Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

Imperial Ponds Conservation Area

2016 Annual Report

August 2018

Work conducted under LCR MSCP Work Task E14

Lower Colorado River Multi-Species Conservation Program Steering Committee Members

Federal Participant Group

Bureau of Reclamation
U.S. Fish and Wildlife Service
National Park Service
Bureau of Land Management
Bureau of Indian Affairs
Western Area Power Administration

Arizona Participant Group

Arizona Department of Water Resources
Arizona Electric Power Cooperative, Inc.
Arizona Game and Fish Department
Arizona Power Authority
Central Arizona Water Conservation District
Cibola Valley Irrigation and Drainage District
City of Bullhead City
City of Lake Havasu City
City of Mesa
City of Somerton
City of Yuma
Electrical District No. 3, Pinal County, Arizona
Golden Shores Water Conservation District
Mohave County Water Authority
Mohave Valley Irrigation and Drainage District
Mohave Water Conservation District
North Gila Valley Irrigation and Drainage District
Town of Fredonia
Town of Thatcher
Town of Wickenburg
Salt River Project Agricultural Improvement and Power District
Unit "B" Irrigation and Drainage District
Wellton-Mohawk Irrigation and Drainage District
Yuma County Water Users' Association
Yuma Irrigation District
Yuma Mesa Irrigation and Drainage District

Other Interested Parties Participant Group

QuadState Local Governments Authority
Desert Wildlife Unlimited

California Participant Group

California Department of Fish and Wildlife
City of Needles
Coachella Valley Water District
Colorado River Board of California
Bard Water District
Imperial Irrigation District
Los Angeles Department of Water and Power
Palo Verde Irrigation District
San Diego County Water Authority
Southern California Edison Company
Southern California Public Power Authority
The Metropolitan Water District of Southern California

Nevada Participant Group

Colorado River Commission of Nevada
Nevada Department of Wildlife
Southern Nevada Water Authority
Colorado River Commission Power Users
Basic Water Company

Native American Participant Group

Hualapai Tribe
Colorado River Indian Tribes
Chemehuevi Indian Tribe

Conservation Participant Group

Ducks Unlimited
Lower Colorado River RC&D Area, Inc.
The Nature Conservancy

Lower Colorado River Multi-Species Conservation Program

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Prepared by:

Andrea Finnegan, Restoration

Chris Dodge, Wildlife Group

Jeff Lantow, Fisheries Group

Becky Blasius, Adaptive Management Group

Lower Colorado River
Multi-Species Conservation Program
Bureau of Reclamation
Lower Colorado Region
Boulder City, Nevada
http://www.lcrmscp.gov

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ACRONYMS AND ABBREVIATIONS

DO	dissolved oxygen
FY	fiscal year
Imperial NWR	Imperial National Wildlife Refuge
IPCA	Imperial Ponds Conservation Area
LCR MSCP	Lower Colorado River Multi-Species Conservation Program
lidar	light detection and ranging
max	maximum
mg/L	milligrams per liter
min	minimum
pH	the acidity or basicity (alkalinity) of an aqueous solution
Reclamation	Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service

Symbols

°C	degrees Celsius
>	greater than
<	less than
µS/cm	microsiemens per centimeter
%	percent

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1.0 INTRODUCTION

The purpose of this annual report is to summarize activities that have occurred at the Imperial Ponds Conservation Areas (IPCA) from October 1, 2015, through September 30, 2016, which is Federal fiscal year (FY) 2016. Water usage is presented as a calendar year, January 1 through December 31, 2016, consistent with water accounting reporting.

1.1 Background

In 2005, the Bureau of Reclamation (Reclamation) partnered with the U.S. Fish and Wildlife Service (USFWS) to fulfill a portion of the Lower Colorado River Multi-Species Conservation Program's (LCR MSCP) habitat creation/restoration goals. A Land Use Agreement has been entered into between Reclamation and the USFWS that identifies 126 acres of program lands that comprise the IPCA and secures water on the Imperial National Wildlife Refuge (Imperial NWR).

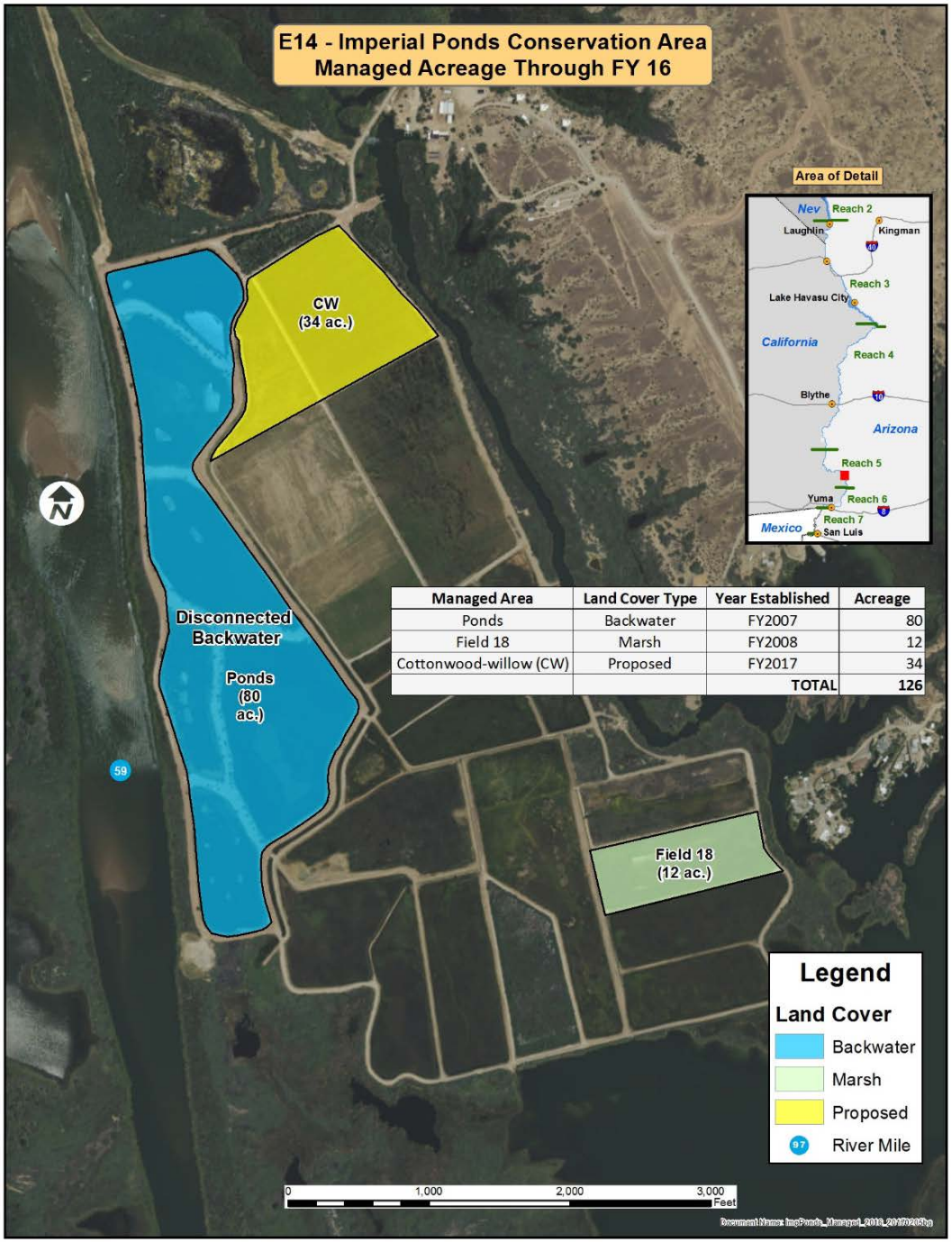
2.0 CONSERVATION AREA INFORMATION

2.1 Purpose

The IPCA was developed for both native fishes and terrestrial wildlife species. Currently, the IPCA consists of six disconnected backwaters totaling 80 acres created as backwater habitat for razorback suckers (*Xyrauchen texanus*) and bonytail (*Gila elegans*). There are 12 acres of managed marsh for California black rails (*Laterallus jamaicensis coturniculus*), Yuma clapper rails (*Rallus longirostris yumanensis* [also known as Yuma Ridgway's rail = *R. obsoletus yumanensis*]), and western least bitterns (*Ixobrychus exilis hesperis*). Thirty-four acres will be developed as riparian habitat for southwestern willow flycatchers (*Empidonax traillii extimus*), yellow-billed cuckoos (*Coccyzus americanus occidentalis*), and other LCR MSCP species as identified in the LCR MSCP Habitat Conservation Plan (LCR MSCP 2004).

2.2 Location

The IPCA is located within Reach 5 of the LCR MSCP program area. It consists of 126 acres of land on the Imperial NWR, located in Arizona, at River Mile 59 (figure 1).



Managed Area	Land Cover Type	Year Established	Acreage
Ponds	Backwater	FY2007	80
Field 18	Marsh	FY2008	12
Cottonwood-willow (CW)	Proposed	FY2017	34
		TOTAL	126

Figure 1.—IPCA managed acreage through FY16.

2.3 Landownership

The property is located on the Imperial NWR, which is owned and managed by the USFWS.

2.4 Water

The IPCA receives water from the Imperial NWR's entitlement granted by the 1964 Supreme Court Decree in *Arizona* v. *California* and by U.S. Department of the Interior Secretarial reservation. The Imperial NWR has an entitlement of 28,000 acre-feet of water diverted from the main stream, or 23,000 acre-feet of consumptive use of main stream water, whichever is less, with a priority date of February 14, 1941. The water used for the ponds and irrigation is supplied from a portion of this water.

2.5 Agreements

A Land Use Agreement was signed in 2006 by Reclamation and the USFWS to secure land and water for the IPCA for the remainder of the 50-year LCR MSCP. The agreement outlines the rights and responsibilities of each partner in the project's development and maintenance.

2.6 Public Use

The IPCA is in an area that was closed to the public by the USFWS prior to becoming a conservation area; it remains closed to the public.

2.7 Law Enforcement

Law enforcement activities are performed primarily by the USFWS's Law Enforcement Officer, under the LCR MSCP's site-specific Fire Management & Law Enforcement Strategy (LCR MSCP 2010). Additional local law enforcement assistance is available through the Arizona Game and Fish Department's Yuma Office, the Yuma County Sheriff's Office, and the Bureau of Land Management's Yuma Office.

2.8 Wildfire Management

The USFWS will provide an appropriate management response to all wildfires that occur within the IPCA. The full range of suppression strategies is available to managers provided that selected options do not compromise firefighter or public safety, are cost effective, consider the benefits of suppression and the values to be protected, and are consistent with resource objectives (LCR MSCP 2010).

3.0 HABITAT DEVELOPMENT AND MANAGEMENT

3.1 Planting

No planting occurred at the IPCA during FY17. Fremont cottonwood-Goodding's willow (*Populus fremontii-Salix gooddingii*) (hereafter cottonwood-willow) planting will not occur before FY18 or before replacement of the canal is complete.

3.2 Irrigation

Two groundwater wells supply water to all six ponds being managed for native fishes. Each pond receives approximately 8.5 acre-feet of water per month, except during July through September, when the water volume increases to 17 acre-feet of water per month, for a total of 771 acre-feet of water for the year, as shown in table 1.

Water delivery during 2016 is shown in table 2. The ponds received 723 acre-feet of water. Irrigation to the cottonwood-willow fields and Field 18 began in mid-February 2016 and continued through September 2016. The system has only one flow meter for the entire complex, so irrigation to the cottonwood-willow fields and Field 18 must be estimated. The amount of water used in the cottonwood-willow fields and Field 18 is estimated based on the assumption that the cottonwood-willow fields use 20% and Field 18 uses 8% of the total water delivered to the complex.

3.3 Site Management

The Imperial NWR mowed and trimmed vegetation around the ponds to keep boat access open and rights-of-way clear.

Table 1.—Target water delivery schedule for the IPCA ponds

Month	Monthly target volume per pond (gallons)	Total monthly target (gallons)	Total monthly target (acre-feet)	Operation cycle	Pond(s)	Weekly operation hours
January February March	2,800,000	16,800,000	51.41	Week 1	1, 2, 3	45
				Week 2	4, 5, 6	
				Week 3	1, 2, 3	
				Week 4	4, 5, 6	
April May June	2,800,000	16,800,000	51.41	Week 1	1, 2, 3	45
				Week 2	4, 5, 6	
				Week 3	1, 2, 3	
				Week 4	4, 5, 6	
July August September	5,600,000	33,600,000		Week 1	1, 2, 3	90
				Week 2	4, 5, 6	
				Week 3	1, 2, 3	
				Week 4	4, 5, 6	
October November December	2,800,000	16,800,000	51.41	Week 1	1, 2, 3	45
				Week 2	4, 5, 6	
				Week 3	1, 2, 3	
				Week 4	4, 5, 6	
Total annual delivery for all six ponds per year (acre-feet)						**771**

Table 2.—Water usage summary for 2016

Location	Annual water usage (acre-feet)	Annual water usage by habitat type (acre-feet)
Pond 1	91	722
Pond 2	124	
Pond 3	128	
Pond 4	124	
Pond 5	130	
Pond 6	125	
Cottonwood-willow Field 1	37	80
Cottonwood-willow Field 2	43	
Field 18	71	71

3.4 Management of Existing Land Covers and Habitat

3.4.1 Pond Management

Operation and management of the IPCA primarily relates to the control, manipulation, and management of water to the backwaters, marsh, and riparian fields. This includes pumping water into the marsh or riparian fields and operating gates and other control infrastructure to manage delivery of water into the IPCA. Water management may be adjusted seasonally to accommodate evapotranspiration rates and wildlife habitat requirements.

3.4.2 Field Management

Irrigation of Fields 1 and 2, scheduled for cottonwood-willow planting, continued in an effort to reduce soil salinity until planting. Irrigation of Field 18, which is managed as a marsh, continued.

4.0 MONITORING

Many of the monitoring activities are part of larger monitoring projects for the LCR MSCP. Additional details and information may be available in the technical reports available on the LCR MSCP Web site (www.lcrmscp.gov) or upon request.

4.1 Backwater Monitoring

4.1.1 Native Fishes

Backwater fish monitoring focused on the second year of post-renovation monitoring. This included quarterly fish sampling using a variety of techniques in an effort to detect fishes following pond renovations in December 2014 (table 3). After 2 years of intensive monitoring, mosquitofish (*Gambusia affinis*) were the only species detected, and these were limited to Pond 5.

Table 3.—FY16 total fish monitoring gear types and quantities

Gear type	Pond 1	Pond 2	Pond 3	Pond 4	Pond 5	Pond 6	FY16 total	FY15 and FY16 totals
Trammel net	14	16	12	10	12	12	76	112
Hoop net	50	54	40	50	40	40	274	403
Minnow trap	101	101	74	75	75	101	527	874
Larval light trap	12	14	8	8	8	10	60	162

4.1.2 Water Quality

Physico-chemical water quality parameters, including temperature, dissolved oxygen (DO), specific conductivity, and pH, all have the potential to affect the survival of native fishes as well as their ability to complete their life cycle. Water quality in the Imperial ponds was monitored using multi-parameter water quality instruments, which recorded temperature in degrees Celsius (°C), DO in milligrams per liter (mg/L), specific conductivity in microsiemens per centimeter (µS/cm), and pH. A single multi-parameter water quality instrument was deployed near the center of each pond, suspended at approximately 1 meter below the surface, and programmed to record data twice each day. The initial reading is recorded within 1 hour before sunrise and the second reading 12 hours later (e.g., 5 a.m. and 5 p.m.) These times vary by season but are chosen to capture the lowest and highest temperature and DO readings of the day.

Water quality parameters within the ponds occasionally deviated from the threshold values suggested by Kesner et al. (2008) for native fishes: temperature < 33.3°C, pH < 9.0, and DO > 4.0 mg/L; however, no negative impacts to native fishes were documented during these periods. Temperature ranged from 8.8 to 35.12 °C, pH from 7.7 to 9.57, DO remained in excess 2.52 mg/L, and specific conductivity from 2,107 to 10,716 µS/cm (figures 2–5). No threshold value was suggested for specific conductivity. The suggested threshold water quality values are viewed as management guidelines to minimize environmental stressors on native fishes; they are not considered mortality thresholds. Both razorback suckers and bonytail have been observed surviving in habitats where water quality parameters exceed these suggested values.

4.2 Avian Monitoring

4.2.1 Marsh Bird Surveys

Presence surveys for California black rails, western least bitterns, Virginia rails (*Rallus limicola*), and Yuma clapper rails were conducted in marsh habitat at the IPCA in three survey sessions during March and April. Two LCR MSCP marsh bird species were detected in Field 18: California black rails and Yuma clapper rails. None were detected during the first survey session (March 17). Four Yuma clapper rails were detected during the second survey session (April 5). There was one detection of a California black rail and three detections of Yuma clapper rails during the third survey session (April 21). There were two detections of Yuma clappers rail during the third survey session (April 28) (Ronning and Kahl 2017).

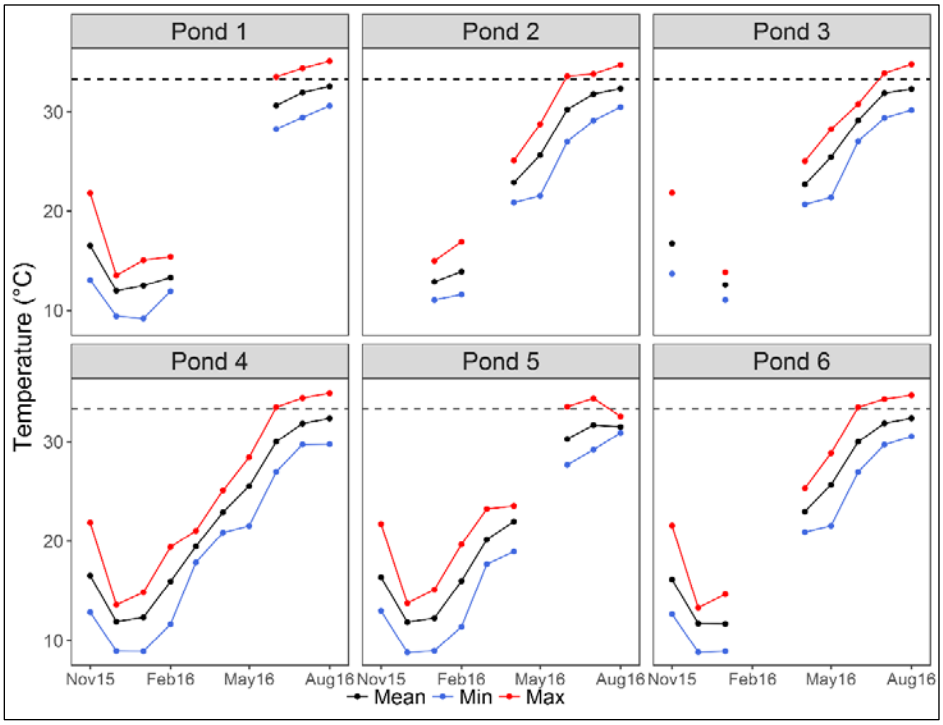


Figure 2.—Monthly mean, minimum (Min), and maximum (Max) temperature.
The dotted line represents the suggested threshold value for native fishes: < 33.3 °C.

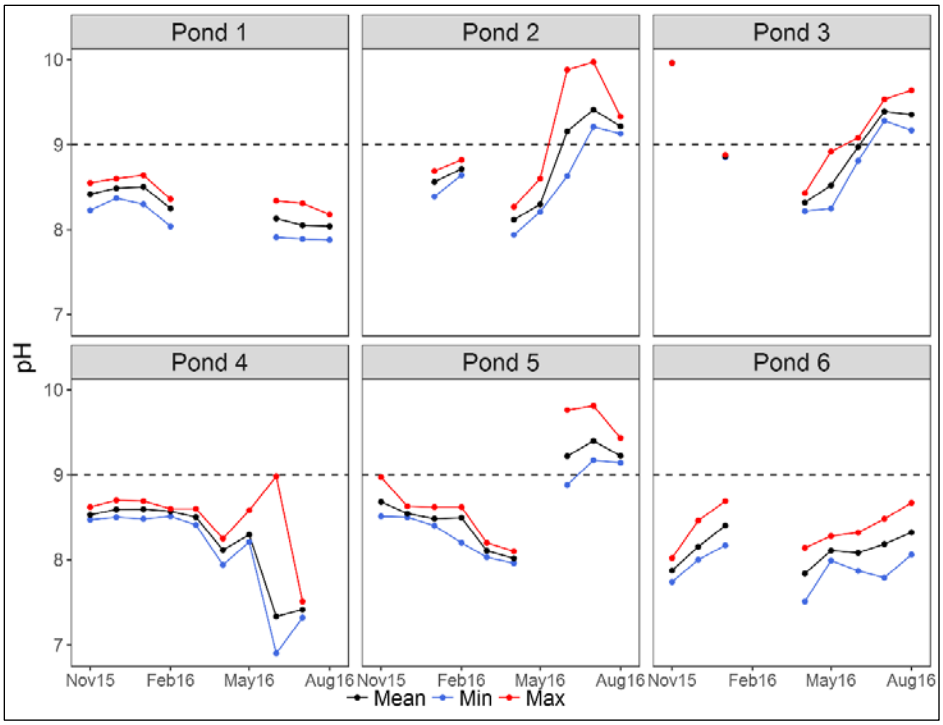


Figure 3.—Monthly mean, minimum (Min), and maximum (Max) pH.
The dotted line represents the suggested threshold value for native fishes: pH < 9.0.

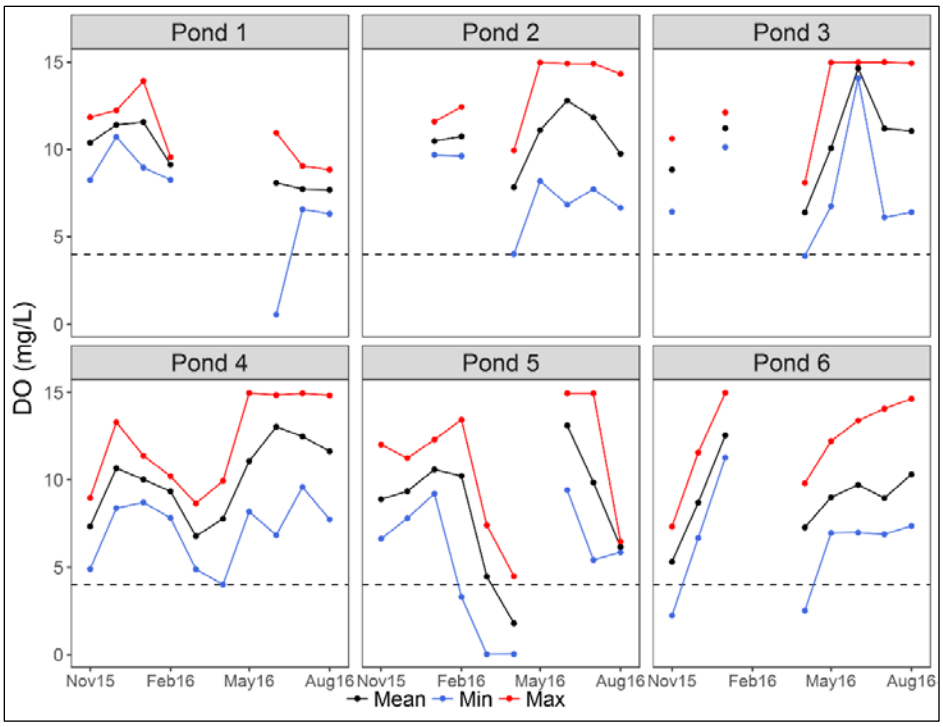


Figure 4.—Monthly mean, minimum (Min), and maximum (Max) DO.
The dotted line represents the suggested threshold value for native fishes: DO > 4.0.

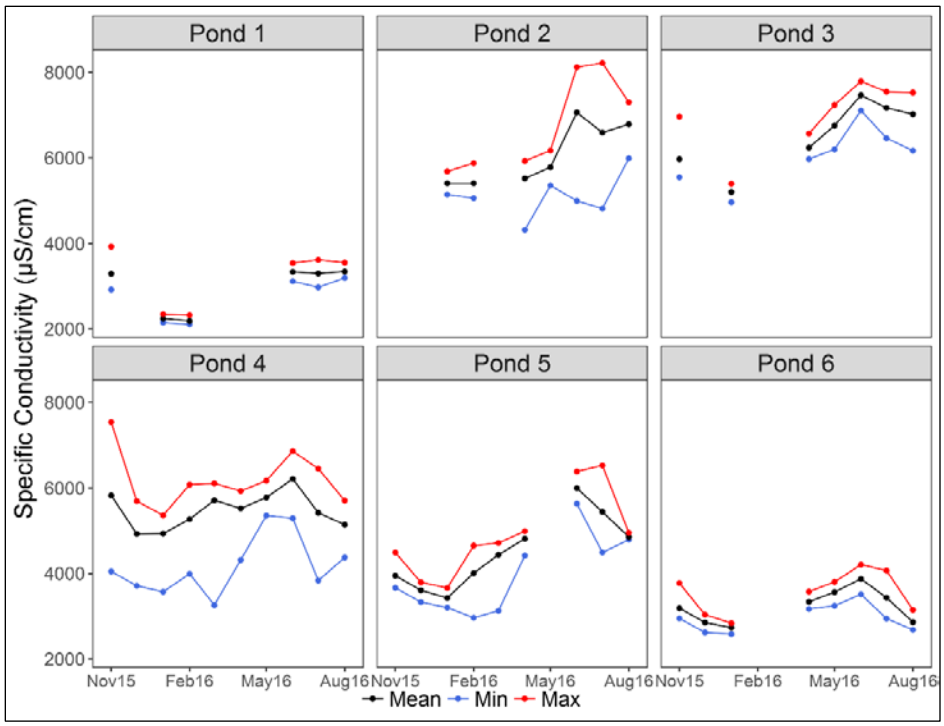


Figure 5.—Monthly mean, minimum (Min), and maximum (Max) specific conductivity.

4.3 Small Mammal Monitoring

4.3.1 Rodent Monitoring

Live trapping was conducted on March 30, 2016, to determine the presence of Yuma hispid cotton rats (*Sigmodon hispidus plenus*) near the IPCA. Sixty traps were set on transects around the east side of Field 18 and the future riparian field. One Yuma hispid cotton rat was captured across the road and 60 meters to the northeast of Field 18. No other covered species were captured (Hill 2018).

5.0 HABITAT CREATION CONSERVATION MEASURE ACCOMPLISHMENT

5.1 Vegetation Monitoring

Vegetation data were collected in FY16 using light detection and ranging (lidar). Lidar measures the vegetation structure and provides the ability to identify structural diversity and successional growth stages. Conservation area vegetation will be evaluated on a periodic basis using lidar to ensure the habitat is meeting species' requirements. A procedure to analyze and provide vegetation structure metrics will be developed, and the results will be presented in future reports.

Preliminary analyses suggest that airborne lidar may not provide the necessary detail for evaluating marsh habitat. Alternative techniques will be explored.

5.2 Evaluation of Conservation Area Habitat

The Final Habitat Creation Conservation Measure Accomplishment Tracking Process was finalized in October 2011 (LCR MSCP 2011). All areas within the IPCA were designed to benefit covered species at the landscape level.

The fish ponds will continue to be maintained consistent with the protocols employed during the water management study until a water delivery and management plan is developed. The water depths at Field 18 are managed during the breeding season for Yuma clapper rails, California black rails, and western least bitterns. Table 4 shows how much habitat is creditable for each of the targeted covered species at the IPCA. Three species with habitat creation goals have creditable acres at the IPCA. These species, including their corresponding conservation measure acronyms, are: Yuma clapper rail (CLRA1), California black rail (BLRA1), and western least bittern (LEBI1).

Table 4.—Species-specific habitat creation conservation measure creditable total acres for 2016

Species-specific habitat creation conservation measure	BONY2	RASU2	CLRA1	BLRA1	LEBI1
Creditable acres in 2016	0[1]	0[1]	0	0	0
Total, including previous years	0	0	12	12	12

[1] Reclamation and the USFWS have completed a 5-year management strategy, which calls for stocking native fishes in FY17. Acres will be considered creditable at that time.

6.0 ADAPTIVE MANAGEMENT

Adaptive management relies on the initial receipt of new information, the analysis of that information, and the incorporation of the new information into the design and/or direction of future project work (LCR MSCP 2007). Under the Adaptive Management Program, habitat creation sites will be assessed for biological effectiveness and whether they fulfill the conservation measures outlined in the HCP for 26 covered species and if they potentially benefit 5 evaluation species. Post-development monitoring and species research results will be used to adaptively manage habitat creation sites after initial implementation. Once monitoring data are collected over a few years, and then analyzed for the IPCA, recommendations may be made through the adaptive management process for site improvements in the future.

There are no adaptive management recommendations for the IPCA at this time.

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