



# Lower Colorado River Multi-Species Conservation Program

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*Balancing Resource Use and Conservation*

## Imperial Ponds Conservation Area 2018 Annual Report



**March 2020**

Work conducted under LCR MSCP Work Task E14

# Lower Colorado River Multi-Species Conservation Program Steering Committee Members

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

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Arizona Game and Fish Department  
Arizona Power Authority  
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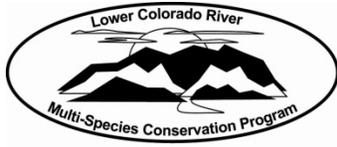
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The Nature Conservancy



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RECLAMATION

# **Lower Colorado River Multi-Species Conservation Program**

## **Imperial Ponds Conservation Area 2018 Annual Report**

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**Lower Colorado River  
Multi-Species Conservation Program  
Bureau of Reclamation  
Lower Colorado Basin  
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<http://www.lcrmscp.gov>**

**March 2020**

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# ACRONYMS AND ABBREVIATIONS

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
mg/L	milligram(s) per liter
N/A	not applicable
pH	the acidity or basicity (alkalinity) of an aqueous solution
PIT	passive integrated transponder
Reclamation	Bureau of Reclamation
USFWS	U. S. Fish and Wildlife Service

## **Symbols**

%	percent
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# 1.0 INTRODUCTION

The purpose of this annual report is to summarize all activities that have occurred at the Imperial Ponds Conservation Areas (IPCA) from October 1, 2017, through September 30, 2018, which is Federal fiscal year (FY) 2018. Water usage is presented as a calendar year, January 1 through December 31, 2018, consistent with the Colorado River Accounting and Water Use Report: Arizona, California, and Nevada, Calendar Year 2018 (Bureau of Reclamation [Reclamation] 2019).

## 1.1 Background

In 2005, 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 for the Imperial National Wildlife Refuge (Imperial NWR).

# 2.0 CONSERVATION AREA SITE INFORMATION

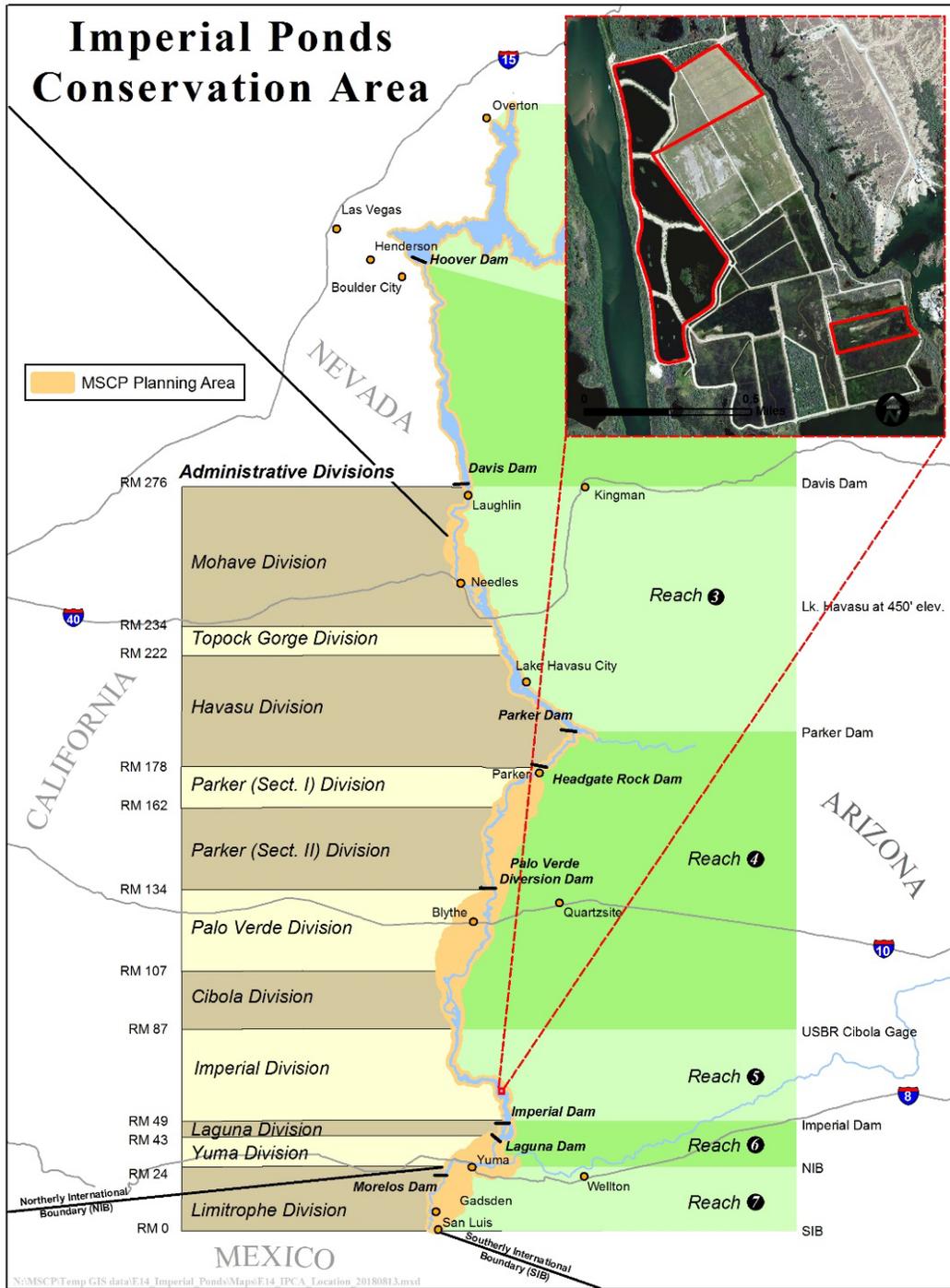
## 2.1 Purpose

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 (figure 1). It consists of 126 acres of land on the Imperial NWR, located in Arizona, at River Mile 59.

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**Figure 1.—Location of the IPCA.**

## 2.3 Landownership

The IPCA 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 mainstream, or 23,000 acre-feet of consumptive use of mainstream 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**

Three distinct land cover types are being created at the IPCA. The first is a series of disconnected backwaters, managed for native fishes, which have been constructed. The second is a small marsh complex, managed for rail species, which is also operational. The third is a stand of cottonwood-willow (*Populus fremontii-Salix gooddingii*), which has not yet been planted. The managed acreage is shown on figure 2.

### **3.1 Planting**

No planting occurred at the IPCA during FY18. Future development of 34 acres of cottonwood-willow fields is currently on hold until canal upgrades are completed.

### **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 (table 1).

Water delivery during 2018 is shown in table 2. The ponds received 738 acre-feet of water. Irrigation to the cottonwood-willow fields and marsh Field 18 began in mid-February 2017 and continued through September 2017. 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 marsh Field 18 is estimated based on the assumption that the cottonwood-willow fields will use 20% of the total water delivered to the farming complex and marsh Field 18 will use 8%.

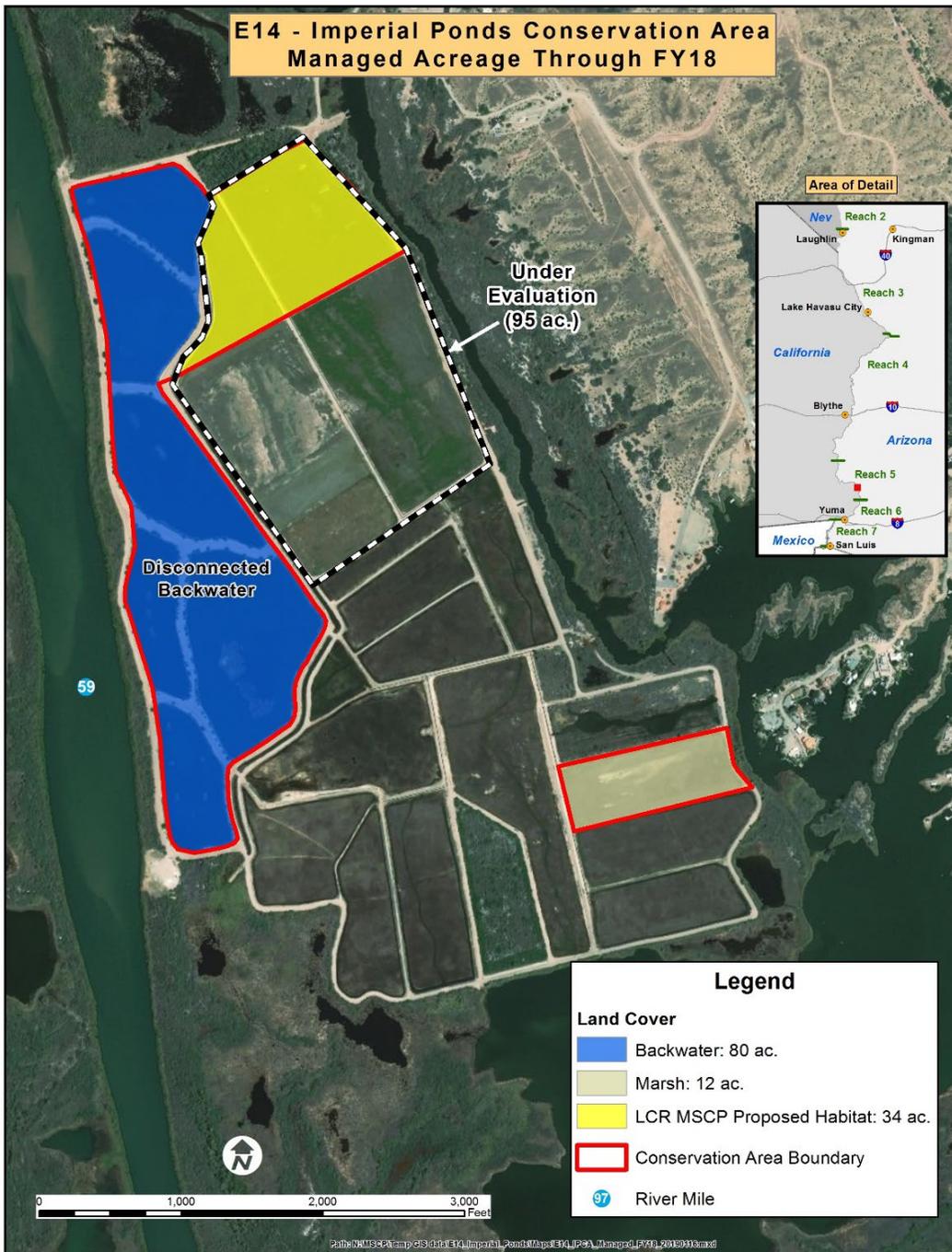


Figure 2.—IPCA managed acreage through FY18.

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

<b>Month</b>	<b>Monthly target volume per pond (gallons)</b>	<b>Total monthly target (gallons)</b>	<b>Total monthly target (acre-feet)</b>	<b>Operation cycle</b>	<b>Pond(s)</b>	<b>Weekly operation hours</b>
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	
<b>Total annual delivery for all six ponds per year (acre-feet)</b>						<b>771</b>

Table 2.—Water usage summary for 2018

<b>Location</b>	<b>Annual water usage (acre-feet)</b>	<b>Annual water usage by habitat type (acre-feet)</b>
Pond 1	106	738
Pond 2	124	
Pond 3	130	
Pond 4	115	
Pond 5	132	
Pond 6	131	
Cottonwood-willow Field 1	94	148
Cottonwood-willow Field 2	54	
Marsh Field 18	15	160

### **3.3 Site Management**

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

### **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 information is available in the technical reports on the LCR MSCP website ([www.lcrmscp.gov](http://www.lcrmscp.gov)) or upon request.

### **4.1 Backwater Monitoring**

#### **4.1.1 Native Fishes**

Native fishes were stocked into all six ponds during FY17. Each pond was stocked with approximately 300 adult fishes in an even ratio of males to females (table 3). Fishes were released in advance of their known spawning season, and all fishes were injected with passive integrated transponder (PIT) tags prior to release.

Fish monitoring at the Imperial ponds was focused on monitoring the PIT-tagged portion of each pond population using remote PIT tag scanners. Each pond is comprised of PIT-tagged fishes from the original stocking event, naturally recruited fishes, which were PIT tagged following capture events, and untagged recruited

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Table 3.—Imperial ponds native fish stockings  
(Pond, total of each species stocked, sex ratios, and average total length at stocking)

<b>Pond</b>	<b>Razorback suckers (male/female)</b>	<b>Bonytail (male/female)</b>	<b>Average length at stocking (millimeters)</b>
1	300 (150/150)		430
2		299 (150/149)	272
3	300 (150/150)		426
4	300 (150/150)		436
5		300 (150/150)	272
6		300 (150/150)	271

fishes. In addition to population monitoring, other monitoring objectives included documenting spawning/recruitment within the ponds through larval fish surveys, minnow trapping, and netting events.

Remote PIT tag scanning was accomplished using two to three permanent scanners in each pond, which were set to run continuously. In an effort to maximize scanning contacts, weirs were attached to one antenna in Ponds 4, 5, and 6. Data were downloaded approximately every 2–4 weeks during each site visit.

Remote PIT tag scanning contacts were used to track razorback sucker populations from October 2017 through September 2018. Population estimates were calculated every 2 weeks. The population estimates as of September 2018 were: Pond 1 – 180 fish, Pond 3 – 198 fish, and Pond 4 – 198 fish (figures 3–5). These population estimates represent 60, 66, and 66% survival, respectively, at 21 months post-release.

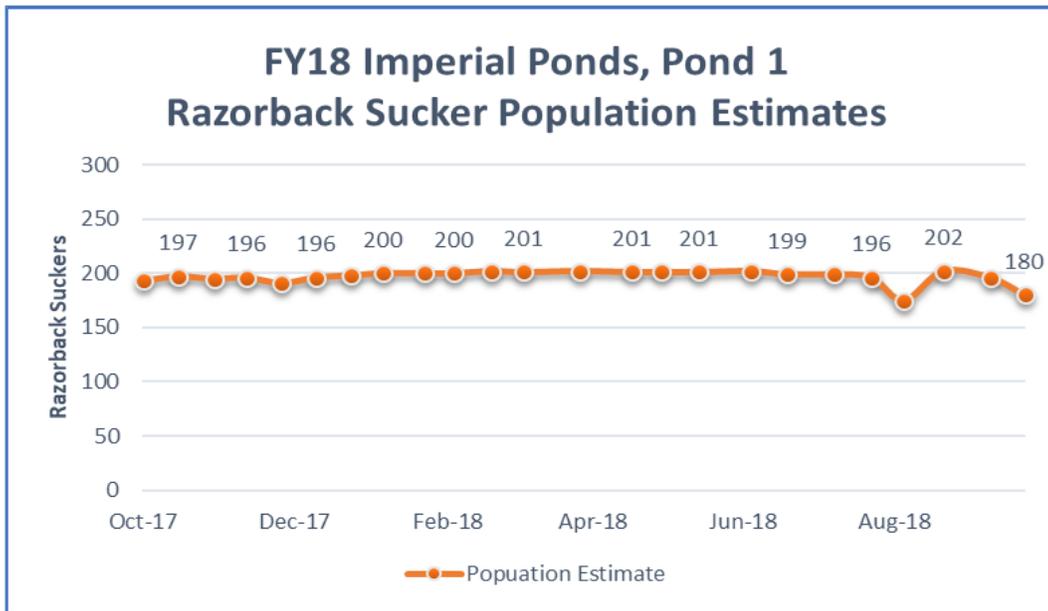


Figure 3.—Pond 1 razorback sucker population, FY18

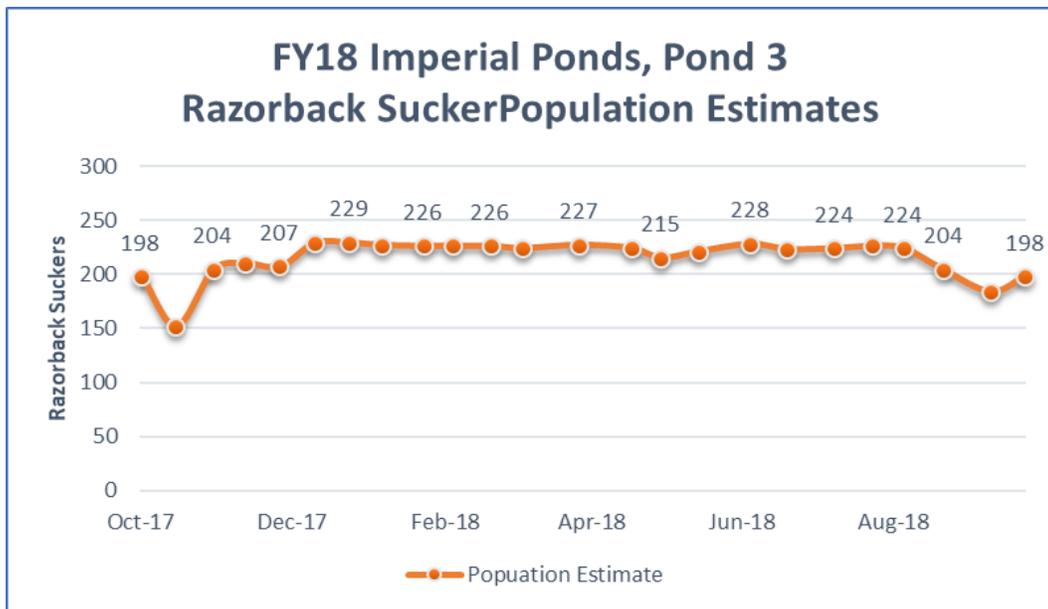
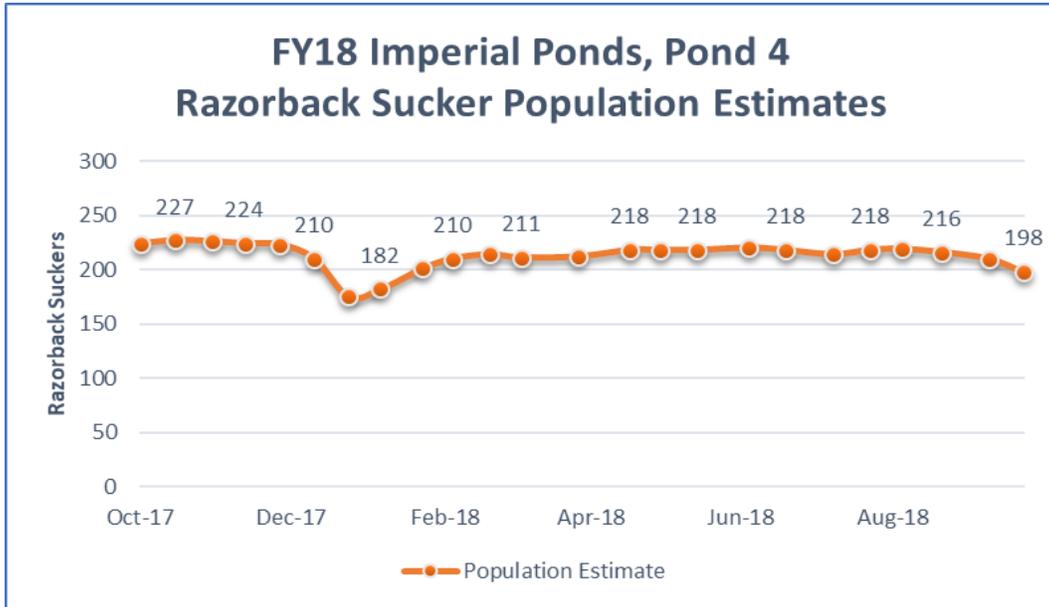


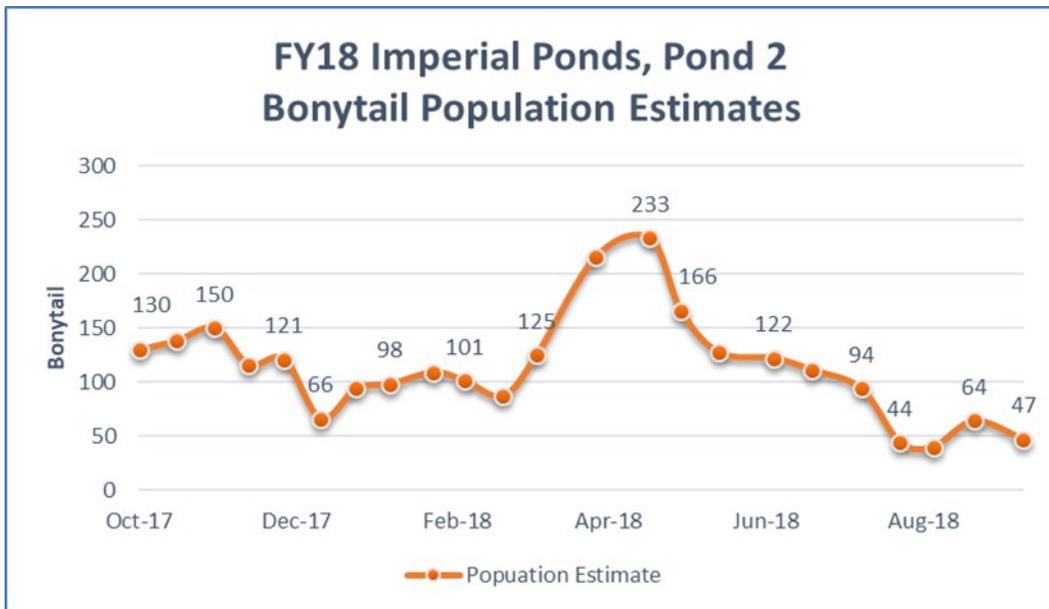
Figure 4.—Pond 3 razorback sucker population, FY18

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**Figure 5.—Pond 4 razorback sucker population, FY18.**

Similar to the razorback sucker ponds, remote PIT tag scanning contacts were used to track bonytail populations from October 2017 through September 2018. Population estimates were calculated every 2 weeks. The population estimates as of September 2018 were: Pond 2 – 47 fish, Pond 5 – 42 fish, and Pond 6 – 110 fish (figures 6–8). These population estimates represent 16, 14, and 37% survival, respectively, at 18 months post-release.



**Figure 6.—Pond 2 bonytail population, FY18.**

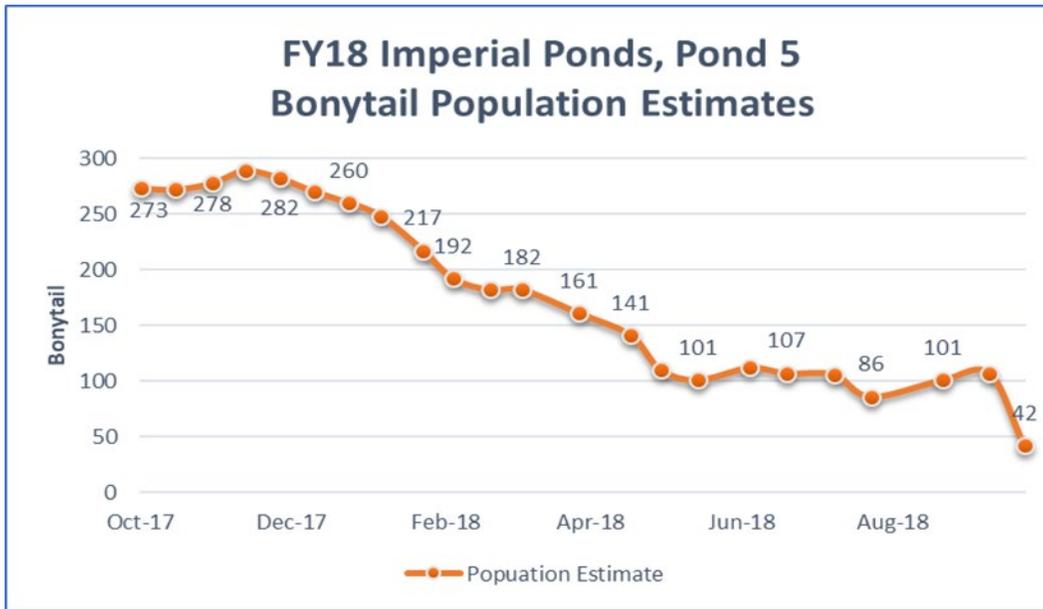


Figure 7.—Pond 5 bonytail population, FY18.

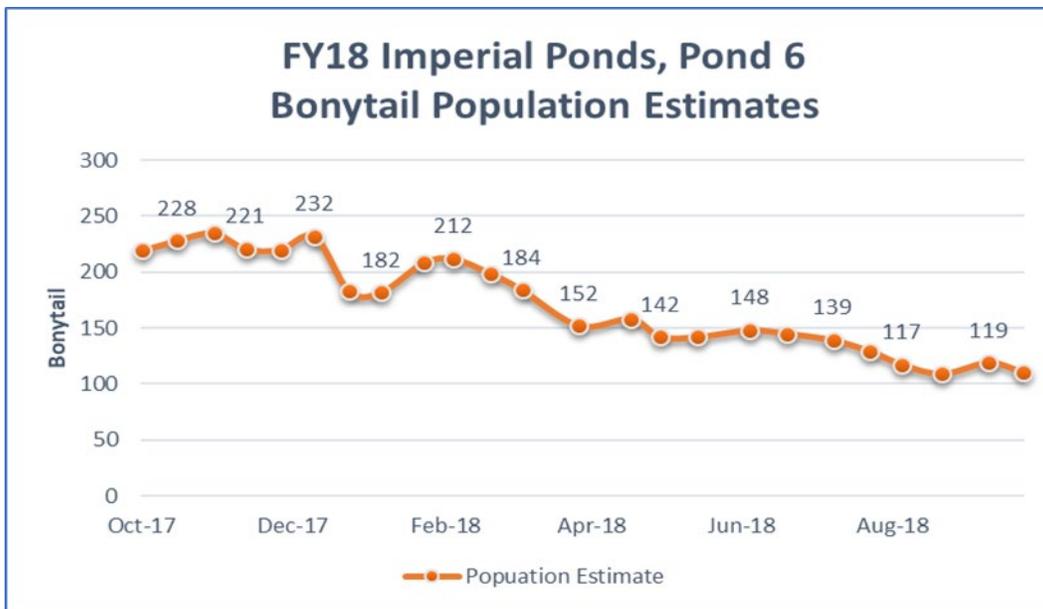


Figure 8.—Pond 6 bonytail population, FY18.

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Fish surveys were conducted from November through May using multiple techniques to detect the various life stages of each species. Trammel netting and electrofishing were conducted before the spawning season in order to monitor the health of adult fishes. Larval sampling, minnow traps, and hoop nets were used to survey ponds during and after the spawning season to document spawning events. Fifteen larval light traps, 18 larval dip netting surveys, 143 minnow traps, 128 hoop nets, 81 trammel nets, and 5 electrofishing surveys were set/conducted in FY18 (table 4).

Table 4.—FY18 Imperial ponds monitoring effort

<b>Method</b>	<b>Pond 1</b>	<b>Pond 2</b>	<b>Pond 3</b>	<b>Pond 4</b>	<b>Pond 5</b>	<b>Pond 6</b>	<b>Total</b>
Larval light	5	1	4	4	1	0	15
Larval dip net	2	4	1	1	4	6	18
Minnow traps	6	22	6	6	80	23	143
Hoop nets	30	16	18	18	27	19	128
Trammel nets	20	16	11	12	12	10	81
Electrofishing	2	1	1	1	0	0	5

All larval monitoring and minnow trapping resulted in the capture of 3 razorback suckers and 18 bonytail; hoop nets and trammel nets were the most effective and captured a total of 1,534 and 701 fish, respectively (table 5). Razorback sucker larvae were only detected in Pond 1, and young-of-year bonytail were only captured from Pond 2.

Table 5.—FY18 Imperial ponds monitoring results

<b>Method</b>	<b>Pond 1</b>	<b>Pond 2</b>	<b>Pond 3</b>	<b>Pond 4</b>	<b>Pond 5</b>	<b>Pond 6</b>	<b>Total</b>
Larval light	0	0	0	0	0	N/A	0
Larval dip net	3	0	0	0	0	0	3
Minnow traps	0	18	0	0	0	0	18
Hoop nets	2	1,513	1	5	4	9	1,534
Trammel nets	67	495	33	33	26	47	701
Electrofishing	0	1	0	4	N/A	N/A	5

A mass bonytail spawning event was observed in Pond 2 on April 20, 2018, at the pond surface along the northwest shore. The spawning event occurred about 3–4 meters from shore in open water and was comprised of stocked adults and recruited fish from the previous year. The fish were too numerous to count and were estimated to be in the thousands to tens of thousands. The fish occupied a 20-meter stretch of water from the surface to about 2 meters down.

#### **4.1.2 Water Quality Monitoring**

Physico-chemical water quality parameters, including temperature, dissolved oxygen, 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 instruments that were set to record temperature in degrees Celsius, dissolved oxygen in milligrams per liter (mg/L), specific conductivity in microsiemens per centimeter, and pH. A single multi-parameter water quality instrument was deployed near the center of each pond at a depth of approximately 1 meter below the surface.

No water quality data are reported for FY18. Changes in key personnel and data recording errors associated with new instruments resulted in data that were too inconsistent and sparse to produce a meaningful summary. Population monitoring documented survival of adults, reproduction, and recruitment, suggesting that water quality remained within acceptable ranges for razorback suckers and bonytail throughout the year.

## **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. One LCR MSCP marsh bird species was detected: western least bittern. One was detected during the first survey session (March 23) and the second session (April 6). No birds were detected on the third session (April 25) (Kahl, Jr. 2018).

A separate research project conducted at the Imperial NWR by the Idaho Cooperative Fish and Wildlife Research Unit detected Yuma clapper rails in Field 18 in FY18 (Harrity and Conway 2018).

## 5.0 HABITAT CREATION AND CONSERVATION MEASURE ACCOMPLISHMENT

### 5.1 Vegetation Monitoring

Vegetation data were collected in FY18 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 six disconnected backwaters will continue to provide backwater habitat for razorback suckers and bonytail. The water depths at Field 18 are managed during the breeding season for Yuma clapper rails, California black rails, and western least bitterns. Table 6 shows how much habitat is creditable for each of the targeted covered species at the IPCA. A total of five species with habitat creation goals have creditable acres at the IPCA. These species, including their corresponding conservation measure acronyms, are: bonytail (BONY2), razorback sucker (RASU2), Yuma clapper rail (CLRA1), California black rail (BLRA1), and western least bittern (LEBI1) (table 6).

Table 6.—Species-specific habitat creation conservation measure creditable total acres for 2018<sup>1</sup>

Species-specific habitat creation conservation measure	BONY2	RASU2	CLRA1	BLRA1	LEBI1
Creditable acres in 2018	0	0	0	0	0
<b>Total, including previous years</b>	<b>80</b>	<b>80</b>	<b>12</b>	<b>12</b>	<b>12</b>

<sup>1</sup> The habitat creation accomplishment analysis was not performed for FY18 because lidar data were not available.

## 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 27<sup>1</sup> covered species and to determine 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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<sup>1</sup> The northern Mexican gartersnake (*Thamnophis eques megalops*) was added as a covered species by an amendment to the Program Documents on March 5, 2018.

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