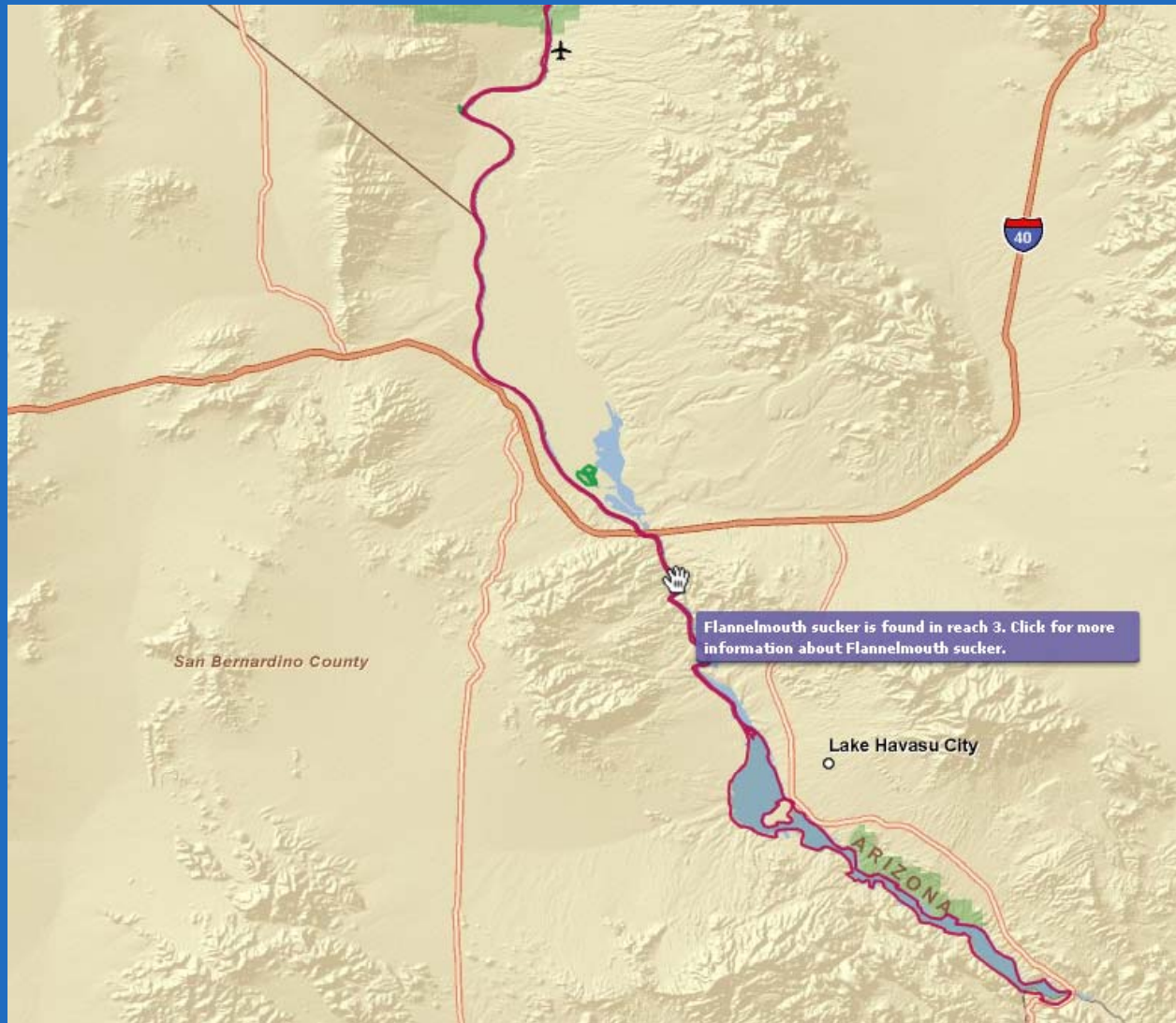


# Navigation – Arizona Bells Vireo



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# Navigation – Flannelmouth Sucker



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