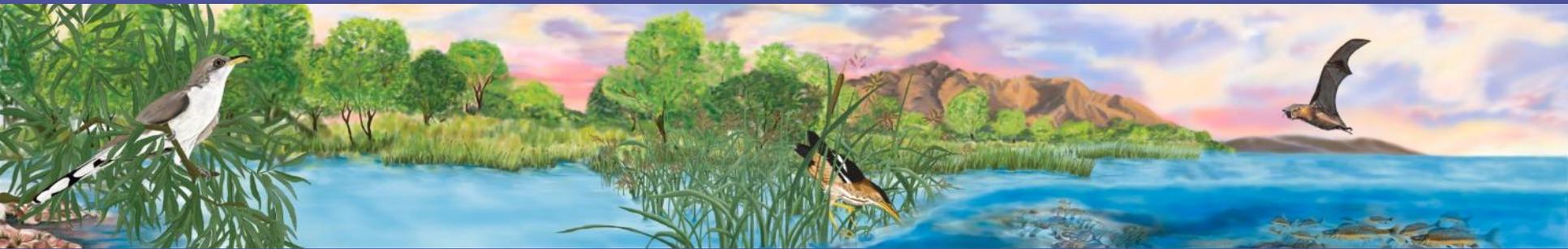


Lower Colorado River Multi-Species Conservation Program



Balancing Resource Use and Conservation

ACCOMPLISHMENTS AND SCIENCE PRIORITIES



Carolyn Ronning, Wildlife Group Manager
Bureau of Reclamation
Boulder City, Nevada

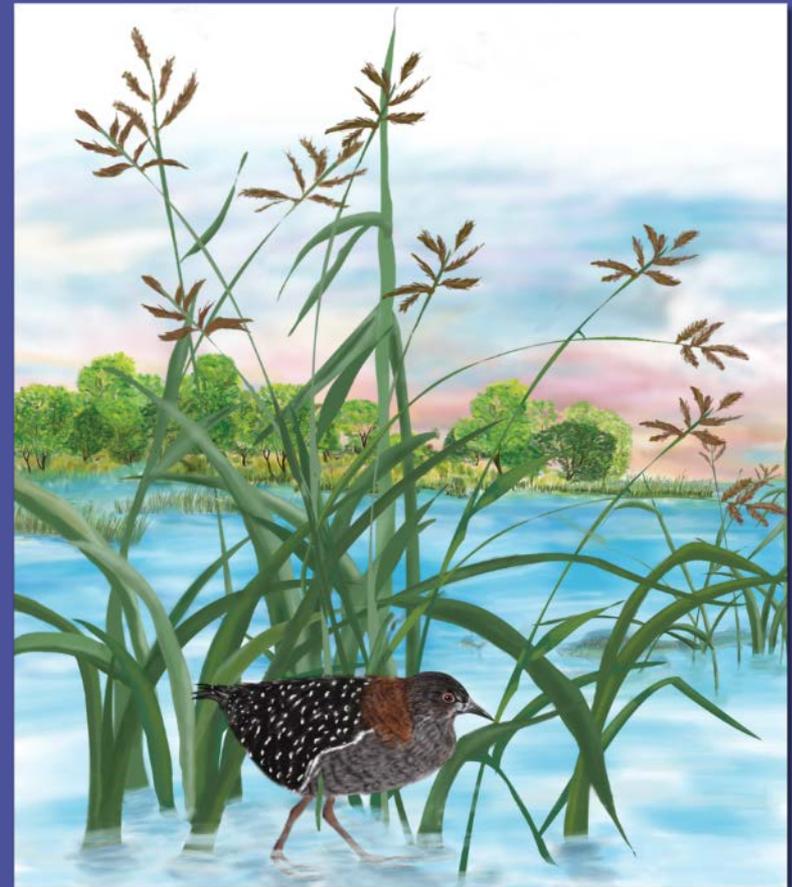


Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

PURPOSE

Multi-stakeholder Federal and non-Federal partnership responding to the need to balance the use of lower Colorado River water resources and the conservation of native species and their habitats in compliance with the Endangered Species Act.





Lower Colorado River Multi-Species Conservation Program

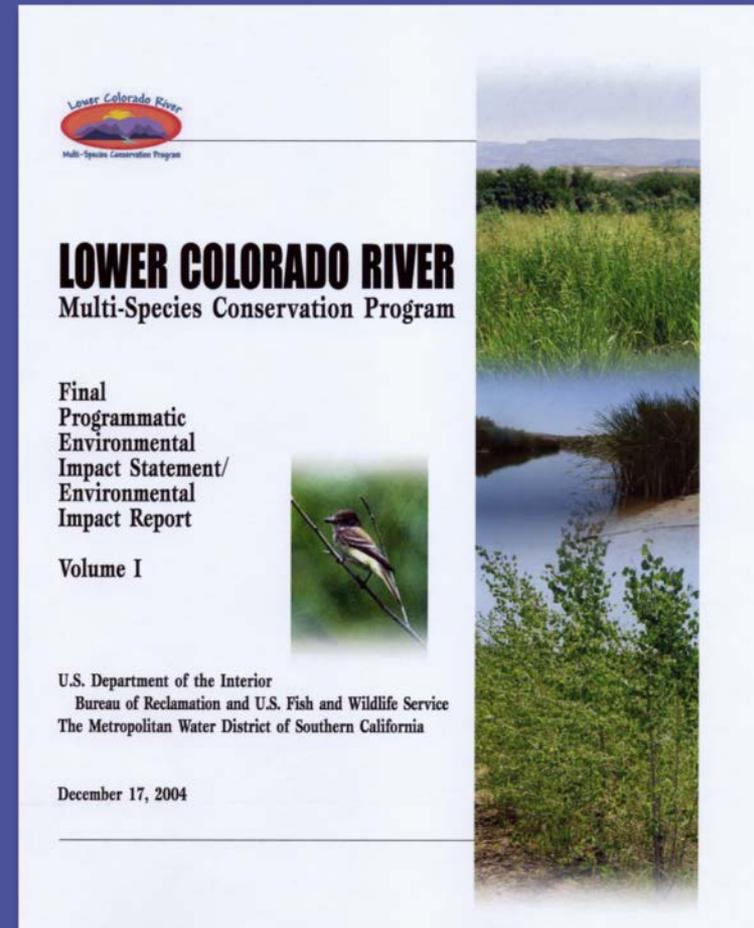
Balancing Resource Use and Conservation

50-Years of ESA and CESA Compliance

- Section 7 and Section 10 HCP

Covered Actions

- Delivery and Diversion of 9 MAF
- Maintenance Activities
- Movement of 1.574 MAF



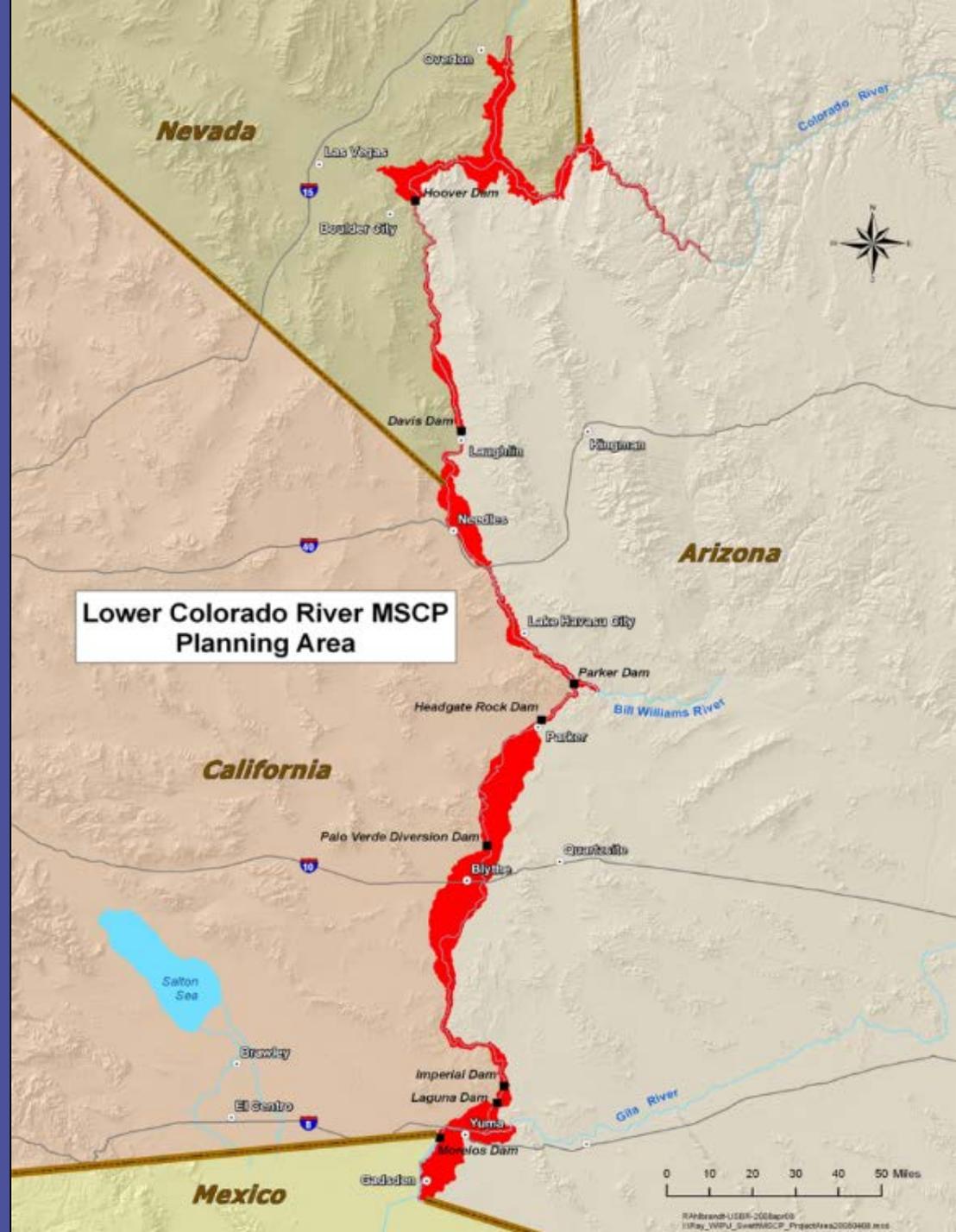
LOWER COLORADO RIVER MSCP RIVER MSCP

Planning Area

Extends over 400 miles from Lake Mead to the southernmost border with Mexico.

Includes:

- Lake Mead
- Lake Mohave
- Lake Havasu
- the historic 100-year floodplain





Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

COST SHARING

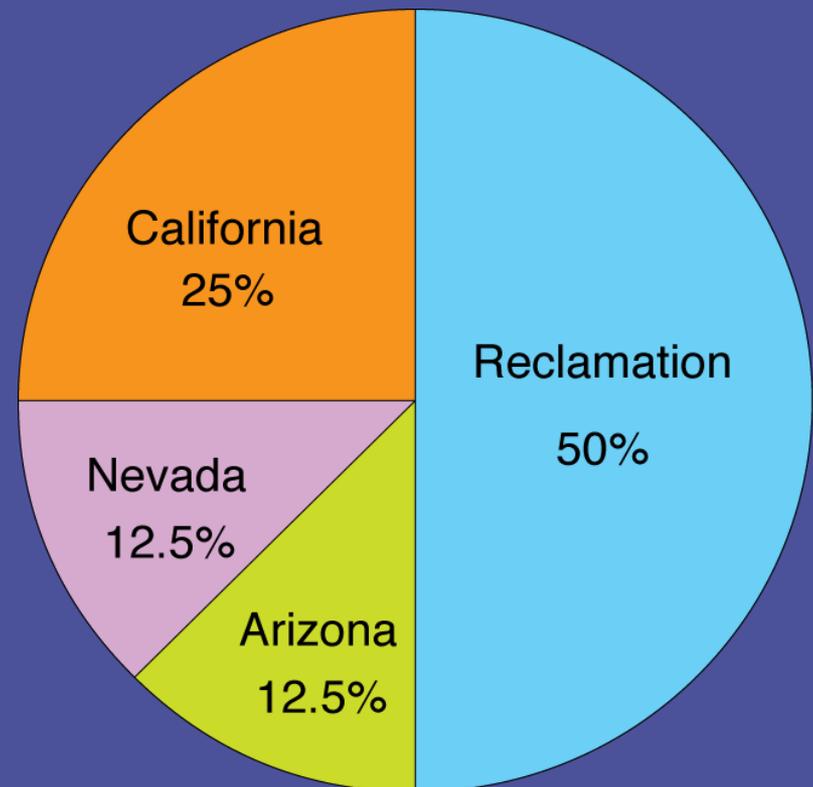
- **Total Program Cost**
\$626 million (2003 dollars and adjusted annually for inflation)
- **Federal / State Cost Share**
Split 50/50

2017 = \$30,874,452

2018 = \$31,251,240

2019 = \$31,960,488

2020 = \$33,268,164





Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

COVERED SPECIES

- 8 threatened and endangered species
 - 3 birds, 3 fish, 2 reptiles



Yuma Ridgway's rail
(Yuma clapper rail)



southwestern willow flycatcher



yellow-billed cuckoo



Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

COVERED SPECIES

- 8 threatened and endangered species
 - 3 birds, 3 fish, 2 reptiles



bonytail



humpback chub



razorback sucker



Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

COVERED SPECIES

- 8 threatened and endangered species
 - 3 birds, 3 fish, 2 reptiles



desert tortoise (*Gopherus agassizii*)



Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

COVERED SPECIES

- 2018 – northern Mexican gartersnake (*Thamnophis eques megalops*) added as a covered species
- Present at Havasu National Wildlife Refuge and on the Bill Williams River



Photo: Great Basin Bird Observatory, 2015



Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

COVERED SPECIES

- 19 other species
 - 4 mammals, 9 birds, 1 reptile, 1 amphibian, 1 fish, 1 insect, 2 plants
- 5 “evaluation species”*
 - 3 mammals, 2 amphibians

** Evaluation species are those which would qualify as covered species except sufficient information on their biology, habitat use, and occurrence within the project area are not sufficient at the time the HCP was completed*



Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

CONSERVATION AREA DEVELOPMENT AND MANAGEMENT GOALS

- Cottonwood-willow - 5,940 acres
- Mesquite - 1,320 acres
- Marsh – 512 acres
- Backwaters – 360 acres





Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

FISH AUGMENTATION GOALS

- 660,000 razorback suckers
- 620,000 bonytail





Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

PROGRAM COMPONENTS

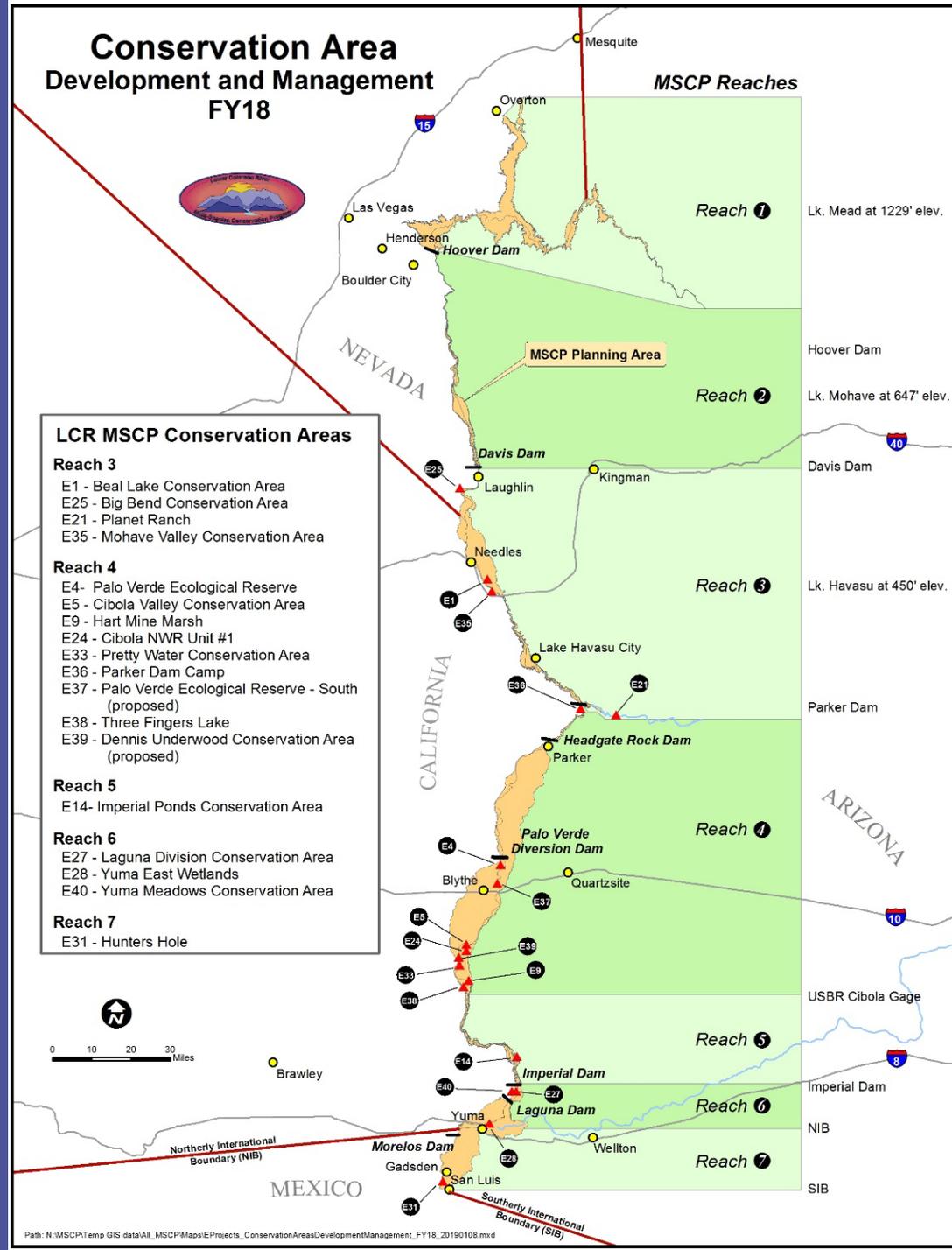
- Conservation Area Development & Management
- Fish Augmentation
- Species Research
- System-wide Monitoring
- Existing Habitat Maintenance

CONSERVATION MEASURES COMPLETE

- **DETO1** – Acquire and protect 230 acres of Mojave desert tortoise habitat
- **FTHL1** – Acquire and protect 230 acres of flat-tailed horned lizard habitat
- **RLFG1** – \$10,000/year for 10 years to a relict leopard frog conservation program
- **FLSU2** – \$80,000/year for 5 years to a flannelmouth sucker conservation program
- **AMM2** – Avoid flow-related impacts on covered species

Conservation Areas

- 17 conservation areas
 - 9 complete
 - 2 in planning stage
 - 2 under construction
 - 4 were complete but will be expanded
- Over 6,000 acres of habitat has been created



HABITAT CREATION ACCOMPLISHMENTS

- LCR MSCP has established sufficient acres of habitat to complete conservation measures for:
 - western red bat (765 ac)
 - Colorado River cotton rat (125 ac)
 - elf owl (1,784 ac)
 - summer tanager (602 ac)
 - western yellow bat (765 ac)
 - Yuma hispid cotton rat (76 ac)
 - Gila woodpecker (1,702 ac)
 - MacNeill's sootywing (222 ac)

PROGRAMMATIC ACCOMPLISHMENTS

- Conceptual Ecological Models for 20 covered species (2014-2019)
- Annual Accomplishment / Work Plans (annual)
- Five-year Research & Monitoring Priorities (FY08-12, FY13-17 and FY18-22)

Lower Colorado River Multi-Species Conservation Program



Balancing Resource Use and Conservation

Draft Implementation Report,
Fiscal Year 2020 Work Plan and Budget,
Fiscal Year 2018 Accomplishment Report



April 2019



Lower Colorado River Multi-Species Conservation Program

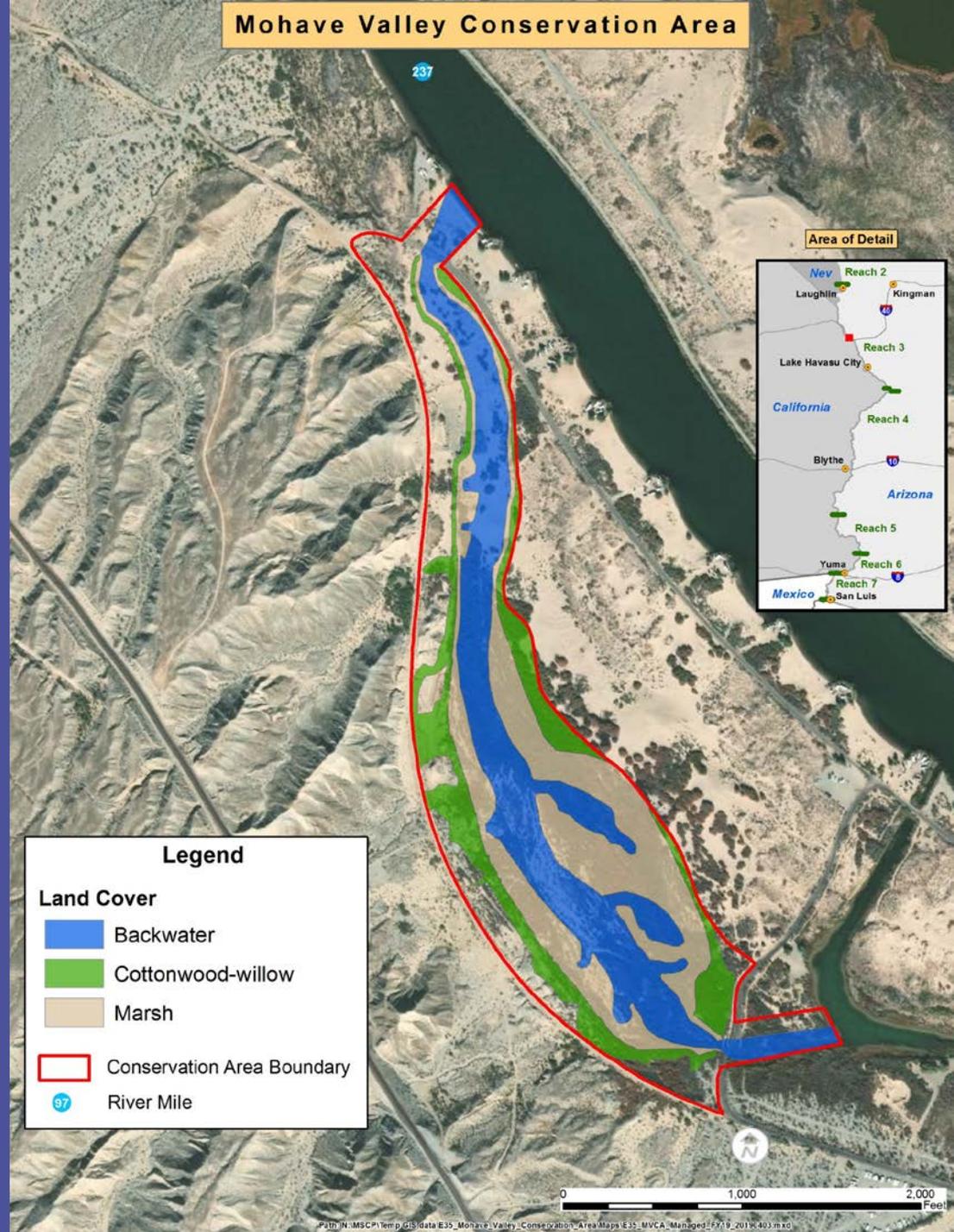
Balancing Resource Use and Conservation

CONSERVATION AREA DEVELOPMENT AND MANAGEMENT



Mohave Valley Conservation Area

- Construction completed April 2019
- 61-acre connected backwater
 - 15' depth







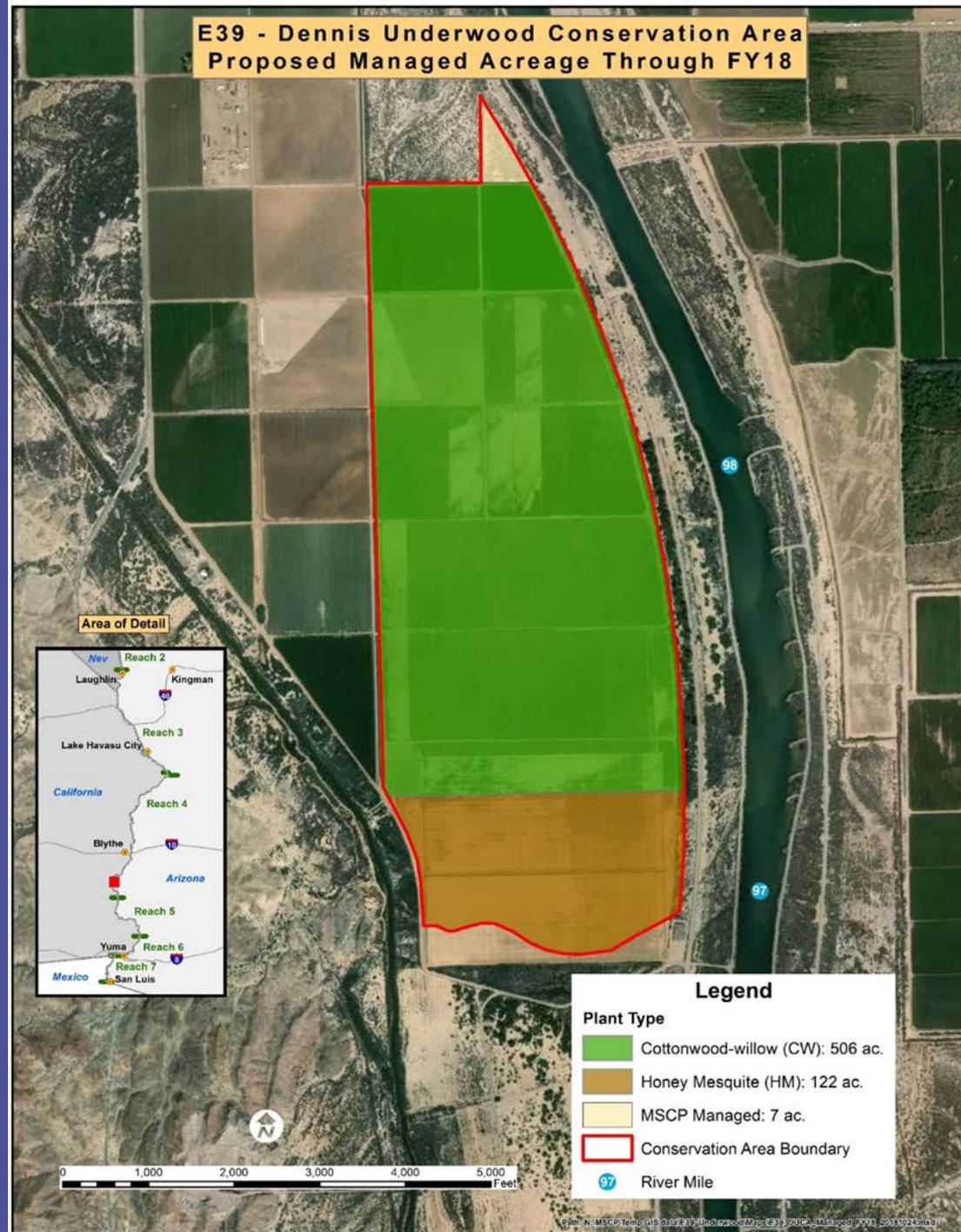


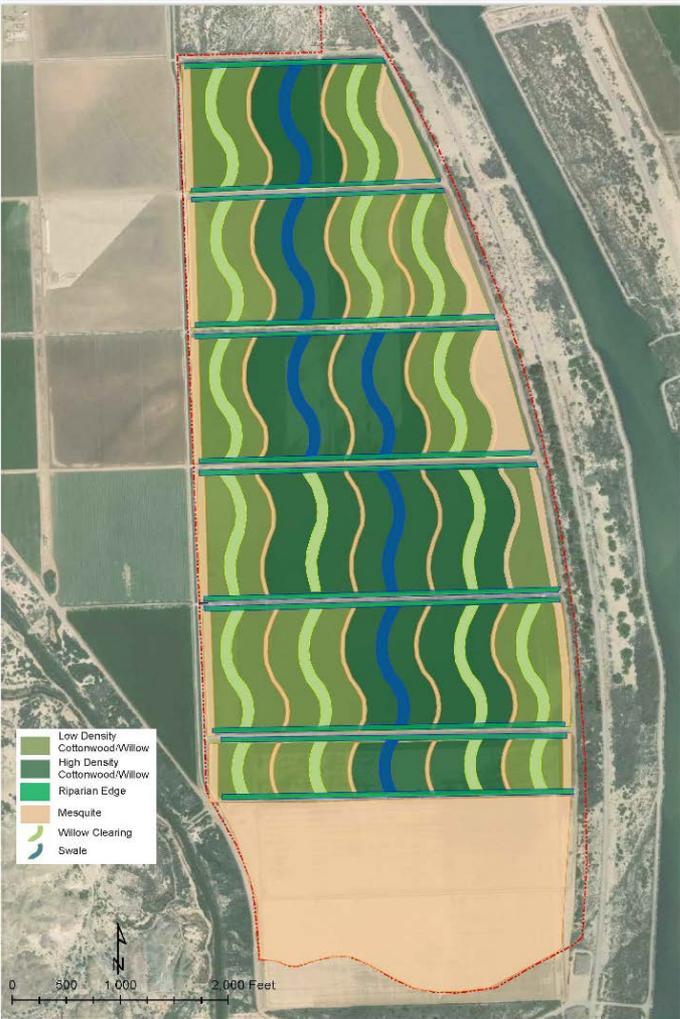




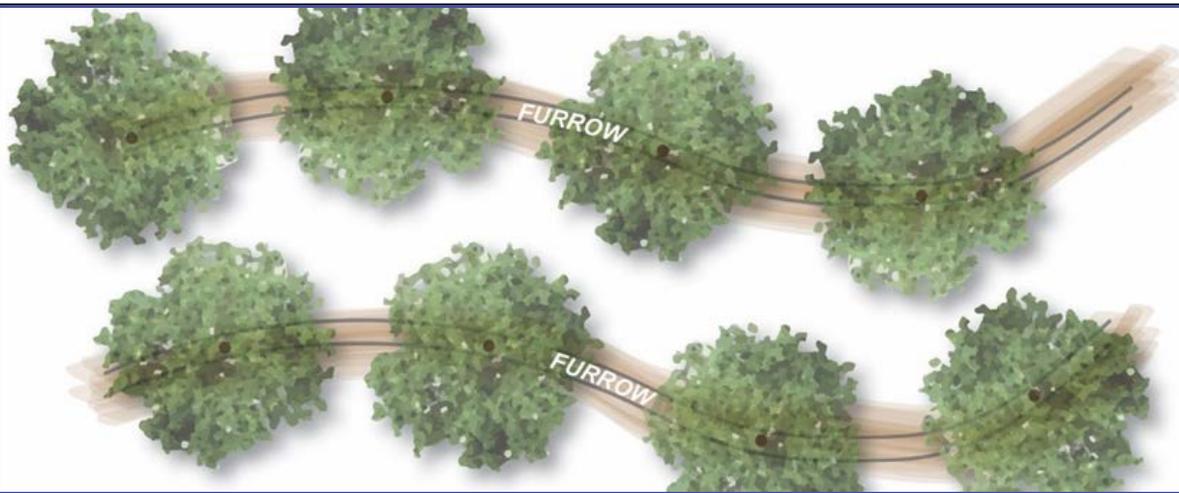
Dennis Underwood Conservation Area

- 635 acres
- The habitat creation concept includes establishing approximately 506 acres of cottonwood-willow and 122 acres of honey mesquite land cover types.



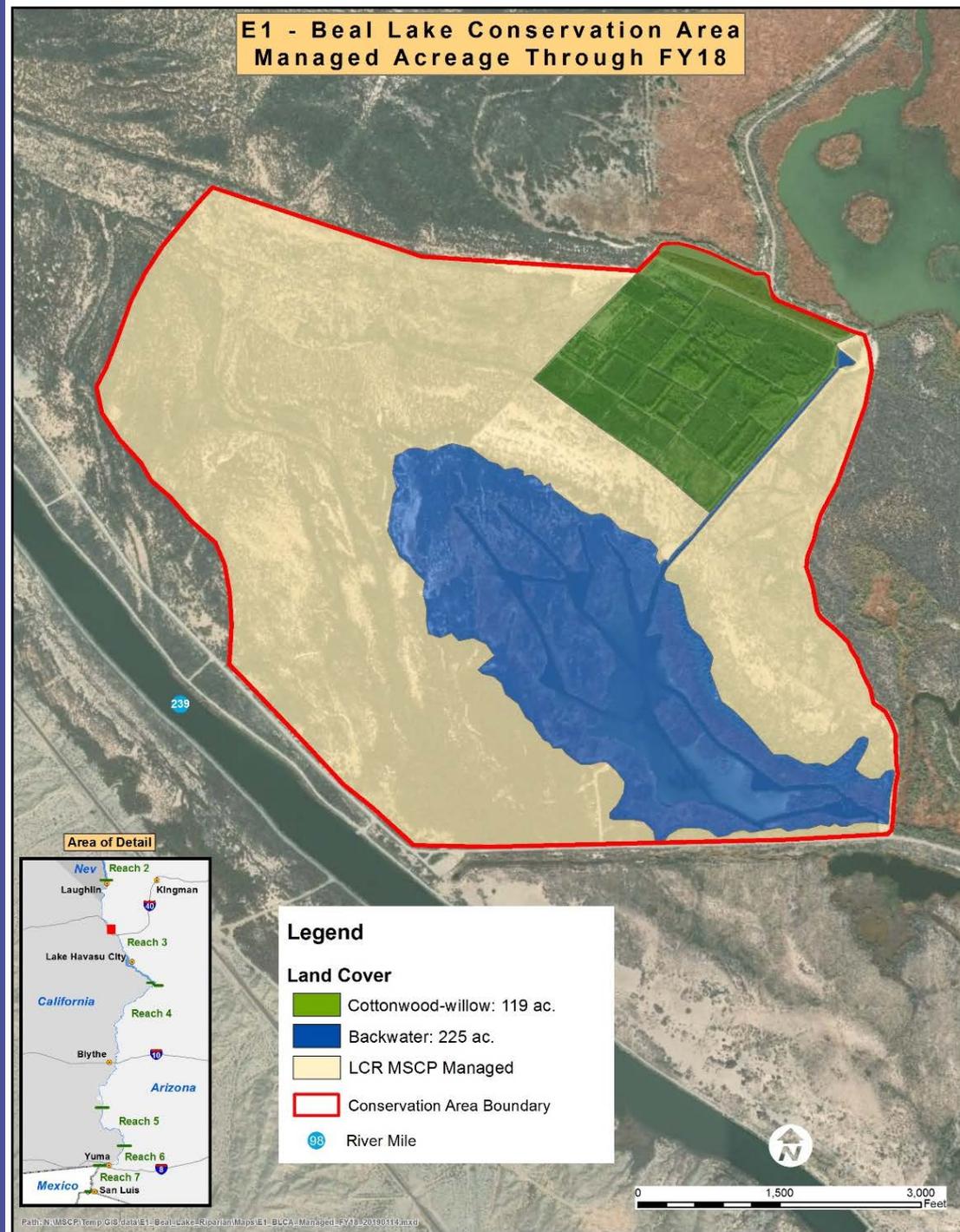


- 1. Mesquite
- 2. Low density Cottonwood-coyote willow
- 3. Willow clearing
- 4. High Density Cottonwood, coyote, Gooding's Willow
- 5. Swale
- 6. High Density Cottonwood-Gooding's Willow



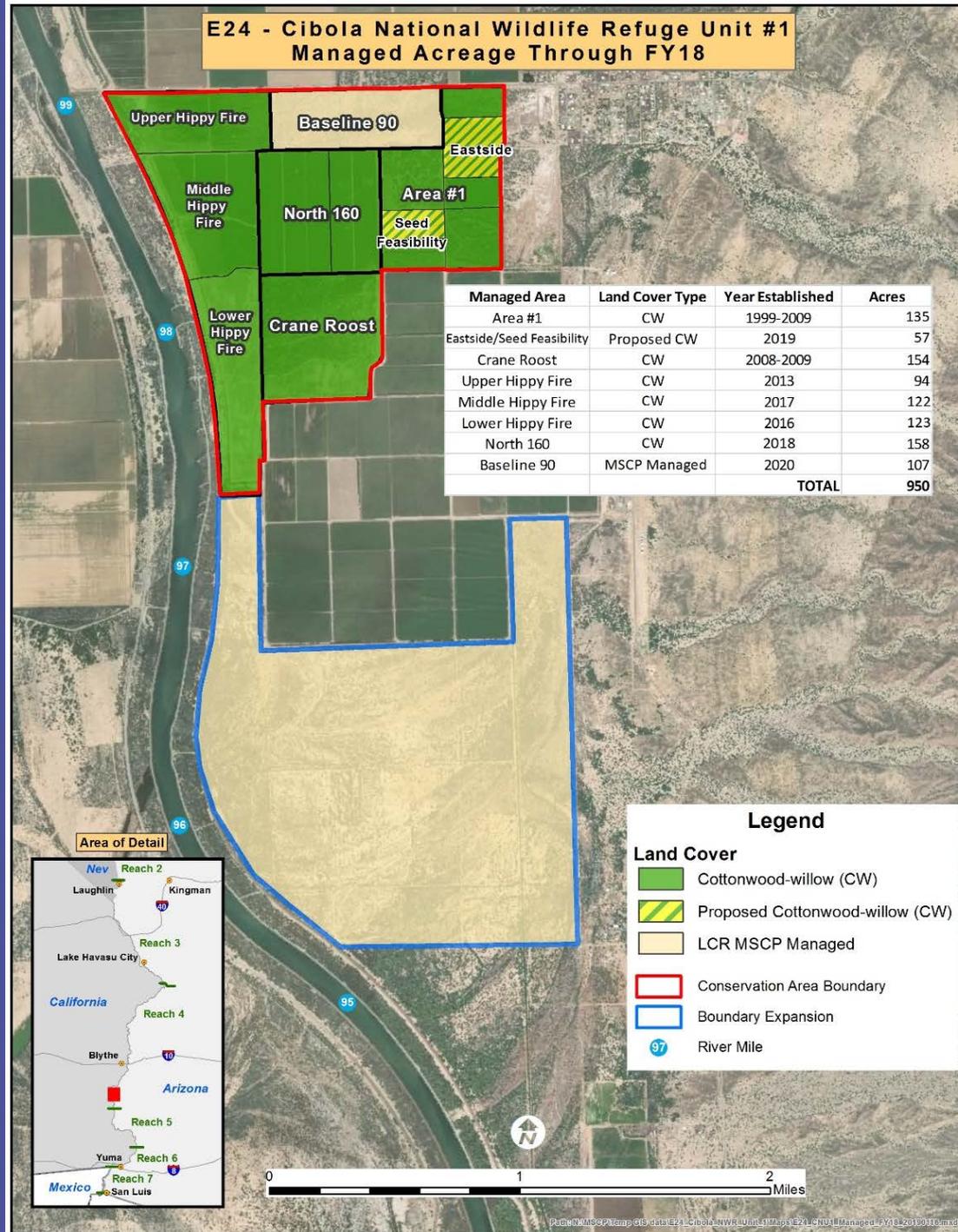
Beal Lake Conservation Area expansion

- Land use agreement in place
- An additional 400 acres was approved
- The habitat creation concept includes establishing approximately 300–400 acres of additional cottonwood-willow, honey mesquite, and marsh land cover types. This includes areas that can be flood irrigated as well as areas that would take advantage of the high-water table.



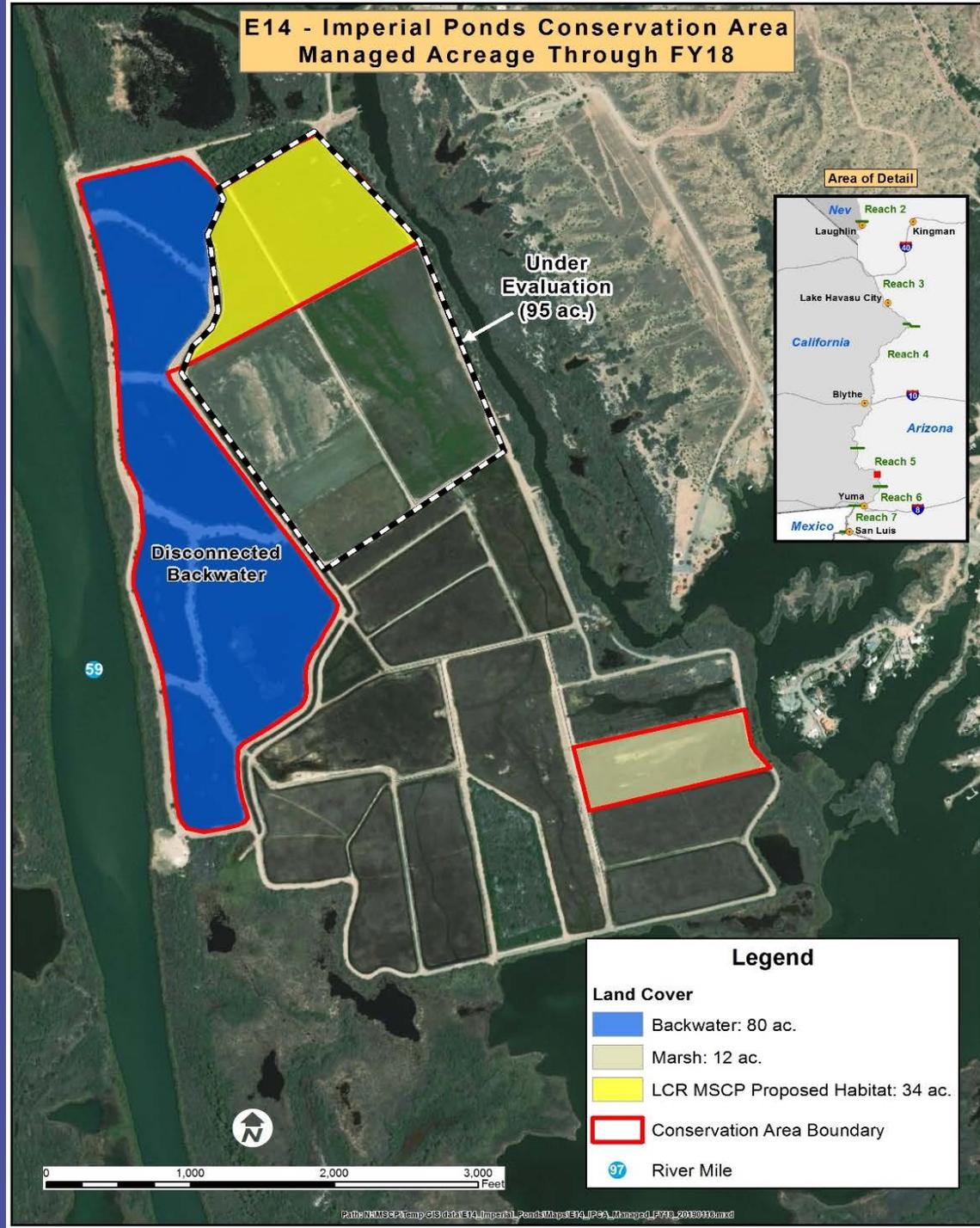
Cibola NWR Unit #1 expansion

- Land use agreement in place
- An additional 1,200 acres was approved
- The habitat creation concept includes establishing approximately 1000 acres of additional cottonwood-willow, honey mesquite, and marsh land cover types.



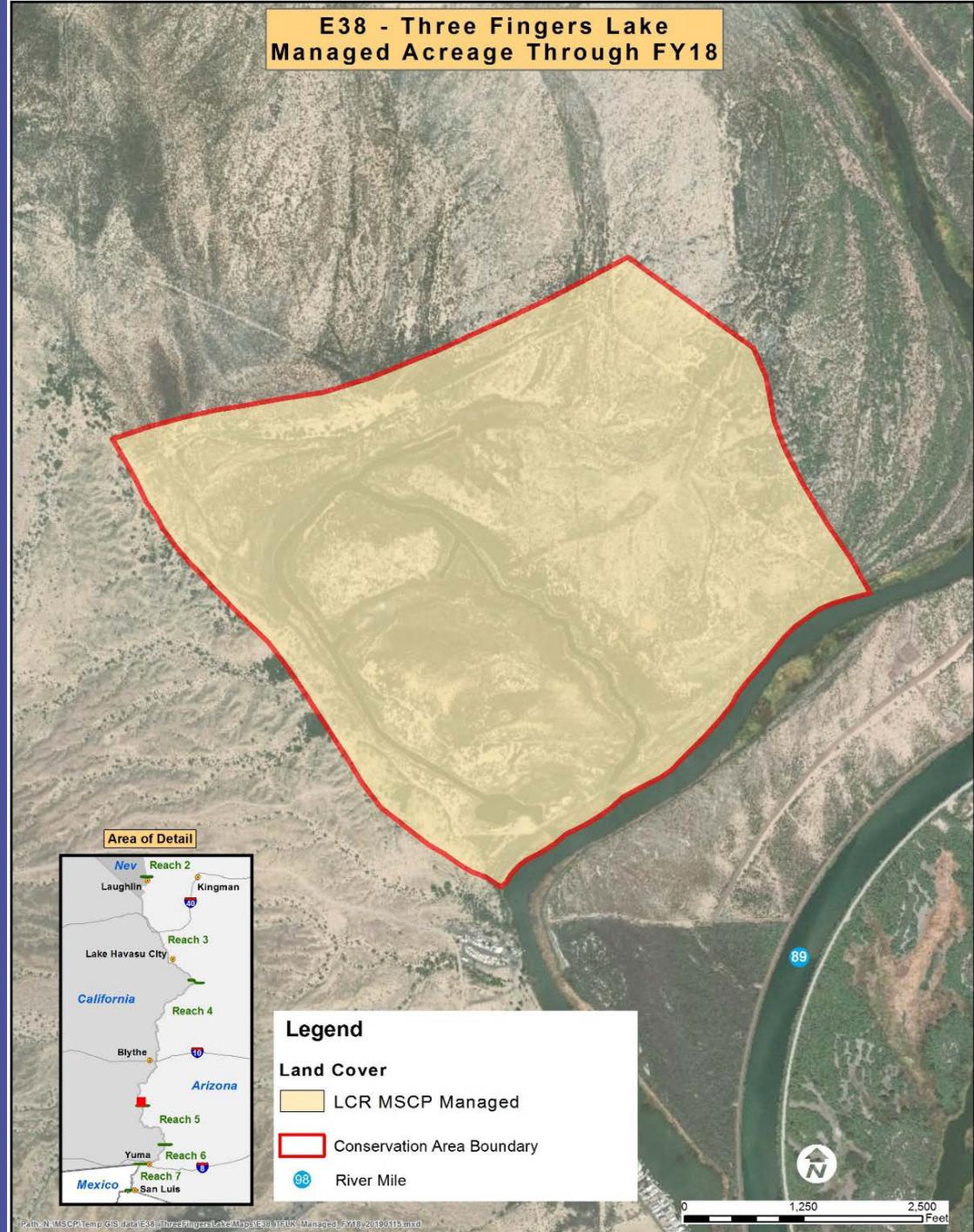
Imperial Ponds Conservation Area evaluation

- Land use agreement in place for an additional 95 acres to be developed.
- Being evaluated for ponds and/or riparian land cover



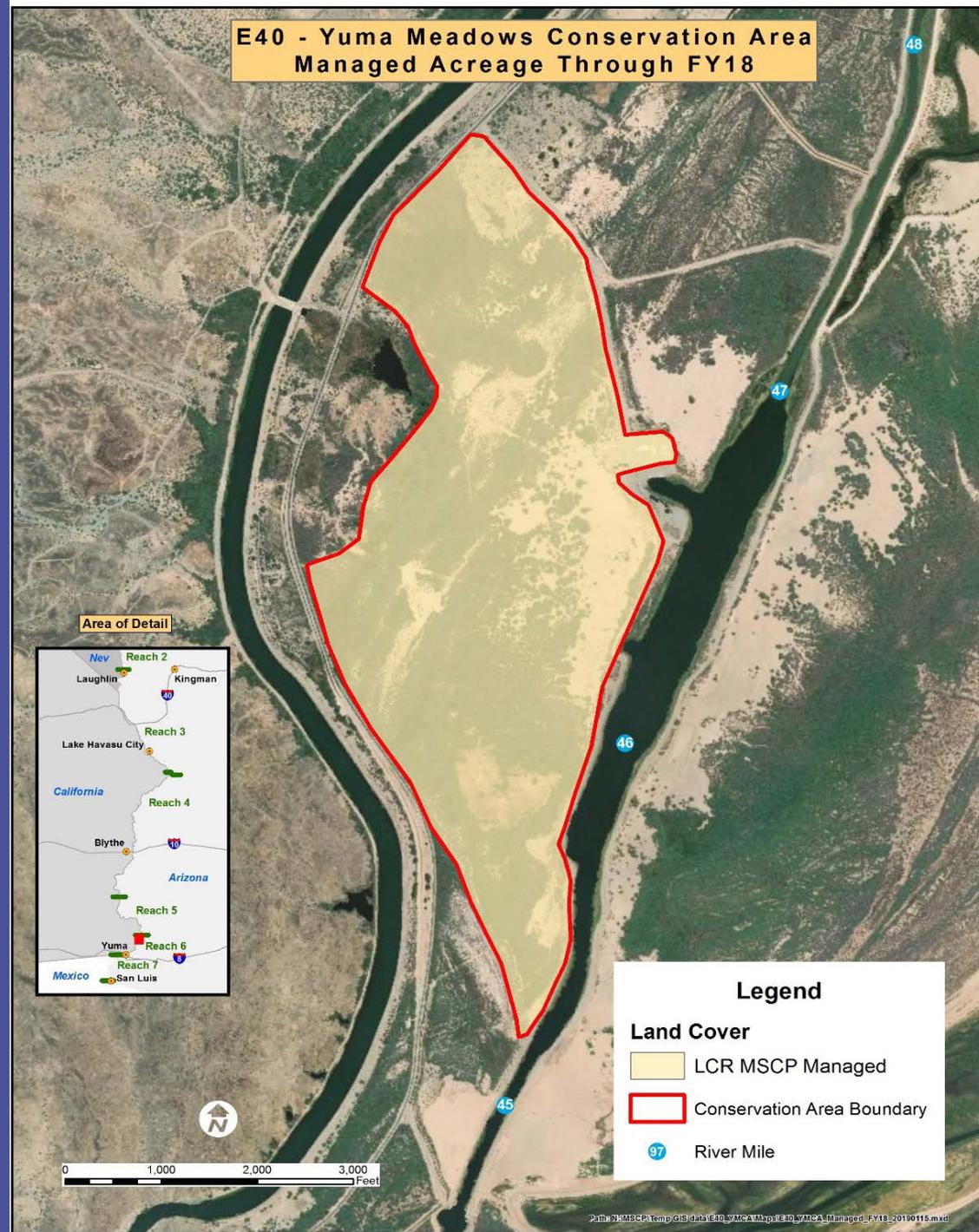
Three Fingers Lake

- Land use agreement in place
- 640 acres
- The habitat creation concept includes establishing approximately 250 acres of marsh land cover.



Yuma Meadows Conservation Area

- Land use agreement in place
- 433 acres
- The habitat creation concept includes establishing approximately 123 acres of backwater land cover.



Lower Colorado River Multi-Species Conservation Program



Balancing Resource Use and Conservation

FISH AUGMENTATION



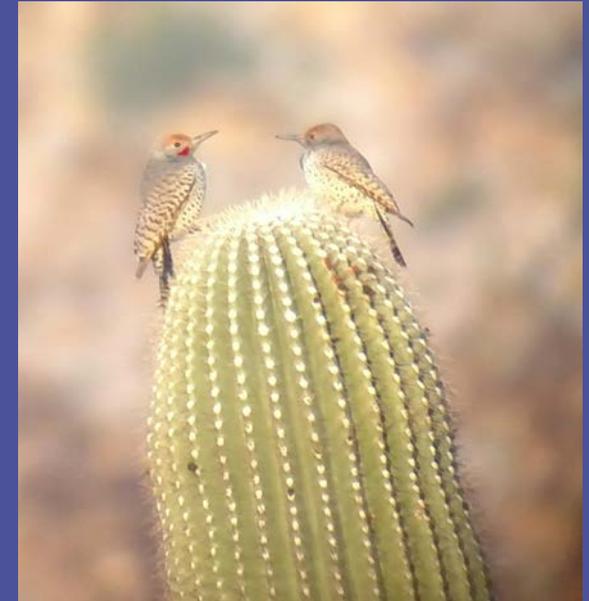
FISH AUGMENTATION ACCOMPLISHMENTS THROUGH FY19

Reach	Razorback Total FY05 - 19	Bonytail Total FY05 - 19
2	*	2,330
3	100,146	60,065
4/5	112,267	46,125

* 132,201 razorback were released into Reach 2 to maintain a genetically diverse broodstock. These fish don't count towards LCR MSCP augmentation goals

WILDLIFE RESEARCH

- Inventory method development
 - Focused on species that have been difficult to detect along the LCR
 - elf owl
 - gilded flicker
 - Colorado River toad
 - lowland leopard frog



WILDLIFE RESEARCH

- Habitat requirement studies
 - elf owl
 - Colorado River toad
 - lowland leopard frog



WILDLIFE RESEARCH

- Determining availability of created habitat for colonization and use
 - Bat foraging distance – tracking study
 - Modeling marsh bird occupancy and water depth
 - Gilded flicker surveys



HABITAT RESEARCH

- Development of cost effective habitat management techniques to:
 - Measure vegetation structure
 - Monitor soil moisture
 - Maintain habitat - manipulation



FISHERIES RESEARCH

- Evaluation of immediate post-stocking survival of razorback and bonytail



OTHER RESEARCH

- Providing funding to existing conservation programs
 - sticky buckwheat and threecorner milkvetch



POST-DEVELOPMENT MONITORING

- Presence monitoring of covered and evaluation species
- Will be focusing additional efforts to document breeding of southwestern willow flycatchers, yellow billed cuckoos and other covered bird species at conservation areas where breeding has not yet been documented.
- Habitat development and characteristics



POST-DEVELOPMENT MONITORING

Conservation Area	Count of LCR MSCP Species Detected At Least Once Between 2005-2019
Beal Lake Conservation Area	20
Big Bend Conservation Area	8
Cibola National Wildlife Refuge Unit #1	12
Cibola Valley Conservation Area	11
Hart Mine Marsh	5
Hunters Hole	8
Imperial Ponds Conservation Area	5
Laguna Division Conservation Area	7
Mohave Valley Conservation Area	2
Palo Verde Ecological Reserve	13
Parker Dam Camp	1
Planet Ranch	12
Pretty Water Conservation Area	1
Yuma East Wetlands	13

FUTURE TERRESTRIAL RESEARCH PRIORITIES

- Analyze the vegetation at LCR MSCP conservation areas and system-wide monitoring sites used by covered species. Determine if there are any further habitat characteristics in common between utilized sites that can be used to improve created habitat for these species.



FUTURE TERRESTRIAL RESEARCH PRIORITIES

- Continue to assess the hydrology at restoration sites and then, if necessary, conduct hydrology studies and/or demonstrations to determine the appropriate water regime for breeding southwestern willow flycatcher habitat. Test varying irrigation regimes to determine the appropriate regime to create and/or maintain breeding flycatcher habitat.

FUTURE TERRESTRIAL RESEARCH PRIORITIES

- Continue to assess the range of potentially acceptable ambient temperatures for placement of nest boxes for elf owls. Analyze microclimate data from weather stations throughout LCR MSCP conservation areas to identify if any locations within the conservation areas stayed within the acceptable ambient temperatures for safe placement of nest boxes for elf owls.



FUTURE TERRESTRIAL RESEARCH PRIORITIES

- Review prey-base studies to determine if knowledge gaps still exist. Evaluate whether there are available tools or methods that can influence prey-base abundance at conservation areas. Evaluate need for prey abundance monitoring.

FUTURE TERRESTRIAL RESEARCH PRIORITIES

- Look into habitat management actions that could provide Colorado River cotton rat and Yuma hispid cotton rat habitat structure back into conservation areas that have matured and lost the suitable structure.
- Clarify the use of marsh by cotton rats. Detections indicate that cotton rats likely use the grassland edge of the marsh but not the regularly inundated portions of the marsh.



FUTURE TERRESTRIAL RESEARCH PRIORITIES

- Look into habitat management actions that could bring quailbush back into conservation areas that have matured and lost stands of the shrub.



FUTURE MONITORING PRIORITIES

- Conduct covered species-specific monitoring to determine presence at restoration sites to assist in adaptively managing the sites.
- Conduct monitoring to evaluate whether the restoration sites meet the conservation measures for credit determination, where appropriate, and to determine whether the sites are meeting the management guidelines to adaptively manage the site.

FUTURE MONITORING PRIORITIES

- Track the yellow-billed cuckoo colonization curve at restoration sites. Are they attracted to younger vegetation? Will presence decrease as vegetation gets more mature?
- Look at the level of effort required to confirm nesting of yellow-billed cuckoos to ensure follow-ups are meeting monitoring needs.
- Look at Bill Williams River historical detection locations to determine if yellow-billed cuckoos were targeting younger patches of habitat similar to what they use in LCR MSCP conservation areas. How is the habitat similar or different to habitat at LCR MSCP conservation areas?



FUTURE MONITORING PRIORITIES

- Conduct surveys for gilded flickers and elf owls in LCR MSCP conservation areas near occupied nesting habitat to document if created habitat is used for foraging or nesting. Wait until cavity density in the conservation areas are appropriate before monitoring (these species are expected to use cavities created by other woodpeckers).



FUTURE MONITORING PRIORITIES

- Define system-wide monitoring objectives for Arizona Bell's vireos, Sonoran yellow warblers, summer tanagers, Gila woodpeckers, and vermilion flycatchers. Determine if stratified random sampling and Monitoring Avian Productivity and Survivorships methods should be replaced with other system-wide monitoring methods. This will take into account where the species are most likely to occur.



FUTURE MONITORING PRIORITIES

- Conduct surveys for northern Mexican gartersnakes at the BLCA and Planet Ranch and conduct surveys for lowland leopard frogs, Colorado River toads, and other amphibians at Planet Ranch to determine where potential prey and habitat is located for northern Mexican gartersnakes.



FUTURE MONITORING PRIORITIES

- Continue to monitor sootywing occupancy in quailbush patches in the cottonwood-willow land cover type and along marsh edges to determine if these land covers regularly provide sootywing habitat when quailbush is present.
- Monitor quailbush patches near proposed conservation area honey mesquite plantings to determine where sootywing populations are located that could colonize the new habitat. This may help inform the likelihood of colonization after fire.



Lower Colorado River Multi-Species Conservation Program



Balancing Resource Use and Conservation

www.lcrmscp.gov