

# Lower Colorado River Multi-Species Conservation Program



*Balancing Resource Use and Conservation*

## Marsh Bird Surveys, Conservation Areas 2012 Annual Report



July 2013

# 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 County Government Coalition  
Desert Wildlife Unlimited

## **California Participant Group**

California Department of Fish and Game  
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**

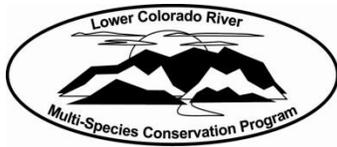
Colorado River Commission of Nevada  
Nevada Department of Wildlife  
Southern Nevada Water Authority  
Colorado River Commission Power Users  
Basic Water Company

## **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

## Marsh Bird Surveys, Conservation Areas 2012 Annual Report

*Prepared by:*

Joseph Kahl, Wildlife Group

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

July 2013

# ACRONYMS AND ABBREVIATIONS

BBCA	Big Bend Conservation Area
CD	compact disc
IPCA	Imperial Ponds Conservation Area
LCR MSCP	Lower Colorado River Multi-Species Conservation Program
NWR	National Wildlife Refuge
Reclamation	Bureau of Reclamation
USFWS	U.S. fish and Wildlife Service

## **Symbols**

%	percent
---	---------

# CONTENTS

	Page
Abstract .....	iii
Introduction.....	1
Background .....	1
Survey Areas .....	2
Big Bend Conservation Area .....	2
Beal Lake .....	2
Hart Mine Marsh.....	6
Imperial Ponds Conservation Area .....	6
Methods.....	6
Results.....	7
Discussion .....	9
Big Bend Conservation Area .....	9
Beal Lake .....	9
Hart Mine Marsh.....	12
Imperial Ponds Conservation Area .....	12
Recommendations.....	12
Literature Cited .....	13

## Tables

Table	Page
1 Big Bend Conservation Area marsh bird survey results, 2012.....	7
2 Beal Lake marsh bird survey results, 2012 .....	8
3 Hart Mine marsh bird survey results, 2012.....	10
4 Imperial Ponds Conservation Area marsh bird survey results, 2012.....	11

## Figures

Figure	Page
1 LCR MSCP area. ....	3
2 Big Bend Conservation Area, Beal Lake and Topock Gorge. ....	4
3 Hart Mine Marsh and Imperial Ponds Conservation Area.....	5

## **Attachments**

### Attachment

- 1 Species Lists
- 2 Survey Data Sheet

## ABSTRACT

In 2012, surveys for marsh birds were conducted by the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) at conservation areas along portions of the lower Colorado River (see figures 1 and 2). Surveys were conducted during March, April, and May. A Virginia rail (*Rallus limicola*) was detected at the Big Bend Conservation Area. Yuma clapper rail, least bittern, and Virginia rail were detected at Beal Lake.

Surveys for marsh birds in LCR MSCP conservation areas were also conducted during March, April, and May by personnel from the U.S. Fish and Wildlife Service. Yuma clapper rails, least bitterns, and Virginia rails were detected at Hart Mine Marsh at the Cibola National Wildlife Refuge (NWR). Yuma clapper rails, least bitterns, California black rails, and Virginia rails were detected at the Imperial Ponds Conservation Area at the Imperial NWR (see figures 1 and 3).

# INTRODUCTION

The Yuma clapper rail (*Rallus longirostris yumanensis*) was listed as an endangered species by the U.S. Department of the Interior in 1967 (U.S. Department of Interior 1967) and is currently listed under the Endangered Species Act regulated by the U.S. Fish and Wildlife Service (USFWS). The species is presently listed as threatened in California and is a species of special concern in Arizona (Arizona Department of Game and Fish Department 2006; California Department of Fish and Game 2011). The California black rail (*Laterallus jamaicensis coturniculus*) is a migratory nongame bird of management concern (USFWS 1995). In California, this species is listed as threatened and is also listed as a species of special concern in Arizona (Arizona Game and Fish Department 2002, California Department of Fish and Game 2011). Least bittern (*Ixobrychus exilis*) is a species of special concern in Arizona and California (Arizona Game and Fish Department 2001; Sterling 2008). It is listed by the USFWS as a migratory nongame bird of management concern (USFWS 1995).

Conservation measures for the Habitat Conservation Plan of the Lower Colorado River Multi-Species Conservation Program (LCR MSCP) provide for monitoring and research of the Yuma clapper rail, California black rail, and least bittern (LCR MSCP 2004). Surveys for these three covered species are conducted in existing habitat as part of system-wide monitoring and at sites prior to and after creation of marshland habitat (LCR MSCP 2004).

Research into the habitat requirements of covered marsh birds includes a recently completed study under the direction of Dr. Courtney Conway. In June 2008, Reclamation entered into a Cooperative Agreement with the University of Arizona and the U.S. Geological Survey. A study was initiated in a newly created marsh at Imperial National Wildlife Refuge (NWR) to document vegetation and depth of water used by marsh birds over a 2-year period, correlating the range of hydrologic conditions and plant associations preferred by California black rails, Yuma clapper rails, least bitterns, and other marsh bird species encountered. The results of this study are now being used to develop new marsh habitat under the LCR MSCP at the Laguna Division Conservation Area near Yuma, Arizona, and to manage existing and created wetlands at Cibola NWR (Nadeau et al. 2011). More information about these sites, as well as recent reports, can be found at [www.lcrmscp.gov](http://www.lcrmscp.gov).

# BACKGROUND

Using broadcast vocalizations, Gibbs and Melvin (1993) found that three visits to a wetland were adequate to determine the presence or absence of all target species with 90 percent (%) certainty. Up to a 25% change in population abundance of

## **Marsh Bird Surveys, Conservation Areas 2012 Annual Report**

water birds can be detected over a 10-year monitoring period by surveying 40–80 mini-routes on 2–3 occasions annually (Gibbs and Melvin 1997). Along the lower Colorado River at Mittry Lake (north of Yuma, Arizona), Conway et al. (1993) used radio telemetry in conjunction with playback recordings of Yuma clapper rail to determine detection rates. They determined that marked birds exhibited a year-round response rate of 19.2%. During the early breeding season in March and April, the response rate was 40%. During the late breeding season in May and through July, the response rate was 20%. The maximum number of birds detected during any one survey period provides the minimum number of birds present during the survey year.

Conway and Nadeau (2006) found that broadcasting calls of multiple species of marsh birds does not compromise the vocalization probability of any one species. Since 2006, Reclamation has participated in the National Marsh Bird Monitoring Program (<http://ag.arizona.edu/research/azfwru/NationalMarshBird/index.htm>), which involves surveying several species simultaneously using taped recordings of the species' calls (Conway 2005; USFWS 2006). The goal of the national program is to estimate population changes in marsh birds using standardized, repeatable survey methods (Conway and Nadeau 2006). This goal parallels Reclamation's requirement for long-term monitoring of created habitat to determine if it is suitable for species covered by the LCR MSCP and if the species are present. All Reclamation personnel involved with marsh bird surveys have attended and successfully completed the Marsh Bird Training Workshop presented by Dr. Courtney Conway.

## **SURVEY AREAS**

### **Big Bend Conservation Area**

The Big Bend Conservation Area (BBCA) is located along the lower Colorado River, south of Laughlin, Nevada (figures 2 and 3). It is a small marsh/backwater that contains approximately 15 acres of backwater and 15 acres of upland. The predominant vegetation of the backwater is southern cattail (*Typha domingensis*). It is at the northern limit of Reach 3 and between River Miles 266 and 267 (figures 1 and 2). There are four survey points.

### **Beal Lake**

Beal Lake is also in Reach 3 and is located on the Havasu NWR between Topock Marsh and the lower Colorado River (figures 1 and 2). River Miles 238 and 239 are adjacent to Beal Lake. There are roughly 80 acres of emergent vegetation, predominantly cattail and bulrush (*Juncus* sp.). There are nine survey points at Beal Lake.

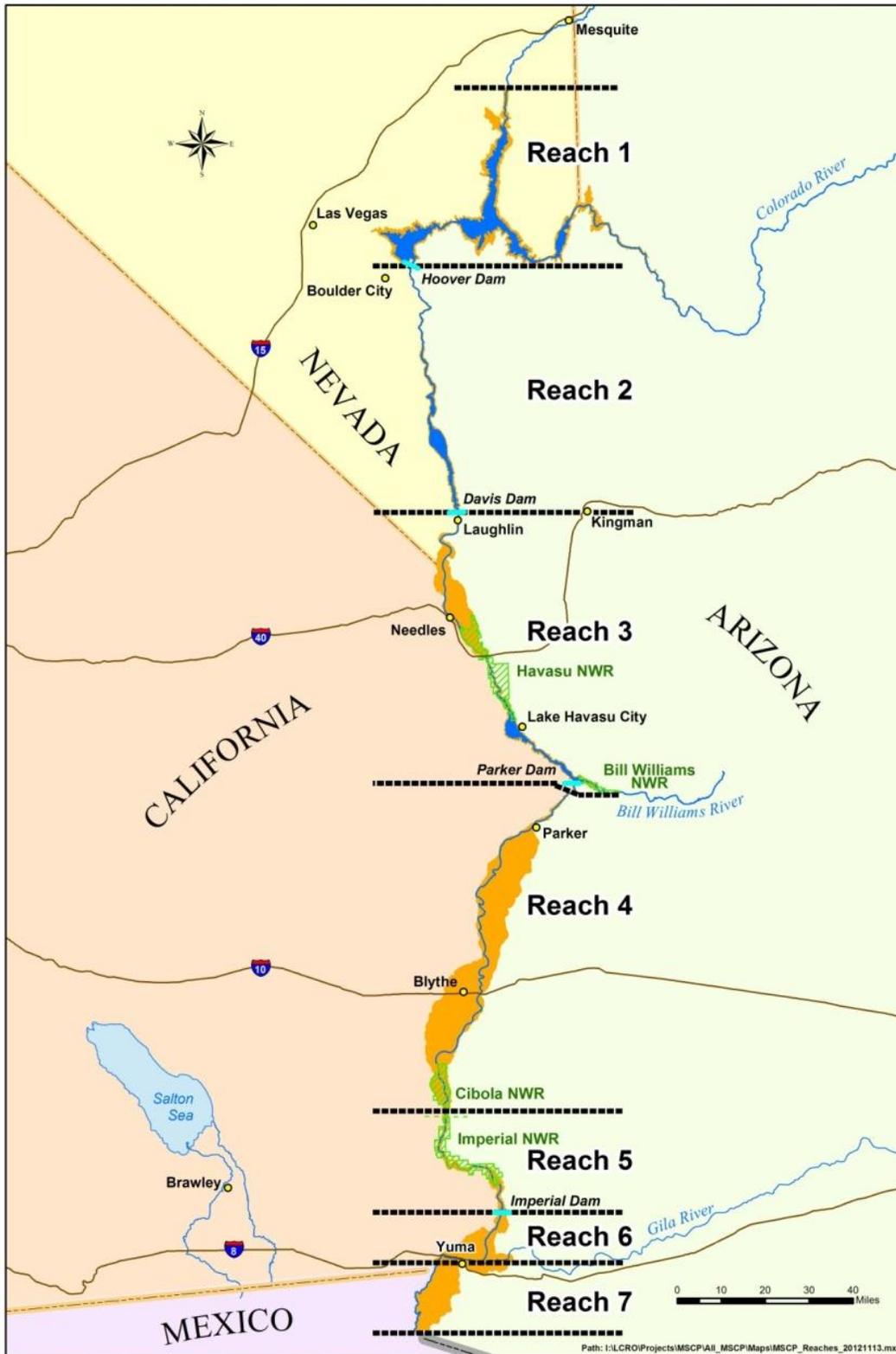


Figure 1.—LCR MSCP area.

**Marsh Bird Surveys, Conservation Areas  
2012 Annual Report**



**Figure 2.—Big Bend Conservation Area, Beal Lake and Topock Gorge.**

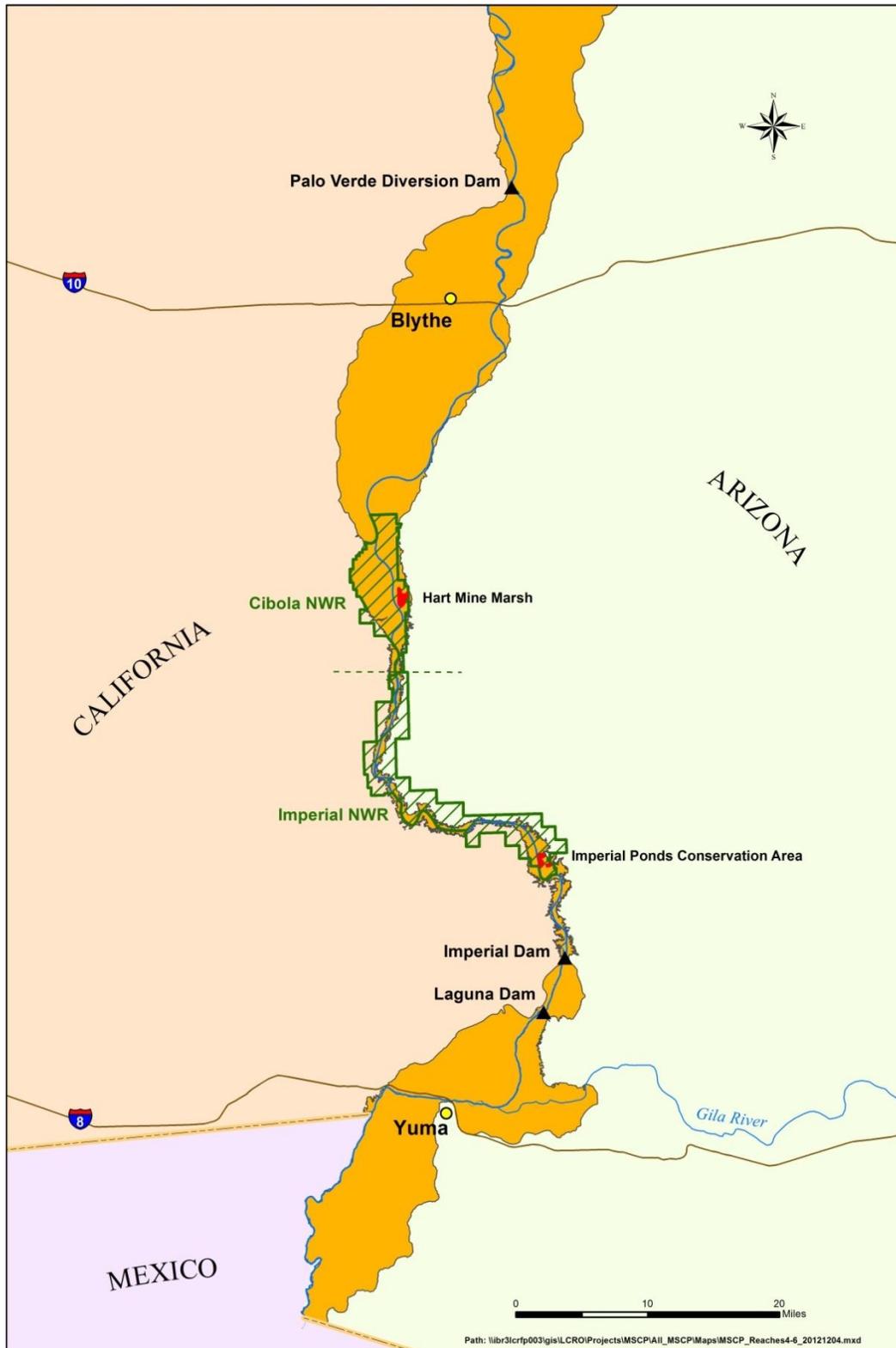


Figure 3.—Hart Mine Marsh and Imperial Ponds Conservation Area.

## Hart Mine Marsh

Hart Mine Marsh is located in Cibola NWR. It was a decadent marsh that was restored from 2009 through 2011. It is at the southern limit of Reach 4 and is adjacent to River Miles 91 and 92 (see figures 1 and 3). It contains 163 acres of marsh habitat. The vegetation consists of southern cattail, three-square bulrush (*Scirpus olneyi*), California bulrush, common spikerush (*Eleocharis palustris*), great bulrush (*S.tabernaemontani*), inland saltgrass (*Distichlis spicata*) with quail bush (*Atriplex lentiformis*), and honey mesquite (*Prosopis glandulosa*). There are eight survey points.

## Imperial Ponds Conservation Area

The Imperial Ponds Conservation Area (IPCA) is located in Imperial NWR. There are six constructed ponds with 80 acres of backwater habitat that contain some marsh habitat along the edges and in hummocks within the ponds. Field 18 is a 12-acre marsh converted from a farm field. It is dominated by bulrush and was constructed primarily for California black rail. There are four survey points for the ponds and two for Field 18. The IPCA is adjacent to River Miles 59 and 58 and is located in Reach 5 (see figures 1 and 3).

## METHODS

Using a standardized protocol from the National Marsh Bird Monitoring Program, surveys for the California black rail, least bittern, Virginia rail, and Yuma clapper rail were performed between March 15 and May 31 (USFWS 2003, 2006; Conway 2009). Four surveys were conducted, and a standardized survey form was used to record the date, start and end time, location, route, observers, environmental data, and other comments as well as selected marsh birds encountered, their responses, and direction and distance from the survey point (attachment 1). The locations and numbers of pied-billed grebe (*Podilymbus podiceps*), sora (*Porzana carolina*), and common gallinule (*Gallinula galeata*) were recorded. The number of marsh wrens (*Cistothorus palustris*) observed at each point was also noted.

Surveys began 30 minutes before sunrise and continued until marsh birds ceased calling, usually by 10:00 a.m. Surveys ceased when the wind speed was greater than 20 kilometers per hour because the detection of birds was impaired due to noise from rustling vegetation. Surveys are not conducted during periods of sustained rain or heavy fog (Conway 2009).

Portable compact disc (CD) players with amplified speakers were used to broadcast calls of the four selected species. The CD consisted of 5 minutes of silence followed by 30 seconds of selected calls and 30 seconds of silence for

each of the species. Specific calls used were “kicky-doo” and “grr” for California black rail, “coo” and “kak” for least bittern, “grunt,” “ticket,” and “kicker” for Virginia rail, and “clatter,” “kek,” and “kek-burr” for Yuma clapper rail. Calls were played at a volume of 80–90 decibels measured 1 meter from the speakers.

Birds encountered before or after the official 9-minute survey period were also noted on the survey form (attachment 2). Maps of the survey sites showing the general location of the birds encountered were marked, and Universal Transverse Mercator coordinates were taken using a Global Positioning System for the survey sites. Surveys at Beal Lake were conducted using a motorized boat; surveys at BBCA, Cibola NWR, and Imperial NWR were conducted on foot and with vehicles.

## RESULTS

Surveys at BBCA were conducted on March 28, April 25, and May 31 (table 1). One Virginia rail, one sora, and three pied-billed grebes were detected in March. In April, four pied-billed grebes were detected, and in May, two were detected.

Table 1.—Big Bend Conservation Area marsh bird survey results, 2012

March 28							
Point	CLRA	LEBI	BLRA	VIRA	SORA	PBGR	COGA
1	0	0	0	0	0	0	0
2	0	0	0	0	0	3	0
3	0	0	0	0	0	0	0
4	0	0	0	1	1	0	0
April 25							
Point	CLRA	LEBI	BLRA	VIRA	SORA	PBGR	COGA
1	0	0	0	0	0	0	0
2	0	0	0	0	0	4	0
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
May 31							
Point	CLRA	LEBI	BLRA	VIRA	SORA	PBGR	COGA
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	2	0
4	0	0	0	0	0	0	0

CLRA – Yuma clapper rail, LEBI – least bittern, BLRA – California black rail, VIRA – Virginia rail, SORA – sora, PBGR – pied-billed grebe, and COGA – common gallinule.

Surveys at Beal Lake were conducted March 27, April 24, and May 30 (table 2). Least bitterns and Virginia rails were detected during all surveys. Yuma clapper rails were detected during the April and May surveys. In March, 2 least bitterns,

**Marsh Bird Surveys, Conservation Areas  
2012 Annual Report**

8 Virginia rails, 11 soras, 1 pied-billed grebe, and 7 common gallinules were detected. During the April survey, 1 Yuma clapper rail, 9 least bitterns, 5 Virginia rails, 3 pied-billed grebes, and 5 common gallinules were detected. In May, 2 Yuma clapper rails, 14 least bitterns, 3 Virginia rails, 4 pied-billed grebes, and 1 common gallinule were detected.

Table 2.—Beal Lake marsh bird survey results, 2012

<b>March 27</b>							
<b>Point</b>	<b>CLRA</b>	<b>LEBI</b>	<b>BLRA</b>	<b>VIRA</b>	<b>SORA</b>	<b>PBGR</b>	<b>COGA</b>
1	0	2	0	1	4	0	0
2	0	0	0	1	2	0	3
3	0	0	0	0	1	0	2
4	0	0	0	0	0	0	0
5	0	0	0	2	0	0	0
6	0	0	0	3	0	1	0
7	0	0	0	1	4	0	1
8	0	0	0	0	0	0	1
9	0	0	0	0	0	0	0
Total	0	2	0	8	11	1	7
<b>April 24</b>							
<b>Point</b>	<b>CLRA</b>	<b>LEBI</b>	<b>BLRA</b>	<b>VIRA</b>	<b>SORA</b>	<b>PBGR</b>	<b>COGA</b>
1	0	2	0	1	0	0	1
2	1	2	0	1	0	1	0
3	0	0	0	1	0	0	1
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	0	0	1	0	0	0
7	0	2	0	1	0	0	1
8	0	1	0	0	0	2	1
9	0	2	0	0	0	0	1
Total	1	9	0	5	0	3	5
<b>May 30</b>							
<b>Point</b>	<b>CLRA</b>	<b>LEBI</b>	<b>BLRA</b>	<b>VIRA</b>	<b>SORA</b>	<b>PBGR</b>	<b>COGA</b>
1	0	2	0	1	0	0	1
2	0	0	0	1	0	1	0
3	2	1	0	0	0	2	0
4	0	2	0	0	0	0	0
5	0	2	0	0	0	1	0
6	0	3	0	0	0	0	0
7	0	3	0	0	0	0	0
8	0	0	0	1	0	0	0
9	0	1	0	0	0	0	0
Total	2	14	0	3	0	4	1

Surveys at Hart Mine Marsh (table 3) were conducted on March 26, April 5 and 18, and on May 12. One least bittern, Virginia rail, sora, and common gallinule were detected during the March survey. The April 5 survey results indicated the presence of 3 least bitterns, 3 Virginia rails, 6 soras, and 1 pied-billed grebe. Two Yuma clapper rails, 11 least bitterns, 1 Virginia rail, 6 pied-billed grebes, and 4 common gallinules were detected during the April 18 survey. On May 12, 6 least bittern, 9 pied-billed grebes, and 1 common gallinule were detected.

Surveys at the Imperial Ponds Conservation Area were conducted on March 19, April 3 and 18, and May 9 (table 4). During the March 19 survey, 1 least bittern, 1 California black rail, 2 soras, 7 pied-billed grebes, and 1 common gallinule were detected. One Yuma clapper rail, 2 least bitterns, 1 California black rail, 1 sora, and 6 pied-billed grebes were detected during the April 3 survey. There were 2 California black rails, 2 Virginia rails, 3 soras, and 1 pied-billed grebe detected on the April 18 survey. During the May 9 survey, 5 California black rails, 3 Virginia rails, and 5 pied-billed grebes were detected.

## DISCUSSION

### Big Bend Conservation Area

None of the LCR MSCP targeted species were detected at the BBCA in 2012, although two secretive marsh bird species, Virginia rail and sora, were detected during the March survey. Pied-billed grebes were detected during all three surveys. The most numerous of the bird species inhabiting the marsh continued to be the yellow-headed blackbird (*Xanthocephalus xanthocephalus*).

Surveys at BBCA by Reclamation started in 2009. Least bitterns were detected in 2009 and 2010 during April surveys. Virginia rails were detected in April and May 2009 and also in March 2011. Reclamation conducted a survey at this site in April 1999 in cooperation with Nevada Division of Wildlife. None of the targeted species were detected during that particular survey. A list of other bird species observed during the surveys can be found in attachment 1.

### Beal Lake

This is the first year that Reclamation has conducted marsh bird surveys at Beal Lake. Marsh bird surveys had been conducted by Dr. Courtney Conway as part of a study of the effects of fire on Yuma clapper rails and California black rails (Conway and Nadeau 2005). Dr. Conway had detected Yuma clapper rails and

**Marsh Bird Surveys, Conservation Areas  
2012 Annual Report**

Table 3.—Hart Mine marsh bird survey results, 2012

<b>March 26</b>							
<b>Point</b>	<b>CLRA</b>	<b>LEBI</b>	<b>BLRA</b>	<b>VIRA</b>	<b>SORA</b>	<b>PBGR</b>	<b>COGA</b>
8	0	0	0	0	0	0	0
10	0	0	0	0	1	0	0
11	0	1	0	0	0	0	0
12	0	0	0	0	0	0	0
13	0	0	0	1	0	0	0
14	0	0	0	0	0	0	0
17	0	0	0	0	0	0	1
19	0	0	0	0	0	0	0
Total	0	1	0	1	1	0	1
<b>April 5</b>							
<b>Point</b>	<b>CLRA</b>	<b>LEBI</b>	<b>BLRA</b>	<b>VIRA</b>	<b>SORA</b>	<b>PBGR</b>	<b>COGA</b>
8	0	0	0	0	0	0	0
10	0	0	0	0	1	0	0
11	0	0	0	0	0	0	0
12	0	1	0	0	1	1	0
13	0	0	0	1	1	0	0
14	0	0	0	0	0	0	0
17	0	1	0	0	2	0	0
19	0	1	0	2	1	0	0
Total	0	3	0	3	6	1	0
<b>April 18</b>							
<b>Point</b>	<b>CLRA</b>	<b>LEBI</b>	<b>BLRA</b>	<b>VIRA</b>	<b>SORA</b>	<b>PBGR</b>	<b>COGA</b>
8	0	2	0	0	0	4	1
10	0	2	0	0	0	1	0
11	2	3	0	0	0	0	1
12	0	0	0	0	0	0	0
13	0	1	0	0	0	0	0
14	0	2	0	0	0	0	0
17	0	0	0	0	0	1	1
19	0	1	0	1	0	0	1
Total	2	11	0	1	0	6	4
<b>May 12</b>							
<b>Point</b>	<b>CLRA</b>	<b>LEBI</b>	<b>BLRA</b>	<b>VIRA</b>	<b>SORA</b>	<b>PBGR</b>	<b>COGA</b>
8	0	1	0	0	0	2	0
10	0	2	0	0	0	3	0
11	0	2	0	0	0	3	0
12	0	0	0	0	0	0	1
13	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0
17	0	0	0	0	0	1	0
19	0	1	0	0	0	0	0
Total	0	6	0	0	0	9	1

**Marsh Bird Surveys, Conservation Areas  
2012 Annual Report**

Table 4.—Imperial Ponds Conservation Area marsh bird survey results, 2012  
(Points 3 and 12 are located in Field 18; Points 8–11 are located in the adjacent ponds.)

<b>March 19</b>							
<b>Point</b>	<b>CLRA</b>	<b>LEBI</b>	<b>BLRA</b>	<b>VIRA</b>	<b>SORA</b>	<b>PBGR</b>	<b>COGA</b>
3	0	0	1	0	1	1	0
8	0	0	0	0	0	1	0
9	0	1	0	0	0	3	1
10	0	0	0	0	0	1	0
11	0	0	0	0	0	0	0
12	0	0	0	0	1	1	0
Total	0	1	1	0	2	7	1
<b>April 3</b>							
<b>Point</b>	<b>CLRA</b>	<b>LEBI</b>	<b>BLRA</b>	<b>VIRA</b>	<b>SORA</b>	<b>PBGR</b>	<b>COGA</b>
3	0	1	1	0	0	0	0
8	0	0	0	0	0	1	0
9	0	1	0	0	0	3	0
10	0	0	0	0	0	1	0
11	0	0	0	0	0	1	0
12	1	0	0	0	1	0	0
Total	1	2	1	0	1	6	0
<b>April 18</b>							
<b>Point</b>	<b>CLRA</b>	<b>LEBI</b>	<b>BLRA</b>	<b>VIRA</b>	<b>SORA</b>	<b>PBGR</b>	<b>COGA</b>
3	0	0	2	0	0	0	0
8	0	0	0	0	0	0	0
9	0	0	0	0	0	1	0
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	0	0	2	3	0	0
Total	0	0	2	2	3	1	0
<b>May 9</b>							
<b>Point</b>	<b>CLRA</b>	<b>LEBI</b>	<b>BLRA</b>	<b>VIRA</b>	<b>SORA</b>	<b>PBGR</b>	<b>COGA</b>
3	0	0	3	0	0	1	0
9	0	0	0	1	0	4	0
12	0	0	2	2	0	0	0
Total	0	0	5	3	0	5	0

least bitterns as well as American coots, common gallinules, and pied-billed grebes from 2001 to 2005 (LCR MSCP 2010). One California black rail was detected at Beal Lake in May 2007 (C. Nadeau, personal communication). In 2012, two of the covered species, Yuma clapper rail and least bittern, were found at Beal Lake. One Yuma clapper rail was detected in April and two in March. All Yuma clapper rails were making the “kek” call – the primary advertising call of the male (Meanley 1985; Zembal and Massey 1987; Eddleman 1989). Detections of least bittern were highest in May with 14; many of these were seen

## **Marsh Bird Surveys, Conservation Areas 2012 Annual Report**

flying and had not responded to the broadcasted calls. Virginia rail detections were the highest in March. Soras were only detected in March. The number of pied-billed grebes detected ranged from one in March to four in May. Common gallinule detections were the highest in March with seven detections. A list of all bird species observed during the surveys can be found in attachment 1.

### **Hart Mine Marsh**

Restoration activities at Hart Mine Marsh were completed in 2010 (fiscal year 2011), and the first survey was conducted by USFWS on March 28, 2010. Only one pied-billed grebe was detected. In 2011, three surveys were conducted. There were five Yuma clapper rails (one pair and three individuals), one Virginia rail, and three pied-billed grebes detected on April 19. Three least bitterns and three common gallinules were detected during the March 28 survey.

In 2012, two Yuma clapper rails were detected on April 8. The numbers of least bittern increased to 11 on the April 8 survey, followed by 6 detected on May 12; both higher than any survey in 2011. There were three Virginia rails and six soras detected on April 5, the highest number of sora detected thus far. Four common gallinules were detected on April 18, and nine pied-billed grebes were detected on May 12, the highest number of pied-billed grebes detected to date.

### **Imperial Ponds Conservation Area**

California black rails were detected in Field 18 during every survey period with a peak of five occurring on May 9. One Yuma clapper rail was detected in Field 18 on April 3. Least bitterns, Virginia rails, and pied-billed grebes were detected both in Field 18 and in the ponds. One common gallinule was detected on March 19 in one of the ponds, and peak numbers of pied-billed grebes were detected on March 19 and April 9, primarily in the ponds.

## **RECOMMENDATIONS**

Reclamation and the USFWS will continue to monitor marsh bird use of created, restored, or current habitat in conservation areas (LCR MSCP 2004).

Reclamation will continue to coordinate with the USFWS in cataloging areas along the lower Colorado River that are being surveyed. Areas that are not currently being surveyed should be identified and potentially surveyed in the future.

## LITERATURE CITED

- Arizona Game and Fish Department. 2001. *Ixobrychus exilis*. Unpublished abstract compiled and edited by the Heritage Management System, Arizona Game and Fish Department, Phoenix, AZ. 8 p.
- \_\_\_\_\_. 2002. *Laterallus jamaicensis coturniculus*. Unpublished abstract compiled and edited by the Heritage Management System, Arizona Game and Fish Department, Phoenix, AZ. 5 p.
- \_\_\_\_\_. 2006. *Rallus longirostris yumanensis*. Unpublished abstract compiled and edited by the Heritage Management System, Arizona Game and Fish Department, Phoenix, AZ. 11 p.
- California Department of Fish and Game. 2011. State and federally listed endangered and threatened animals of California. California Department of Fish and Game, Sacramento, CA. 13 p.
- Conway, C.J. 2005. Standardized North American Marsh Bird Monitoring Protocols. Wildlife Research Report #2005-04. U.S. Geological Survey, Arizona Cooperative Fish and Wildlife Research Unit, Tucson, AZ.
- \_\_\_\_\_. 2009. Standardized North American Marsh Bird Monitoring Protocols. Wildlife Research Report # 2009-02. U.S. Geological Survey, Arizona Cooperative Fish and Wildlife Research Unit, Tucson, AZ.
- Conway, C.J., W.R. Eddleman, S.H. Anderson, and L.R. Hanebury. 1993. Seasonal changes in Yuma clapper rail vocalization rate and habitat use. *Journal of Wildlife Management* 56:282–290.
- Conway, C.J. and C.P. Nadeau. 2005. Effects of Fire on Yuma Clapper Rails and California Black Rails, 2004 Annual Report. Wildlife Research Report Number 2005-01. Arizona Cooperative Fish and Wildlife Research Unit, Tucson, Arizona
- \_\_\_\_\_. 2006. Development and field-testing of survey methods for a continental marsh bird monitoring program in North America. Wildlife Research Report # 2005-11. USGS Arizona Cooperative Fish and Wildlife Research Unit, Tucson, AZ.
- Eddleman, W.R. 1989. Biology of the Yuma clapper rail in the southwestern U.S. and northwestern Mexico. Final Report, Intra-Agency Agreement No. 4-AA-30-02060, Bureau of Reclamation, Yuma Project Office, Yuma, AZ. 127 p.

**Marsh Bird Surveys, Conservation Areas  
2012 Annual Report**

- Gibbs, J.P. and S.M. Melvin. 1993. Call-response surveys for monitoring breeding waterbirds. *Journal of Wildlife Management* 57:27–34.
- \_\_\_\_\_. 1997. Power to detect trends in waterbird abundance with call-response surveys. *Journal of Wildlife Management* 61:1262–1267.
- Lower Colorado River Multi-Species Conservation Program (LCR MSCP). 2004. Lower Colorado River Multi-Species Conservation Program, Volume II: Habitat Conservation Plan. Final. December 17. (J&S 00450.00), Sacramento, CA.
- \_\_\_\_\_. 2010. Beal Riparian and Marsh Restoration Development & Monitoring Plan: Overview. Lower Colorado River Multi-Species Conservation Program, Lower Colorado Regional Office, Boulder City, NV.
- Meanley, B. 1985. The marsh hen: A natural history of the Clapper Rail of the Atlantic coast salt marsh. Tidewater Publ., Centreville, MD.
- Nadeau, C.P., C.J. Conway, M.A. Conway, and M. Ogonowski. 2011. Restoration of managed marsh units to benefit California black rails and other marsh birds: an adaptive management approach, Final Report. Wildlife Research Report #2011-01, USGS Arizona Cooperative Fish and Wildlife Research Unit, Tucson, AZ, USA.
- Sterling, J. 2008. Least Bittern (*Ixobrychus exilis*). In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies and Distinct Population of Birds of Immediate Conservation Concern in California* (Shuford, W.D. and T. Gardali, editors). *Studies of Western Birds* 1. Western Field Ornithologists, Camarillo, CA, and California Department of Fish and Game, Sacramento, CA.
- U.S. Department of the Interior. 1967. *Federal Register*, Vol. 32, No. 48, pp. 4001.
- \_\_\_\_\_. 1995. Migratory nongame birds of management concern in the United States: the 1995 list. Office of Migratory Bird Management, Washington, D.C. 25 p.
- \_\_\_\_\_. 2003. Changes to January 2000 Yuma Clapper Rail Survey Protocol. Memorandum. U.S. Fish and Wildlife Service, Arizona Ecological Services Office, Phoenix, AZ. 2 p.

\_\_\_\_\_. 2006. New Official Survey Protocol for Yuma Clapper Rail Surveys. Memorandum. U.S. Fish and Wildlife Service, Arizona Ecological Services Office, Phoenix, AZ. 9 p.

Zemba, R. and B.W. Massey. 1987. Seasonality of vocalizations by Light-footed Clapper Rails. *J. Field Ornithol.* 58:41–48.

# **ATTACHMENT 1**

Species Lists

Birds observed or encountered during marsh bird surveys in 2012  
 Beal Lake, Havasu National Wildlife Refuge

		March	April	May
Abert's towhee	<i>Melospiza aberti</i>			X
American coot	<i>Fulica americana</i>	X	X	X
American pipit	<i>Anthus rubescens</i>	X		
American white pelican	<i>Pelecanus erythrogynchos</i>	X		
Ash-throated flycatcher	<i>Myiarchus cinerascens</i>		X	
Brown-headed cowbird	<i>Molothrus ater</i>		X	X
Common gallinule	<i>Gallinula galeata</i>	X	X	X
Common raven	<i>Corvus corax</i>	X		X
Common yellowthroat	<i>Geothlypis trichas</i>	X	X	X
Double-crested cormorant	<i>Phalacrocorax auritus</i>	X		
Eared grebe	<i>Podiceps nigricollis</i>		X	
Gadwall	<i>Anas strepera</i>	X		
Gambel's quail	<i>Callipepla gambellii</i>		X	
Great blue heron	<i>Ardea herodias</i>			X
Great egret	<i>Ardea alba</i>		X	X
Great-tailed grackle	<i>Quiscalus mexicanus</i>	X	X	X
Green heron	<i>Butorides virescens</i>			X
Green-winged teal	<i>Anas crecca</i>	X		
Killdeer	<i>Charadrius vociferus</i>	X		
Least bittern	<i>Ixobrychus exilis</i>	X	X	X
Marsh wren	<i>Cistothorus palustris</i>	X	X	X
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>		X	
Northern shoveler	<i>Anas clypeata</i>	X		
Pied-billed grebe	<i>Podilymbus podiceps</i>	X	X	X
Redhead	<i>Aythya americana</i>		X	X
Red-winged blackbird	<i>Agelaius phoeniceus</i>		X	X
Ruddy duck	<i>Oxyura jamaicensis</i>	X	X	X
Song sparrow	<i>Melospiza melodia</i>	X	X	X
Sora	<i>Porzana carolina</i>	X		
Virginia rail	<i>Rallus limicola</i>	X	X	X
Western grebe	<i>Acehmophorus occidentalis</i>		X	X
Western kingbird	<i>Tryannus verticalis</i>		X	
White-winged dove	<i>Zenaida asiatica</i>		X	X
Yellow-breasted chat	<i>Icteria virens</i>		X	X
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>			X
Yuma clapper rail	<i>Rallus longirostris yumanensis</i>		X	X

Birds observed or encountered during marsh bird surveys in 2012  
Big Bend Conservation Area

		March	April	May
Abert's towhee	<i>Melospiza aberti</i>	X	X	X
American coot	<i>Fulica Americana</i>	X	X	X
American kestrel	<i>Falco sparverius</i>	X	X	
Anna's hummingbird	<i>Calypte anna</i>		X	
Barn swallow	<i>Hirundo rustica</i>		X	
Black-crowned night heron	<i>Nycticorax nycticorax</i>			X
Black-tailed gnatcatcher	<i>Poliotilta melanura</i>	X	X	
Brown-headed cowbird	<i>Molothrus ater</i>		X	
Canvasback	<i>Aythya valisineria</i>	X		
Cliff swallow	<i>Petrochelidon pyrrhonota</i>	X		
Common yellowthroat	<i>Geothlypis trichas</i>	X	X	X
Gambel's quail	<i>Callipepla gambelii</i>		X	X
Great blue heron	<i>Ardea herodias</i>	X	X	
Great egret	<i>Ardea alba</i>		X	
Greater roadrunner	<i>Geococcyx californianus</i>		X	
Great-tailed grackle	<i>Quiscalus mexicanus</i>	X	X	X
House finch	<i>Haemorhous mexicanus</i>	X	X	
Ladder-backed woodpecker	<i>Picoides scalaris</i>		X	X
Lucy's warbler	<i>Oreothlypis luciae</i>	X	X	X
Mallard	<i>Anas platyrhynchos</i>	X	X	X
Marsh wren	<i>Cistothorus palustris</i>	X		
Mourning dove	<i>Zenaida macroura</i>	X	X	X
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	X	X	X
Northern shoveler	<i>Anas clypeata</i>	X		
Phainopepla	<i>Phainopepla nitens</i>	X	X	
Pied-billed grebe	<i>Podilymbus podiceps</i>	X	X	X
Red-winged blackbird	<i>Agelaius phoeniceus</i>	X	X	X
Ruddy duck	<i>Oxyura jamaicensis</i>	X	X	
Say's phoebe	<i>Sayornis saya</i>		X	
Sharp-shinned hawk	<i>Accipiter striatus</i>	X		
Song sparrow	<i>Melospiza melodia</i>	X	X	X
Sora	<i>Porzana Carolina</i>	X		
Spotted sandpiper	<i>Actitis macularius</i>		X	
Tree swallow	<i>Tachycineta bicolor</i>	X	X	
Turkey vulture	<i>Cathartes aura</i>	X	X	X
Verdin	<i>Auriparus flaviceps</i>	X	X	
Violet-green swallow	<i>Tachycineta thalassina</i>			X
Virginia rail	<i>Rallus limicola</i>	X		
White-winged dove	<i>Zenaida asiatica</i>			X
Wilson's warbler	<i>Cardellina pusilla</i>			X
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	X	X	X
Yellow-rumped warbler	<i>Setophaga coronate</i>	X	X	

## **ATTACHMENT 2**

Survey Data Sheet

