Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

LOWER COLORADO RIVER
MULTI-SPECIES CONSERVATION PROGRAM

Final Implementation Report, FY19 Work Plan and Budget, FY17 Accomplishment Report

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

Lower Colorado River Multi-Species Conservation Program

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LCR MSCP FY17 Overview
Funding Summary

FY17 Total Required Funding	FY17 Approved Estimate	FY17 Actual Obligations	Cumulative Program Accomplishment
$30,874,452	$30,940,902*	$25,626,026.38**	$271,950,087.95

*$2.1m was anticipated for LWF
**No funds contributed to LWF due to USBR budget cuts

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FY17 Program Element Accomplishment

Program Administration	$ 1,196,839.51	(5%)
Fish Augmentation	$ 1,518,837.64	(6%)
Species Research	$ 2,693,620.42	(11%)
System Monitoring	$ 2,842,418.51	(11%)
Conservation Area D&M	$ 12,153,066.67	(47%)
Post Development Monitoring	$ 1,907,606.82	(7%)
AMP	$ 2,071,682.79	(8%)
Remedial Measure Fund	$ 1,108,828.00	(4%)
Public Outreach	$ 133,126.02	(1%)
TOTAL	**$ 25,626,026.38**	

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FY17 Financial Accomplishments

- Obligations under approved Work Tasks by $5,314,875
  - Federal budget cuts reduced available funds by $2.1 million
  - Planet Ranch delayed due to NMGS
  - MVCA and IPCA work delayed
  - Delay of system monitoring of riparian covered species while the monitoring protocol is evaluated (D6)

- Status of Special Funds
  - HMF: Cumulative Total through FY17 = $33,771,897.09
  - RMF: $1,108,828.00 FY17 payment
    - Cumulative Total through FY17 = $6,315,323.07
  - LWF: $0 contributed in FY17
    - Cumulative Total through FY17 = $15,400,000

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FY17 Fisheries Accomplishments

Razorback sucker contacted via remote PIT scanning (Reach 2)
Photo by Wesley Goldsmith

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FY17 Larvae Collection and Fish Augmentation

Larvae collected from Lake Mohave: **35,541**

Reach 2 (RASU 5):	1,385 RASU > 300 mm
Reach 3 (RASU 3):	8,497 RASU > 300 mm
Reaches 4/5 (RASU 3):	6,519 RASU > 305 mm
Total FY17 RASU (credited):	**15,016**
Reach 2 (BONY 3):	684 BONY > 300 mm
Reach 3 (BONY 3):	5,011 BONY > 300 mm
Reaches 4/5 (BONY 3):	6,687 BONY > 305 mm
Total FY17 BONY (credited):	**12,382**

Razorback sucker larvae attracted to submerged light

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Fish Augmentation Summary FY05-17

SPECIES	LAKE MOHAVE	DAVIS-PARKER	BELOW PARKER	GRAND TOTAL	AUGMENTATION TOTAL
RAZORBACK SUCKER	122,387*	87,615	93,112	303,114	180,727
BONYTAIL	1,597	54,976	32,460	89,033	89,033
TOTAL	122,387*	142,591	125,572	363,364	269,760

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FY17 Fisheries Research

C25: Imperial Ponds Native Fish Research (Closed FY17)

- All six ponds were stocked with native fish
- Ponds were monitored continuously; first year survival of native fish averaged 67.5-70.4%

C31: Razorback Sucker Genetic Diversity Assessment

- Reach 2 – 228 adults and 843 larvae were analyzed. Higher levels of genetic diversity may be present in the river subpopulation
- Reach 3 – 15 adults and 387 larvae were analyzed. Larvae exhibited similar or higher levels of allelic and gene diversity than Lake Mohave

C32: Determination of Salinity, Temperature, pH, and Oxygen Limits for BONY and RASU (Closed FY17)

- Limited mortality observed for juvenile BONY and RASU exposed to salinity concentrations of 17,500 µS/cm at 25 °C

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FY17 Fisheries Research

C40: Studies to Conserve and Manage Native Fish in Off-Channel Habitat

- BONY successfully spawned in the Imperial ponds. Genetic analyses of 552 larvae and juveniles indicated that adult genetic diversity was preserved in progeny
- Development of new genetic markers for gender determination, parentage assessment, and population genetics was initiated

C59: Selenium Monitoring in Created Backwater and Marsh Habitats

- Fish, invertebrate, sediment, and water samples were collected from the BBCA, Hart Mine Marsh, IPCA, and McAllister Lake for selenium analysis
- A single bluegill collected at the BBCA had a selenium concentration of 13.6 ppm dry weight, which is above the 8.5 ppm selenium concentration EPA criterion and above the high-hazard threshold for fishes
- Sediment samples from the BBCA and McAllister Lake were above the 4 ppm dry weight threshold for high-hazard toxicity in sediment

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FY17 Fisheries Research

C64: Post-Stocking Movement, Distribution, and Habitat Use of Razorback Suckers and Bonytail

Reach 2 -

- Active and passive contacts suggested that post-stocking survival of sonic-tagged bonytail was lower than sonic-tagged razorback suckers in Lake Mohave

Reach 3 -

- Forty sonic-tagged razorback suckers were released into Topock Marsh (Reach 3). First year survival was estimated at 57.5%. Topock Marsh PIT scanning contacted 509 razorback suckers and one bonytail

Reach 4/5 -

- Twenty subadult bonytail, 20 subadult razorback suckers, and 10 adult razorback suckers were sonic tagged and released downstream of Palo Verde Dam. Subadult fish were not contacted outside of backwaters during the study period. Monitoring of adult fish is ongoing. Remote PIT scanning in Reach 4/5 backwaters contacted 443 razorback suckers (142 contacted > one year post release) and 279 bonytail (one contacted > one year post release)

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FY17 Fisheries Research

C65: Evaluation of Immediate Post-Stocking Survival of Razorback Suckers and Bonytail

- Predation of native fish by avian predators was monitored for 10 days following selected stocking events
- 5% of bonytail stocked in Laughlin Lagoon in December were consumed by avian predators
- No predation was observed during Imperial ponds stockings

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FY17 Fisheries Monitoring

D8: Razorback Sucker and Bonytail Stock Assessment

Reach 1 -

- Ongoing recruitment in Lake Mead continues to be documented; RASU larvae continue to be collected at 3 sites in Lake Mead
- The current RASU population estimate is 421 individuals (95% CI 305 – 615)

Reach 2 -

- 54,850 hours of remote PIT scanning resulted in contacting 3,707 unique RASU
- The current Lake Mohave RASU population estimate is 3,815 individuals (95% CI 3,573 – 4,073)

Reach 3 -

- 3,306 unique RASU, 728 BONY, and 12 FLSU were contacted using multiple methods
- The current Reach 3 RASU population estimate is 5,337 individuals (95% CI 5,043 – 5,633)

Reach 4 and 5 -

- 443 unique RASU and 279 unique BONY were contacted using multiple methods

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FY17 Fisheries Monitoring

F5: Post-Development Monitoring of Fishes at Conservation Areas

Big Bend Conservation Area

- Seven bonytail and two razorback suckers were captured during routine netting
- Six bonytail and one razorback were contacted via remote PIT scanning
- Flannelmouth and razorback sucker larvae were captured within the conservation area
- Water quality was monitored throughout the year and all parameters remained within suitable ranges for native fish

Beal Lake

- Water quality was monitored throughout the year and all parameters remained within suitable ranges for native fish
- Improved water delivery has reduced specific conductivity within the lake
- Golden algae were not detected in FY17

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FY17 Wildlife Accomplishments

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Species Research

5 research projects focused on 8 species to:

- develop effective survey methods, and
- measure characteristics of habitat to determine the components that are critical to support these species.

The following research projects were closed in FY17:

- C52: Gilded Flicker Riparian Habitat Use and Seasonal Movements Research
- C62: Lowland Leopard Frog and Colorado River Toad Habitat and Ecology Study

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System Monitoring

System-wide monitoring continued along the LCR and adjacent river systems for:

- southwestern willow flycatcher
- yellow-billed cuckoo
- marsh birds
- riparian birds
- bats
- rodents
- amphibians

HIGHLIGHTS:

- 81 Yuma clapper rail detections during the second survey period
- 161 resident or breeding southwestern willow flycatchers were detected and 98 confirmed breeding territories
- The foraging distance study of California leaf-nosed bats and pale Townsend's big-eared along the LCR showed that California leaf-nosed bats are capable of flying more than 5 miles between roost sites and foraging habitat (actually they can travel up to 10 miles) and that created habitat within 10 miles of pale Townsend's big-eared bat roosts can be used for foraging.

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Post-Development Monitoring

Count of LCR MSCP Terrestrial Species Detected During Post-Development Monitoring in FY17	
Conservation Area	Count of LCR MSCP Terrestrial Species Detected in FY17
Beal Lake	10
Big Bend	2
Cibola NWR Unit #1	8
Cibola Valley Conservation Area	6
Hart Mine Marsh	2
Hunters Hole	3
Imperial Ponds Conservation Area	2
Laguna Division Conservation Area	3
Palo Verde Ecological Reserve	8
Parker Dam Camp	1
Planet Ranch	5
Pretty Water Conservation Area	1
Yuma East Wetlands	9

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Listed Species Highlights:

- 27 yellow-billed cuckoo territories and 21 nests were confirmed at LCR MSCP conservation areas (follow-ups to confirm nesting were reduced in FY17)
  - 25 territories and 19 nests at PVER (Phases 3–7)
  - 2 territories and nests at Cibola NWR Unit #1 (1 at Crane Roost and 1 at Hippy Fire)
  - An additional 16 probable and 22 possible breeding territories were observed on conservation areas including Beal Lake Conservation Area, Cibola NWR Unit #1, CVCA, Laguna Division Conservation Area, PVER, and Yuma East Wetlands.
- Yuma clapper rails were detected at Beal Lake Conservation Area, Hart Mine Marsh, Imperial Ponds Conservation Area in Field 18, Laguna Division Conservation Area, and Yuma East Wetlands.

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Other Species Highlights:

- MacNeill's sootywing skippers were detected at Pretty Water Conservation Area for the first time
- Gila woodpeckers were detected at Parker Dam Camp for the first time since becoming a conservation area
- 2 pairs of Sonoran yellow warblers, 15 pairs of Arizona Bell's vireos, 3 pairs of Gila woodpeckers, and 3 pairs of vermilion flycatchers were detected at Planet Ranch
- 11 pairs of Arizona Bell's vireos, 11 pairs of Gila woodpeckers, 6 pairs of summer tanagers, and 34 pairs of Sonoran yellow warblers were detected at the Middle Bill Williams River NWR

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FY17 Restoration Accomplishments ($12,153,067, 47%)

- Support Activities
- Conservation Area Development
- Identification & Inclusion of new Conservation Areas

Supporting Activities

- Acquisition of a Hydraulic Dredge (20” diameter)
- Planet Ranch Water Rights & Design

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The Yuma Dredge

The Tender

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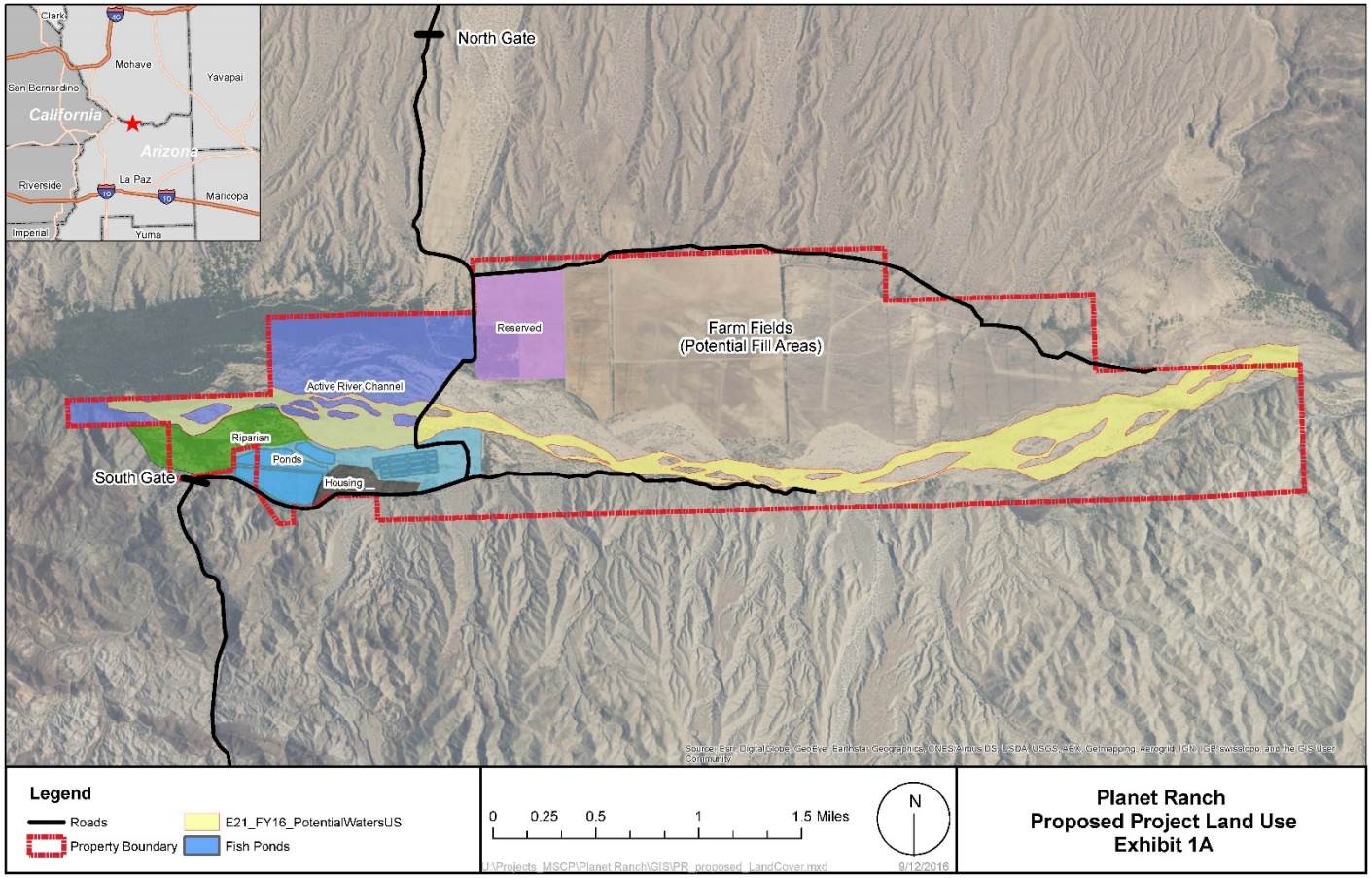
Planet Ranch



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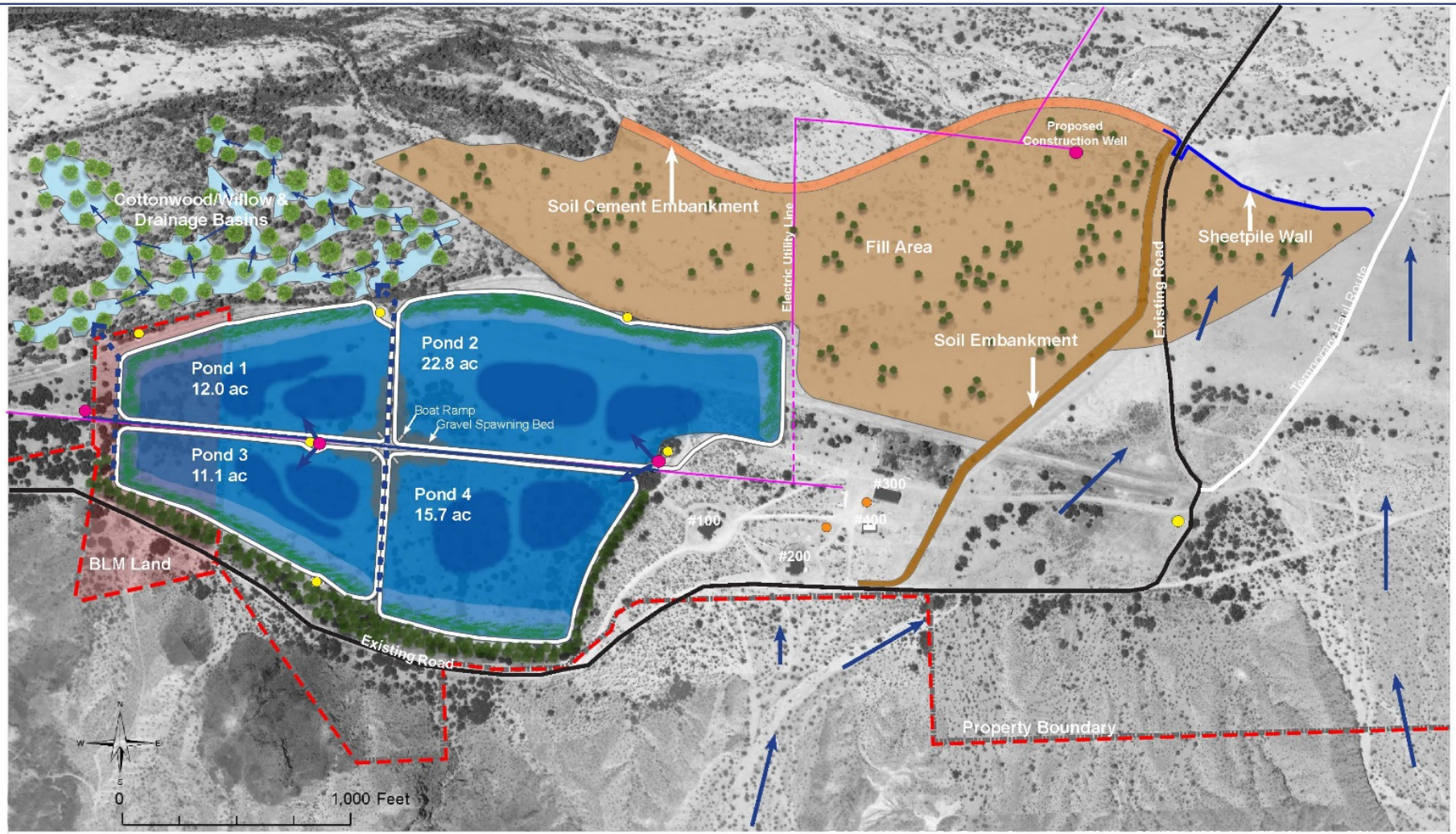
Planet Ranch



Legend

- Existing Monitoring Well
- Proposed Production Well
- Domestic Well (existing and proposed)
- Drain Line
- Distribution Line

Buildings:

#100 Residence
#200 Office
#300 Maintenance Shop
#400 (Proposed Fish Handling & Storage Building)

Pond Notes:

- Deep Water >10ft deep
- Shallow Water 0-4ft deep
- Gravel Spawning Bed 6ft deep

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Conservation Area Development

- Cibola Valley Conservation Area Planting
- Cibola NWR Unit #1 Planting
- Construction at Mohave Valley Conservation Area

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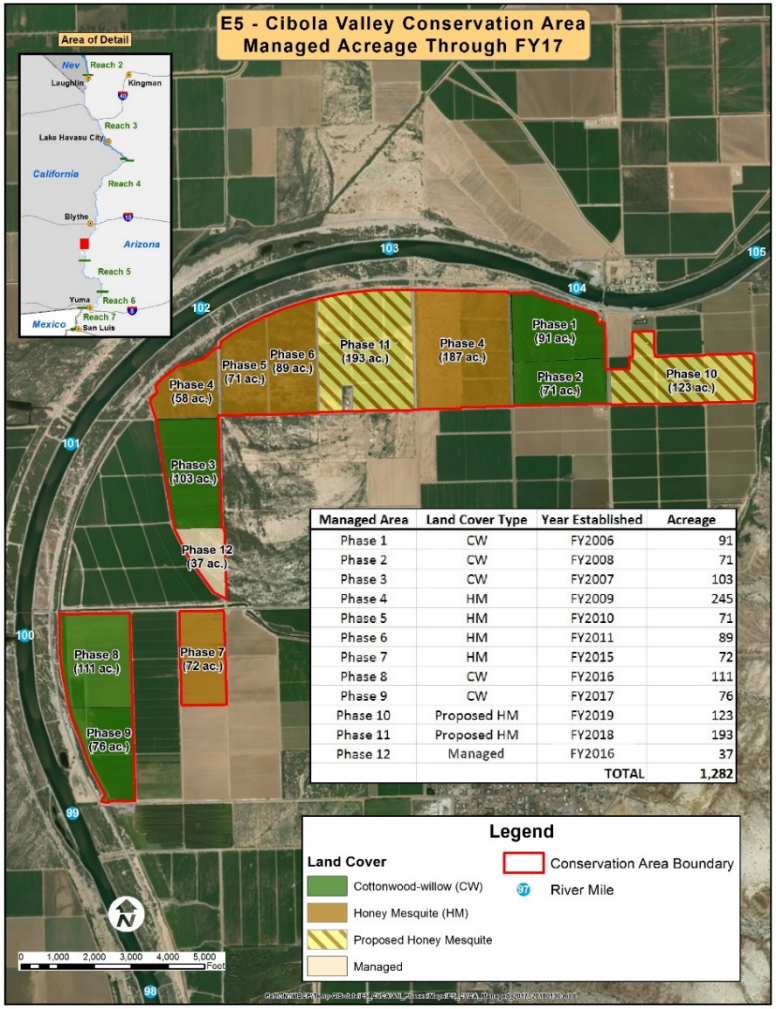

Managed Area	Land Cover Type	Year Established	Acreage
Phase 1	CW	FY2006	91
Phase 2	CW	FY2008	71
Phase 3	CW	FY2007	103
Phase 4	HM	FY2009	245
Phase 5	HM	FY2010	71
Phase 6	HM	FY2011	89
Phase 7	HM	FY2015	72
Phase 8	CW	FY2016	111
Phase 9	CW	FY2017	76
Phase 10	Proposed HM	FY2019	123
Phase 11	Proposed HM	FY2018	193
Phase 12	Managed	FY2016	37
		TOTAL	1,282

Cibola Valley Conservation Area

- Phase 9 Planted
- Established 76 acres of CW
- Over 900 acres established

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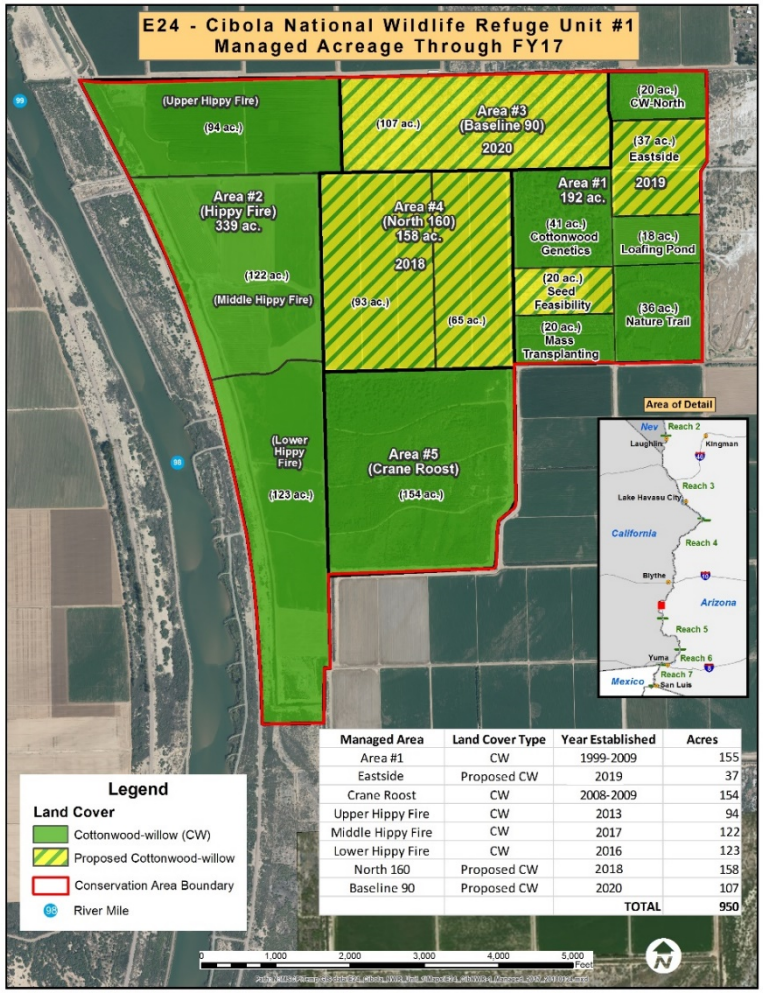

Managed Area	Land Cover Type	Year Established	Acres
Area #1	CW	1999-2009	155
Eastside	Proposed CW	2019	37
Crane Roost	CW	2008-2009	154
Upper Hippy Fire	CW	2013	94
Middle Hippy Fire	CW	2017	122
Lower Hippy Fire	CW	2016	123
North 160	Proposed CW	2018	158
Baseline 90	Proposed CW	2020	107
		TOTAL	950

Cibola Refuge Unit #1

- Middle Hippy Fire Planted
- Established 122 acres of CW
- 685 acres established

Development of Mohave Valley Conservation Area

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Table 1-13.—Acreage by Conservation Area Through FY17				
Conservation Area	Established Land Cover[1]	LCR MSCP Managed Acreage[2]	Available Acreage[3]	**Total Conservation Area Acreage[4]**
Beal Lake Conservation Area (Arizona)	119	434	119	**434**
Big Bend Conservation Area (Nevada)	15	15	15	**15**
Cibola National Wildlife Refuge Unit #1 Conservation Area (Arizona)	628	950	950	**950**
Cibola Valley Conservation Area (Arizona)	929	1159	1,245	**1,309**
Hart Mine Marsh (Arizona)	255	255	255	**255**
Hunters Hole (Arizona)	44	44	44	**44**
Imperial Ponds Conservation Area (Arizona)	92	126	126	**126**
Laguna Division Conservation Area (Arizona and California)	1,171	1,171	1,171	**1,171**
Palo Verde Ecological Reserve (California)	1,023	1,023	1,023	**1,352**
Parker Dam Camp (California)	80	204	80	**204**
Planet Ranch Conservation Area (Arizona)	396*	3,418**	660	**3,418*** **
Pretty Water Conservation Area (California)	566	566	566	**566**
Yuma East Wetlands (Arizona)	380	380	380	**380**
Total	**5,698**	**9,745**	**6,634**	**10,244**

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- Identification of Conservation Areas
  - Dennis Underwood Conservation Area
  - Three Fingers Lake
  - Beal Lake Expansion
  - Cibola NWR Unit #1 Expansion
  - Yuma Meadows Conservation Area

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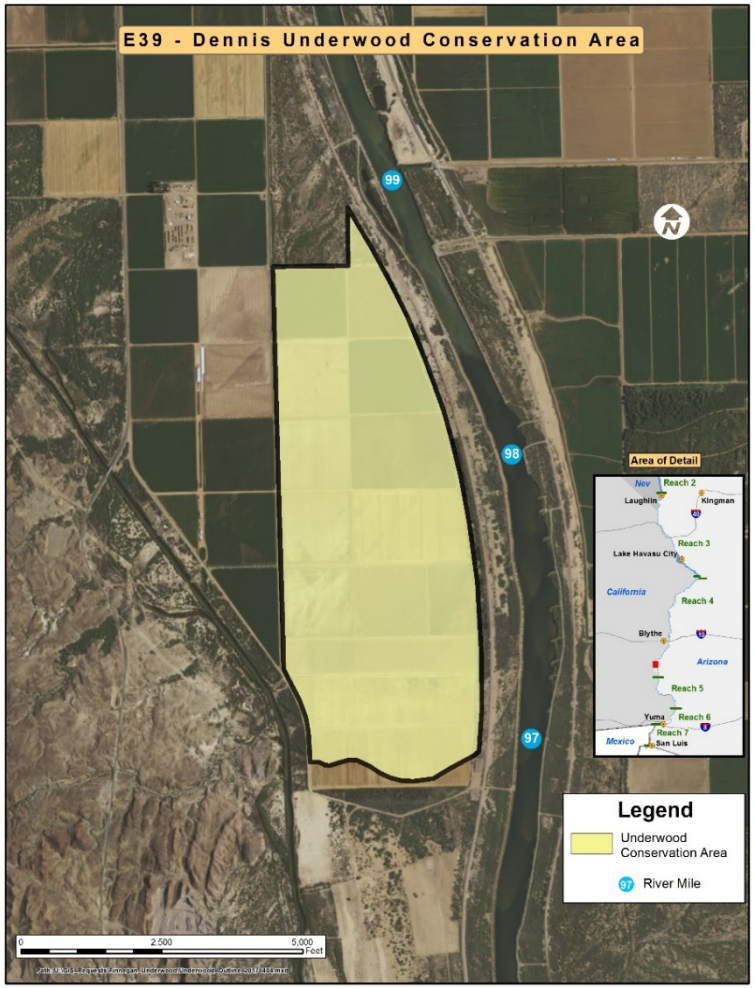

Dennis Underwood Conservation Area

- 635 acres in California
- Targeting cottonwood-willow & honey mesquite

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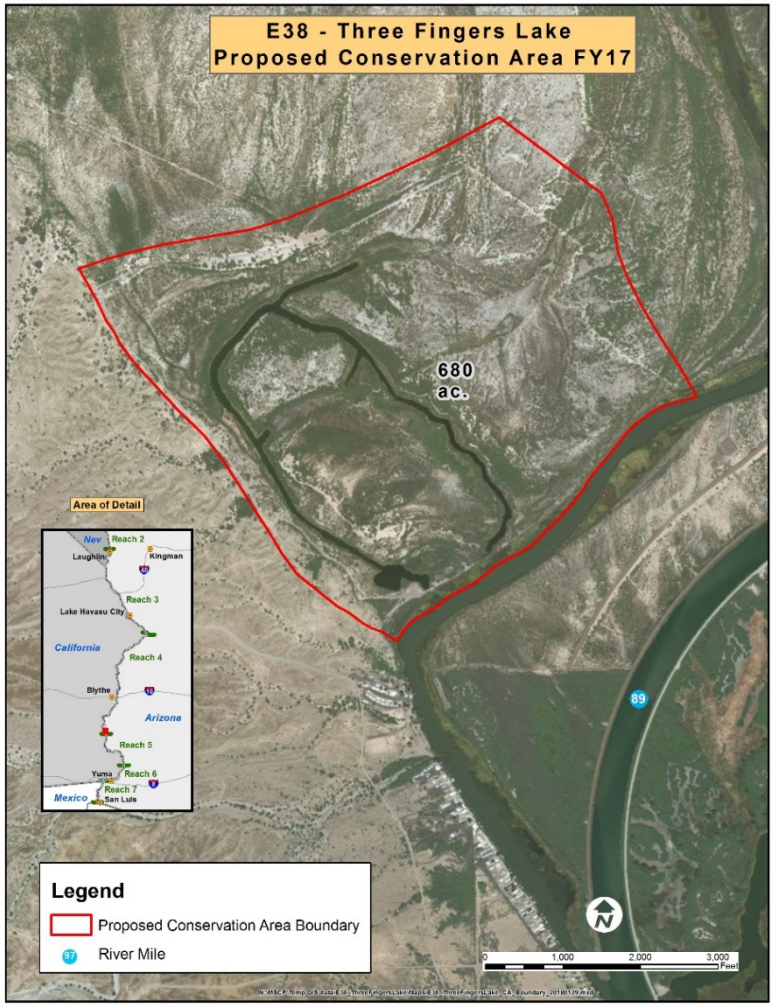

Three Fingers Lake

- 680 acres in California
- Cibola NWR
- Marsh and/or backwater

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Beal Lake Conservation Area Expansion

- 434 acres to 1,000 acres in Arizona
- Havasu NWR
- Targeting 300-400 acres of cottonwood-willow
- New power line (3 miles)

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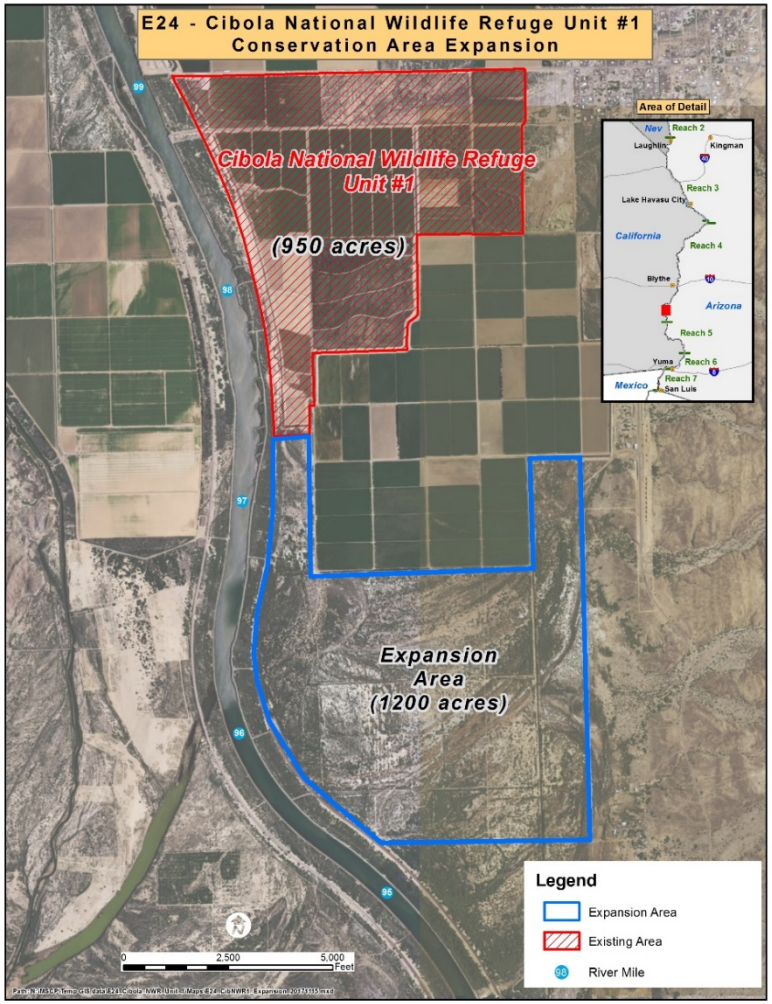

Cibola NWR Unit #1 Expansion

- 1,200 acres in Arizona
- Cibola NWR
- Primarily cottonwood-willow

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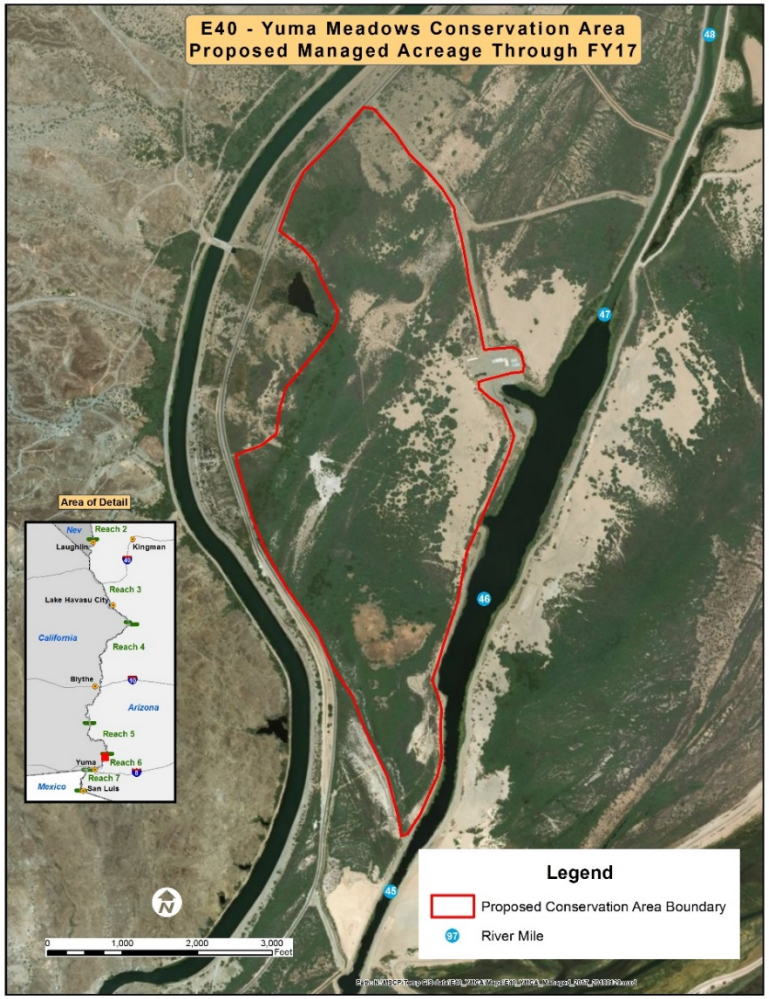

Yuma Meadows Conservation Area

- 433 acres in California
- Reclamation withdrawn land
- Targeting disconnected backwaters

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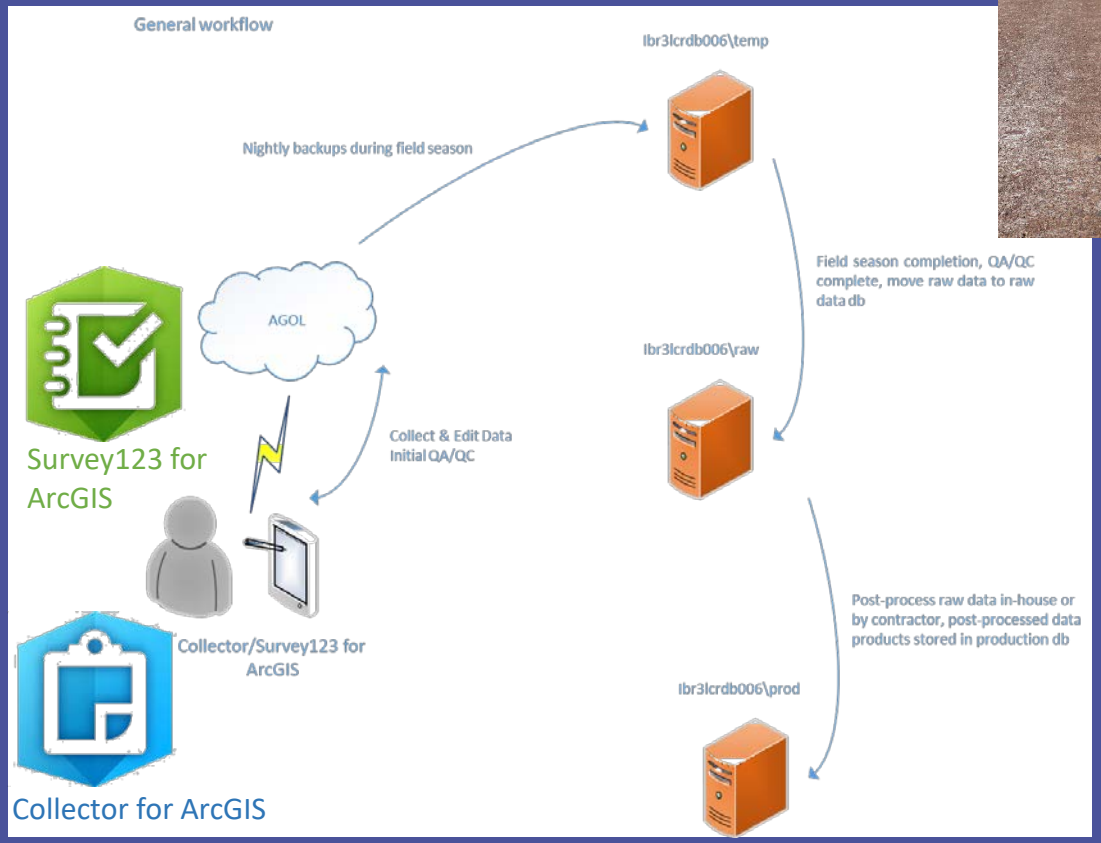
FY17 Adaptive Management Program Accomplishments



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Adaptive Management

General accomplishments

- Peer review of approximately 30 monitoring and research reports
- Provided support to staff on study plan designs and statistical analyses
- Performed habitat creation accomplishment analysis

Fish-related accomplishments

- Supported maintenance and improvements to the LCR Native Fish Database and the Remote Scanning database
- Updated the Razorback Sucker conceptual ecological model to reflect new information about the species

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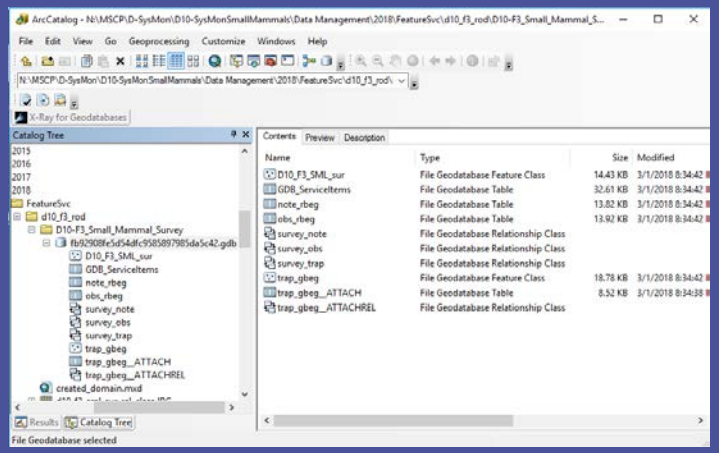
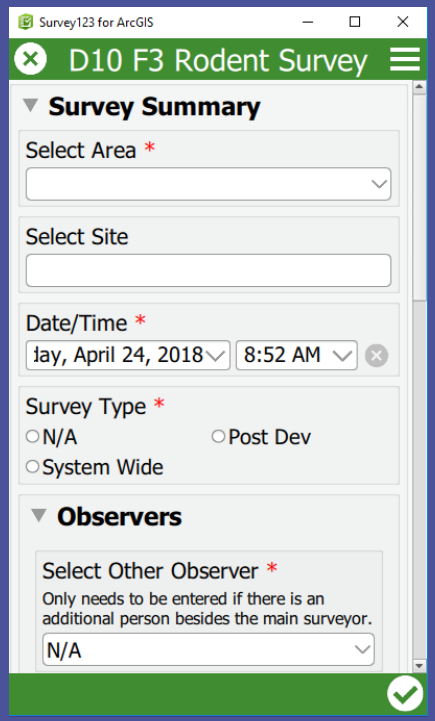
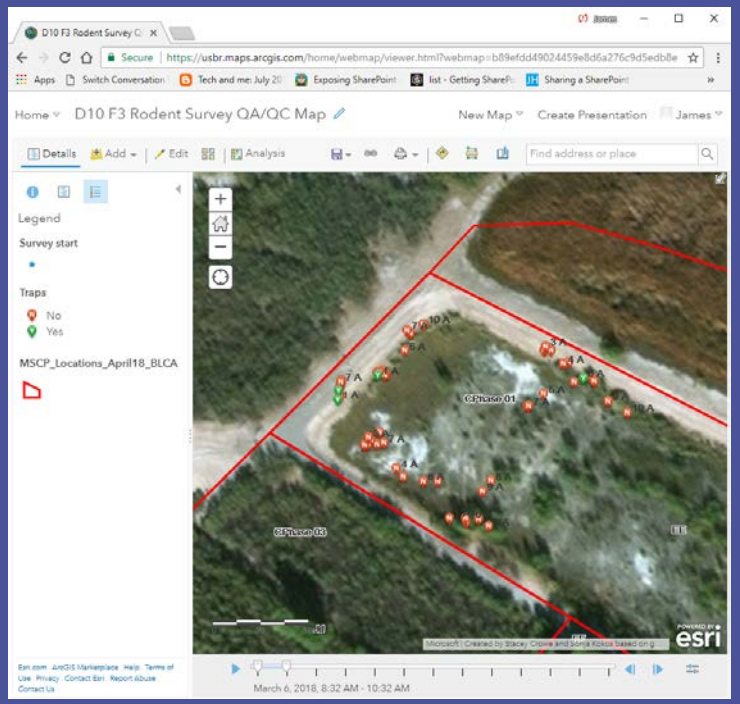
Adaptive Management (cont.)

Wildlife-related accomplishments

- Support review of monitoring and research projects
- Field data collection improvements







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Data Management

Data management accomplishments

- Continued website maintenance – reports, outreach info, meeting info
- Continued efforts to standardize all data collection protocols
- Improvements in field data collection techniques and data processing workflows
- Development of QA/QC tools for MSCP staff and contractors
- Initial efforts to develop tools to present and share monitoring/research results

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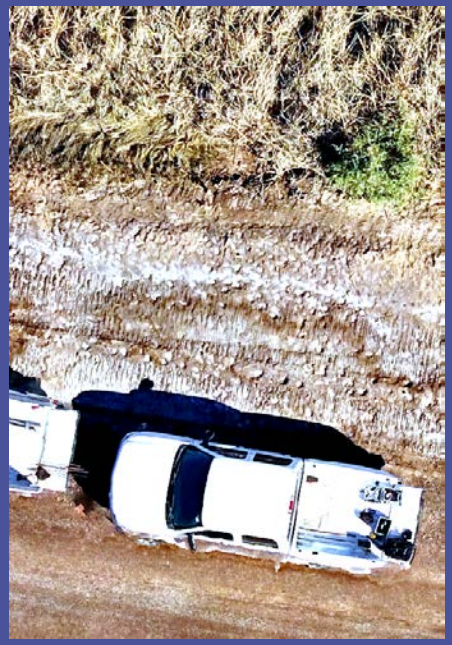
Habitat Manipulation

Habitat manipulation accomplishments

- Mechanical disturbance tested at Hart Mine Marsh in cooperation with US FWS
- Collected photogrammetric data with unmanned aerial systems



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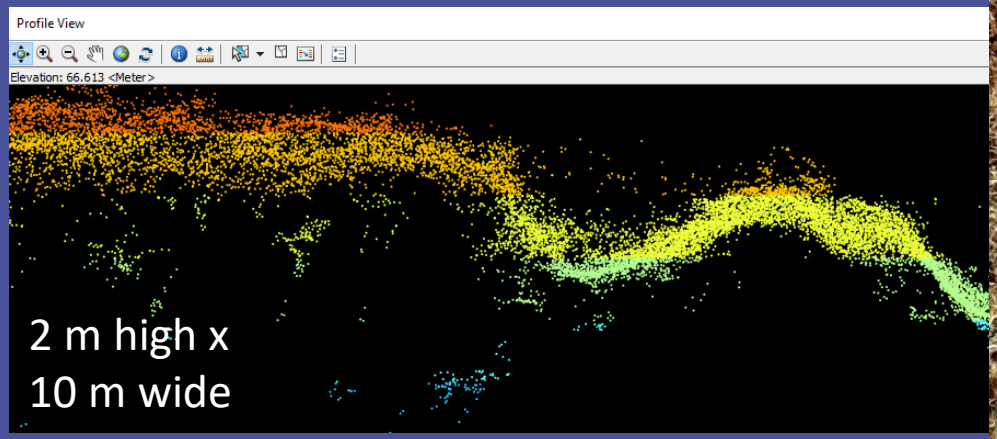
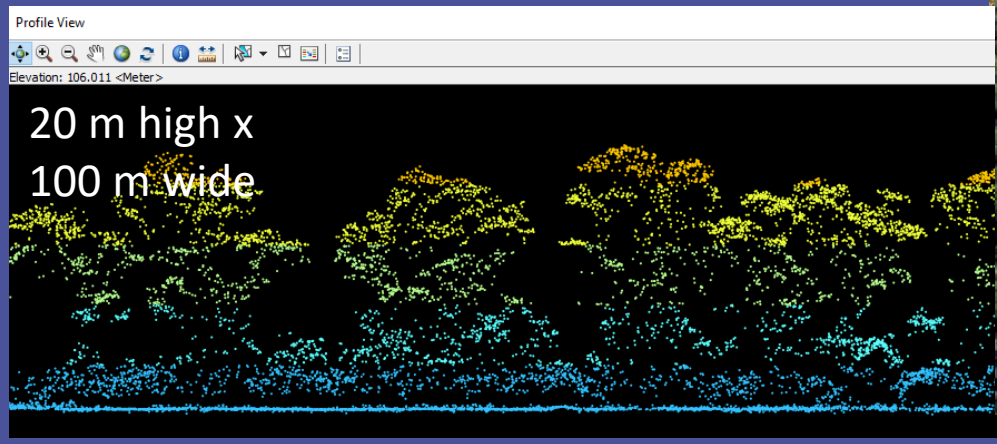
Habitat Manipulation





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Proposed FY19 Program Work Plan and Budget

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FY19 Funding Requirements

(Preliminary Inflation Rate = 1.441%)

Funding Entity	FY19 Contributions	FY19 Adjusted Contributions
Federal	**$15,969,162.00**	**$15,969,162.00**
Non-Federal	**$15,969,162.00**	**$15,969,162.00**
California	*$ 7,984,581.00*	*$ 7,605,253.96*
Arizona	*$ 3,992,290.50*	*$ 4,750,944.58*
Nevada	*$ 3,992,290.50*	*$ 3,612,963.46*
TOTAL	**$31,938,324.00**	**$31,938,324.00**

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FY19 Proposed Work Plans

Program Administration	$ 1,466,938
Fish Augmentation	$ 2,125,000
Species Research	$ 1,107,000
System Monitoring	$ 2,325,000
Conservation Area D&M	$ 15,566,000
Post Development Monitoring	$ 3,040,000
AMP	$ 1,990,000
Remedial Measures Fund	$ 1,147,036
Public Outreach	$ 125,000
TOTAL WORK PLANS	**$ 28,891,974**
Land and Water Fund	$ 3,100,000
TOTAL FY19 BUDGET	**$ 31,991,974**