

**Yuma Clapper Rail Survey along Lower Colorado River
at Topock Gorge, 2004, Final Report**

U.S. Bureau of Reclamation, Lower Colorado Region, Natural Resources Office

Introduction

The Yuma clapper rail (*Rallus longirostris yumanensis*) was listed endangered on 11 March 1967 by the Secretary of Interior pursuant to the Endangered species Act of 1966 (US Dept. of Interior 1968). California listed the Yuma clapper rail rare in 1971 (Leach and Fisk 1972). In 1978, Arizona classified the Yuma clapper rail as group 3, similar to the federal status of endangered (AZ Dept. of Game and Fish Commission 1978).

In 1996, personnel from the Resources Management Office of the Lower Colorado Region, U. S. Bureau of Reclamation (Reclamation) began to conduct surveys for the presence of the Yuma clapper rail in Topock Gorge within the U.S. Fish and Wildlife Service's (USFWS) Havasu National Wildlife Refuge (HNWR), along the lower Colorado River. Surveys were conducted at the request of staff at HNWR. In 2001 and 2002, Reclamation conducted Yuma clapper rail surveys in Topock Marsh, just upstream of Topock Gorge, within HNWR. The USFWS resumed surveys at Topock Marsh in 2003. Reclamation conducts these surveys in accordance with the Biological and Conference Opinion on Lower Colorado River Operations and Maintenance – Lake Mead to Southerly International Border (USFWS 1997), which required that surveys be performed to continually track the population of Yuma clapper rails in order to maintain a minimum breeding population of 700-1000 on the lower Colorado River (USFWS 1983).

Background

The Yuma clapper rail is a large gray brown rail with a slightly decurved bill, very narrow laterally with long legs and toes relative to the body. This very secretive rail feeds mostly on abundant crustaceans found in marsh habitats (Ohmart and Tomlinson 1977). Unlike other subspecies of the clapper rail, *yumanensis* is not restricted to salt water marshes (Eddleman and Conway 1998). It has been found in fresh water marshes along the Virgin and Muddy Rivers and Las Vegas Wash in southern Nevada, the lower Colorado River from Laughlin Bay, Nevada to the Colorado River Delta in Mexico and near the Salton Sea in southern California (Rathbun and Braden 2003, SWCA 1998, Eddleman and Conway 1998). Historically researchers did not believe that the Yuma clapper rail was distributed along the lower Colorado River in the United States (Grinnell 1914, Ohmart and Smith 1973, Rosenberg et al. 1991). Not until the building of dams, which led to the creation of marsh habitats, was the Yuma clapper rail recorded along the lower Colorado River. Dickey recorded the first Yuma clapper rail in 1921, near Laguna Dam, north of Yuma, Arizona, 12 years after Reclamation constructed Laguna dam (Dickey 1923). Naturalists sighted Yuma clapper rails further north of Laguna Dam after Parker, Imperial, and Headgate Rock Dams were built in 1938, 1939, and 1942, respectively (USFWS 1983). The construction of dams created Yuma clapper rail habitat by blocking the flow of sediments which precipitated outward from the river channel, forming sandbars, thus providing suitable substrate for marsh vegetation such as cattails, bulrush, and sedges (Ohmart and Smith 1973).

Radiotelemetry studies of Yuma clapper rail indicate that greater than 75% of the breeding population overwinters along the lower Colorado River (Eddleman 1989, Conway 1990). Eddleman and Conway believe that the Yuma clapper rails migrate locally to search for food and are less vocal in the winter months. Yuma clapper rail males start advertising in February with pair formation beginning shortly afterward (Eddleman and Conway 1998).

Description of Survey Area

The area of study, Topock Gorge, is located along the lower Colorado River between Needles, California and Lake Havasu City, Arizona in Havasu NWR (map1). The predominant vegetation at Topock Gorge consists of bullwhip bulrush (*Juncus californicus*), three-square bulrush (*Scirpus olneyi*), southern cattail (*Typha angustata*) and common reed (*Phragmites communis*). There are also stands of salt cedar (*Tamarix sp.*) and coyote willow (*Salix exigua*) mixed in. There are 52 survey sites with the majority of them located on the eastern side of the Colorado River (Maps 2-4, Fig. 1). A list of other survey areas and the agencies responsible for them (Attachment 1) is included. Reclamation did not survey the Mohave Division in 2003.

Methods

We employed survey protocol and data sheets developed by the USFWS in 1983 and revised in 2000 and again in 2003 (Attachments 2, 3, 4). On current data sheets, we record date, start time, end time, weather, location, route, observers, and other comments as well as rails encountered, their responses and direction and distance from the survey point. This latest version of the data sheet is an optional form more in accordance with established rail survey protocol. From 2000 -2004, the surveys were performed three times between 15 March and 31 May of each year with at least one week between each survey period. Surveys from 1996 through 1999 were done twice during the months of April and May. Each survey period, we attempted to visit each of the 52 sites. Survey periods were conducted at the same time each year. Flat bottomed lightweight power boats provided access to the survey areas. Surveys commenced 30 minutes before sunrise and continued no later than 3 hours after sunrise. Official surveys ceased when winds reached greater than 16 kilometers per hour due to difficulty in hearing the rails over the rustling of the vegetation. We surveyed for the rails using playback recordings of Yuma clapper rail vocalizations provided by the USFWS to elicit responses. Johnny Stewart Bird and Animal game callers were used. The surveyors arrived at the survey site, waited and listened for 1 minute, played clapper rail “kek” and “clatter” call tape for 2 minutes, listened for 2 minutes, play tape for 2 minutes, listened for 1 minute then moved to the next survey site for a total of 8 minutes of survey time at each location. All responses and sightings of Yuma clapper rail were recorded as well as those of the least bittern, Virginia, sora and black rail. General area maps were marked with the location of the birds observed also. All data forms and maps were sent to the Yuma clapper rail coordinator, USFWS-AESO in Phoenix, AZ.

Results

In 2004, surveys were conducted on March 23-24, April 20-21 and May 18-21. One complete survey was done each month and the average used to obtain a yearly detection number. The number of Yuma clapper rails encountered for the months surveyed was 57, 48 and 72, respectively, with the yearly average of 59. Of the 177 Yuma clapper rails that were encountered only 4 were seen. That is a visual encounter rate of 2.3 %. Rails were detected at 4 survey points where they hadn't been found during all of Reclamation's surveys from 1996 to 2004 (Figure 2).

Discussion

Conway et al. (1993) used radiotelemetry in conjunction with playback recordings of Yuma clapper rail along the lower Colorado River at Mittry Lake, north of Yuma, Arizona to determine detection rates for the USFWS protocol. They determined a year-round response rate of 19.2% of the marked birds responding to the recorded calls. During the breeding season (the same time we performed our surveys), the response rate jumped to 40%. Additionally, the use of taped recordings on several visits may cause the birds to alter their behavior and may provide a reason for the decrease of responses (Robbins 1978). The birds may become habituated to the tape recordings and not respond as frequently. Conway et al. and Robbins data suggest that our survey results may show a number less than half the actual number of Yuma Clapper rail that inhabit the gorge.

Although Yuma clapper rail responses at Topock Gorge have fluctuated both during the survey periods and between the years, there has not been a downward trend throughout those years (Fig. 3). It appears to be more of a rollercoaster ride with the car on a steady climb at the present. The highest response in 9 years of Reclamation surveys was during May 2004 with 72 rails. The lowest was in March of 2002 with 17, a difference of 55 rails encountered in a little over 2 years time. These numbers show that the number of rails encountered can vary greatly over a relatively short period of time and the reason or more likely, reasons for these fluctuations are unknown at this time.

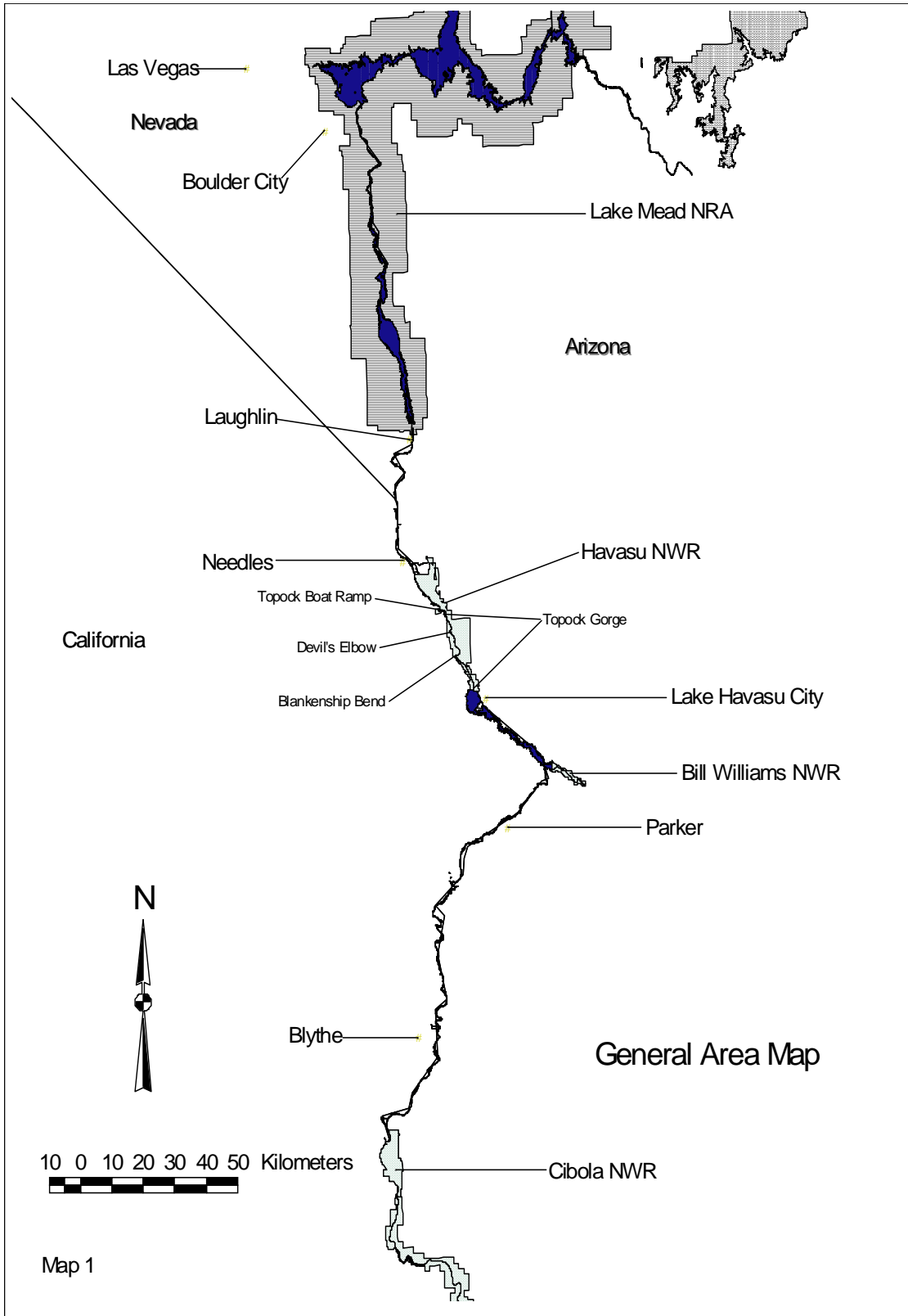
Reservoir levels throughout the survey years have remained fairly constant but there are fluctuations of several feet in the water level during the nesting season. One of the principle causes of nest failure is flooding (Eddleman and Conway 1998). We do not know of an optimum water level in Topock Gorge for Yuma clapper rails.

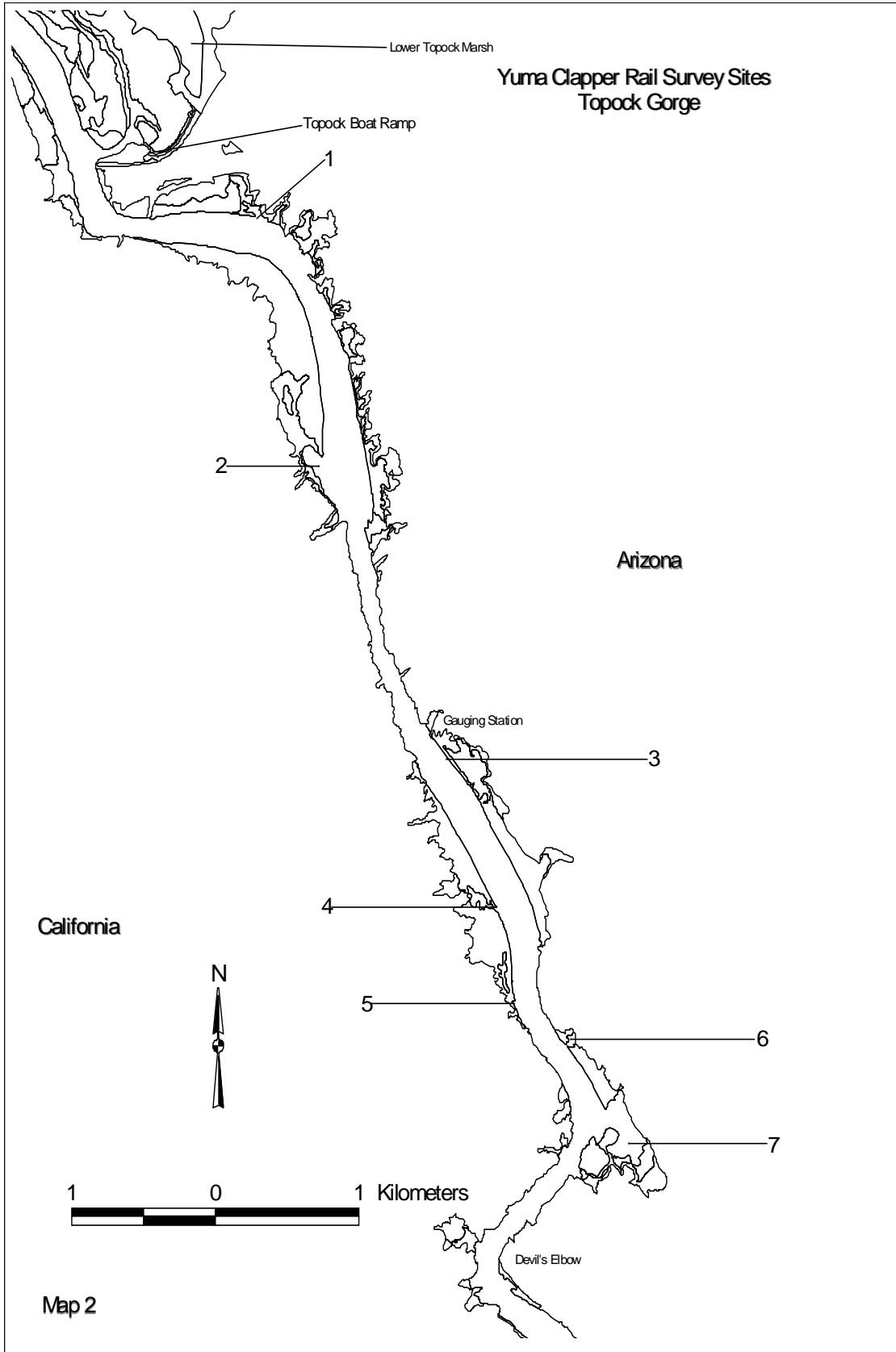
Changes in habitat could also account for the differences in the response levels of Yuma clapper rail between years. Habitat analysis of the survey sites, however, was not performed. If there were any changes of habitat quality during the surveys it is not known. Surveyors have noted minor changes with increases in open water and filling in

of open water and channels with vegetation (J. Swett, per. comm.). Increases or decreases of habitat quality may account for the differences in the yearly response rates but shouldn't account for the response rate changes experienced between months.

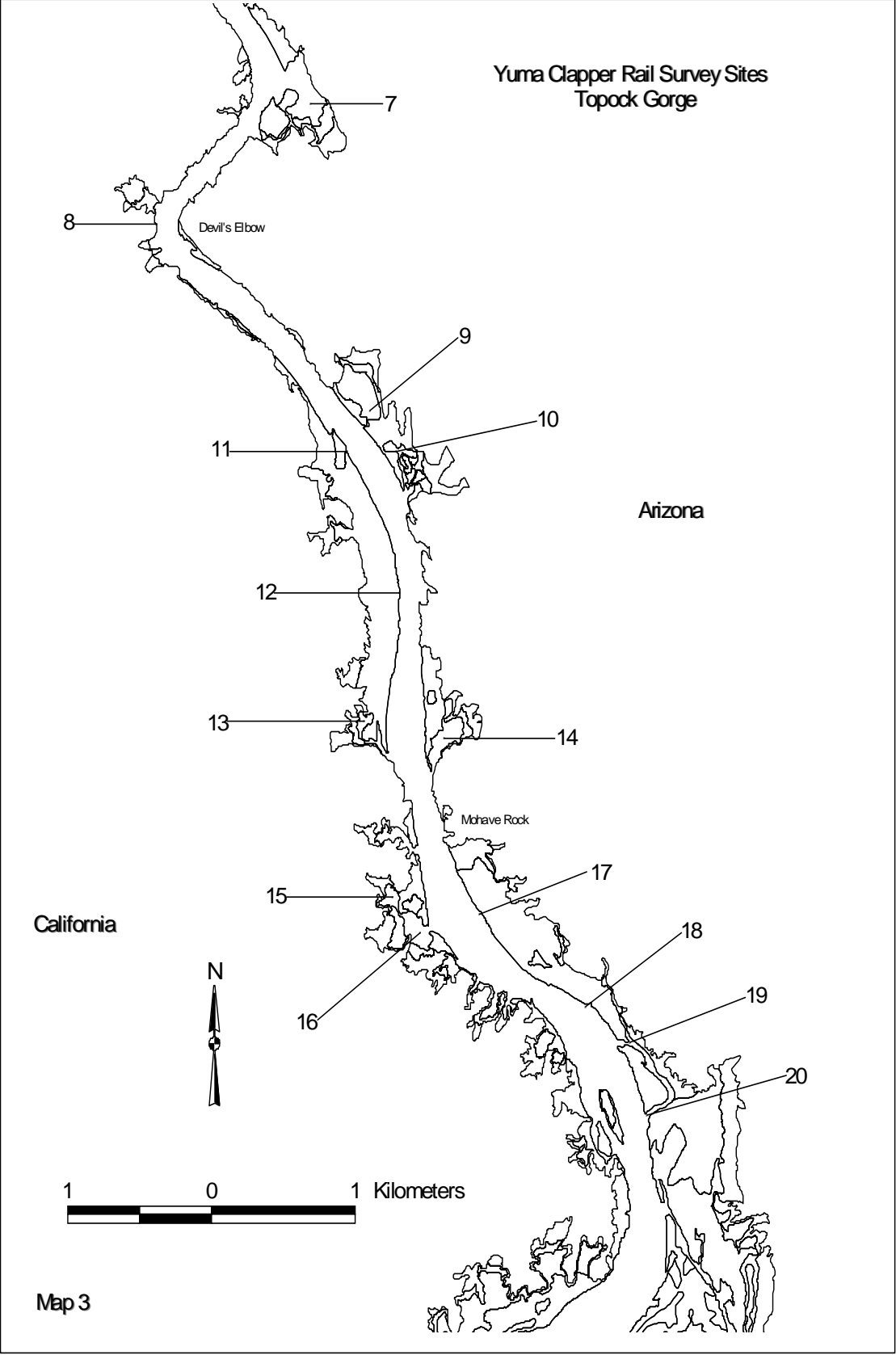
Recommendations

1. Continue survey efforts at Topock Gorge.
2. Look at the significance of water fluctuations and the number of rails encountered. Is there an ideal water level?
3. Perform a more thorough analysis of vegetation composition where Yuma clapper rails are heard and seen including species composition, percentage and distance to shore and open waters and depth of water.
4. Reevaluate areas in Topock Gorge that may potentially provide Yuma clapper rail habitat.





Yuma Clapper Rail Survey Sites
Topock Gorge



California

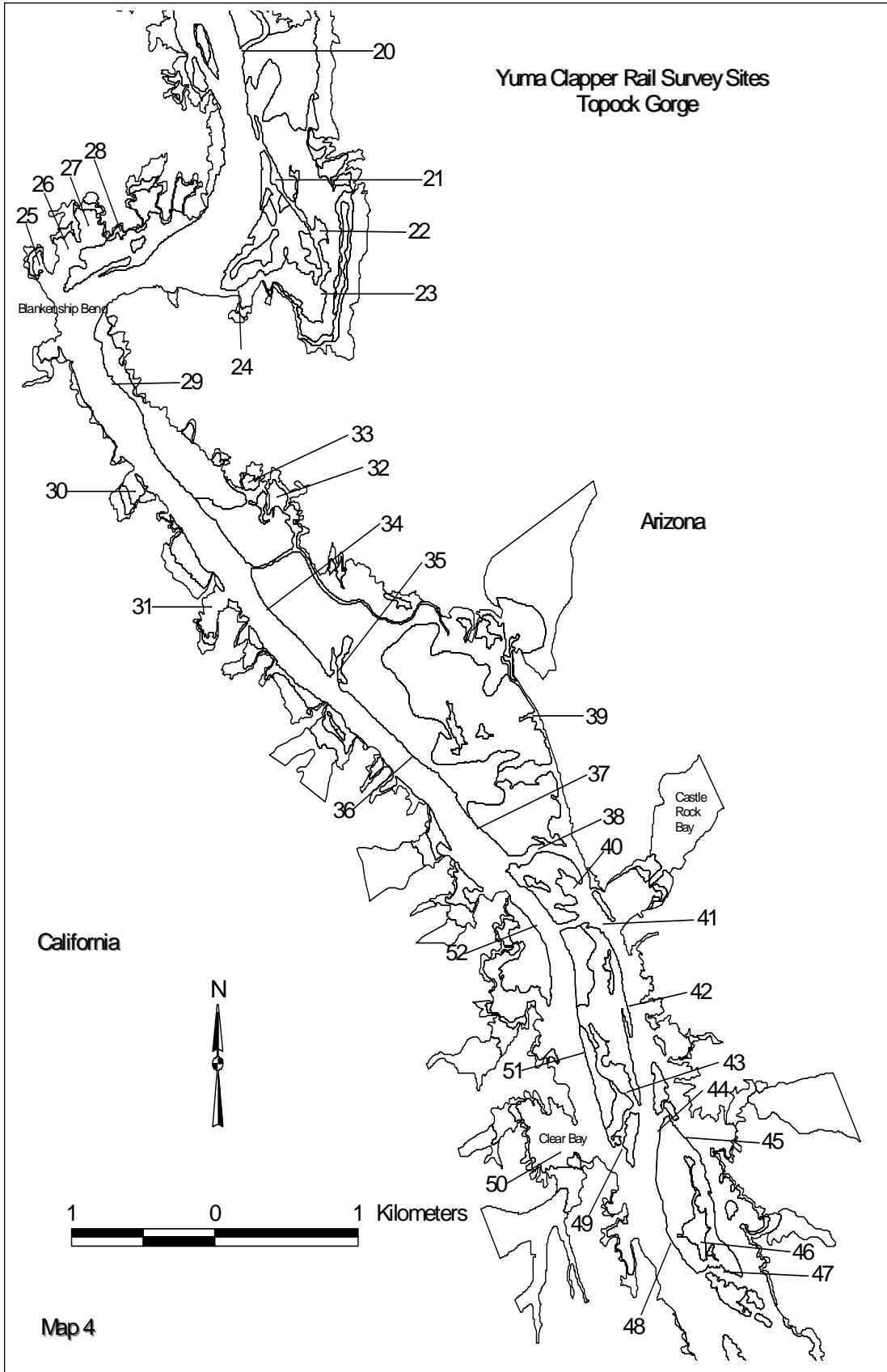
Arizona

N

1 0 1 Kilometers

Map 3

Yuma Clapper Rail Survey Sites
Topock Gorge



California

Arizona

N

1 0 1 Kilometers

Map 4

YUMA CLAPPER RAIL OFFICIAL SURVEY LOCATIONS

ANNUAL SURVEY REQUIRED

Topock Marsh	Fish and Wildlife Service (FWS)
Topock Gorge	Bureau of Reclamation (BOR)
Bill Williams Delta	FWS
Cibola NWR	FWS
Imperial Division	Bureau of Land Management (BLM)#
Imperial NWR	FWS
Mittry Lake/Teal Alley/YPG Slough	Arizona Game & Fish Department (AGFD)
Gila River (Buckeye-Arlington)	AGFD, FWS, Dick Todd
Other Internal Arizona Areas	AGFD, FWS
IWA: Wister Unit	California Department of Fish & Game (CDFG)
Sonny Bono-Salton Sea NWR	FWS
Barnacle Beach (Salton Sea)	FWS
Cienega de Santa Clara	University of Arizona, AGFD, FWS

SURVEY ON THREE YEAR ROTATION*

SURVEY IN 2000 and 2003

Mohave Division	BOR
Parker Division	CDFG, Colorado River Indian Tribes (CRIT)
Laguna Division	AGFD, BLM
Yuma Valley Drains	BOR

SURVEY IN 2001 and 2004

Lake Havasu	BLM
Palo Verde Division	CDFG
Yuma Division	AGFD
Lower Gila River/Quigley Pond	AGFD

SURVEY IN 2002

Parker Strip (CRIT)	CRIT
Cibola Division	CDFG, FWS
Limitrophe Division	AGFD

#BLM has requested assistance from other agencies to complete this location

*locations in this category can be surveyed more often if the responsible agency wishes

**Yuma Clapper Rail Survey Sites
Topock Gorge, Havasu National Wildlife Refuge
Global Positioning System (GPS) Coordinates**

Datum NAD 27
UTM Zone 11

Site #	Easting	Northing	Site #	Easting	Northing
1	731,402	3,844,171	27	735,266	3,831,508
2	731,826	3,842,684	28	735,494	3,831,452
3	732,711	3,840,914	29	735,429	3,830,575
4	733,050	3,840,007	30	735,584	3,829,935
5	733,184	3,839,440	31	736,117	3,829,247
6	733,586	3,839,226	32	736,572	3,829,896
7	733,972	3,838,602	33	736,379	3,829,973
8	732,923	3,837,894	34	736,499	3,829,238
9	734,405	3,836,767	35	736,989	3,828,856
10	734,593	3,836,528	36	737,505	3,828,366
11	734,250	3,836,531	37	737,982	3,827,928
12	734,612	3,835,665	38	738,416	3,827,816
13	734,370	3,834,909	39	738,365	3,828,607
14	734,935	3,834,816	40	738,657	3,827,575
15	734,560	3,833,853	41	738,872	3,827,369
16	734,741	3,833,630	42	739,031	3,826,883
17	735,181	3,833,727	43	739,041	3,826,380
18	735,914	3,833,191	44	739,246	3,826,114
19	736,214	3,832,978	45	739,448	3,826,097
20	736,337	3,832,541	46	739,538	3,825,478
21	736,577	3,831,774	47	739,727	3,825,310
22	736,882	3,831,465	48	739,332	3,825,469
23	736,903	3,831,082	49	738,984	3,826,049
24	736,315	3,831,121	50	738,537	3,826,002
25	734,266	3,831,258	51	738,721	3,826,604
26	735,120	3,831,362	52	738,378	3,827,352

Figure 1, GPS Locations of Survey Sites

General Location _____ Date _____

Observer(s) _____

Survey Method _____ % Cloud Cover _____

Temperature Range _____ Wind Velocity at Start _____ Finish _____

Stop No.	Time	Total Birds Monitored	Sighted	Clatter	Kek	Kek-burr	Other	Habitat Type

Totals

YUMA CLAPPER RAIL SURVEY
COVER SHEET
(January 2000)

Date: _____

Location Information:

Location Name _____ Route _____

Map Name _____ Township/Range/Section _____

Observer(s) _____

Weather:

Start %Cloud Cover _____ Temp _____ Wind Speed _____

End %Cloud Cover _____ Temp _____ Wind Speed _____

Data Summary:

1) Total individual rails seen or heard while surveying _____

2) Number of other rails seen or heard (incidentals) _____

Total rails per route or location equals #1+#2 _____

For rails/hours, each stop is 7 minutes

Observations:

Events during survey that may have affected results:

Other Observations/Comments

Yuma Clapper Rail Survey Data Sheet

January 2000

Location _____ Route _____ Date _____

Weather start _____ end _____ Observer _____

Stop #	Time start	Time stop	Clatter call	Kek call	Other call	Was Rail seen?	Was Rail Heard?	Was Rail Paired?	Other Species?	Habitat Type Where Rail Was Detected?

Page total:
 Total rails recorded on survey _____
 Incidental observations of rails in survey area _____

Literature Cited

- Arizona Game and Fish Commission. 1978. Threatened and unique wildlife of Arizona. Phoenix, 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. *J. Wildl. Manage.* 56: 282-290.
- Conway, C. J. 1990 Seasonal changes in movements and habitat use by three sympatric species of rails. M. S. Thesis, Univ. of Wyoming, Laramie. 58 pp.
- Dickey, D. R. 1923. Description of a new clapper rail from the Colorado River Valley. *Auk* 40 (1):90-94.
- Eddleman, W. R. 1989. Biology of the Yuma Clapper Rail in the southwestern U.S. and northwestern Mexico. Final Rept., Intra-Agency Agreement No. 4-AA-30-02060, U. S. Bur. of Reclam., Yuma Proj. Off., Yuma, AZ
- Eddleman, W. R., and Conway, C. J. 1998. Clapper Rail (*Rallus longirostris*). In *The Birds of North America*, No. 340 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.
- Grinnell, J. 1914. An Account of the mammals and birds of the Lower Colorado Valley. Univ. of Calif. Pub Zool. 12:51-294.
- Leach, H. R., and L. O. Fisk. 1972. At the crossroads- a report on California's Endangered and rare fish and wildlife. Calif. Dept. of Fish and Game. 99 pp.
- Ohmart, R. D. and R. E. Tomlinson. 1977. Foods of western clapper rails. *Wilson Bull.* 89:332-336.
- Ohmart, R. D. and R. W. Smith. 1973. North American clapper rail (*Rallus longirostris*) literature survey with special consideration being given to the past and current status of *yumanensis*. Final Rept. U. S. Bur. Reclam. Contract No 14-06-300-2409. 45pp.
- Rathbun, M. R. and G. T. Braden 2003. The Status of Yuma Clapper Rail and Yellow-Billed Cuckoo along portions of the Virgin River and Muddy River in Southern Nevada for 2002. 29pp.
- Robbins, C. S. 1978. Census Techniques for forest birds. Pages 142-163 in R. M. DeGraff, tech. coord. Proc. workshop management of southern birds for nongame birds. U. S. For. Ser. Gen. Tech. Rep. SE-14, Asheville, NC.

- Rosenberg, K. V., R. D. Ohmart, W. C. Hunter and B. W. Anderson. 1991. Birds of the Lower Colorado River Valley. Univ. of Arizona Press, Tucson.
- SWCA, Inc., Environmental Consultants. 2002. Survey for Yuma clapper rails, yellow-billed cuckoos, and southwestern willow flycatcher along Las Vegas Wash, Clark County, Nevada. Final Report to the Southern Nevada Water Authority, Las Vegas, Nevada, prepared by SWCA Environmental Consultants, Salt Lake City, Utah.
- Tomlinson, R. E. and R. L. Todd. 1973. Distribution of two western clapper rail races as determined by responses to taped calls. *Condor* 75:177-183.
- U. S. Department of the Interior. 1968. Rare and endangered fish and wildlife of the United States. U. S. Bur. Sport Fish. and Wildl. Resour. Publ. No. 34. 251 pp.
- U. S. Fish and Wildlife Service. 1983. Yuma Clapper Rail Recovery Plan. U. S. Fish and Wildlife Service, Albuquerque, NM 51 pp.
- U. S. Fish and Wildlife Service 2002. Yuma Clapper Rail Survey Data 1990-2000. Online search at arizonaes.fws.gov/yuma.htm.

**YUMA CLAPPER RAIL SURVEY
OPTIONAL DATA SHEET
COVER SHEET
MARCH 2003**

Date of survey: _____

Location

Name: _____ Route: _____

Map Name: _____ Township/Range/Section: _____

Observers: _____

Weather:

Start: % Cloud Cover: _____ Temp: _____ Wind Speed: _____ Precipitation: _____

End: % Cloud Cover: _____ Temp: _____ Wind Speed: _____ Precipitation: _____

Instructions:

- Use one line of data sheet for each individual bird detected at each survey point. Where more than one individual encountered, give each individual a number (YCRA 1, YCRA 2 etc.). If a pair is detected, each bird gets a separate line and number. The pair is identified in the "Comments" section.
- If bird is seen but not heard, indicate with an "s" in the data boxes. If seen and heard, indicate with "1s".
- Timed data boxes reflect silent and active call-broadcast periods divided into 8 one-minute intervals. If a bird is seen or heard during any part of each one-minute period, record it. For example, YCRA 1 may be heard during the initial passive minute, the 2nd calling minute, and the 4th calling minute. A notation should be made in each of the three relevant columns.
- In the "calls heard" column, note which types of calls were made by the individual bird during the 8-minute survey period. Please use the following for YCRA calls: kek (k); clatter (c); kekburr (kb); kekhurrah (kh), other (o)
- If other secretive marsh birds are heard during the survey, record them in the same way as the YCRA individuals. A list of species abbreviations and call types is given below:
 - Least Bittern (LEBI: coo, kak, other)
 - Virginia Rail (VIRA: grunt, ticket, kicker, other)
 - Sora Rail (SORA: whinny, perweep, keep, other)
 - Black Rail (BLRA: kickydoo, grr, churt, other)

Data summary:

Number YCRA recorded (seen or heard) during survey: _____

Number YCRA incidentally observed (seen or heard): _____

Comments/Events during survey that may have affected results:

Date:

Location:

Route

Page:

*put an 's' in appropriate column if bird was seen but not heard, '1s' if was seen and heard use one line for each individual (example, YCRA 1, YCRA 2, etc.). If a pair is detected, note which birds are paired in the comments.

Sta #	Time Start	Species of individual Detected	Responded During:							calls heard	repeat?	distance (estimate)	direction	Comments
			Pass 1 min	YCRA 1st	YCRA 2nd	Silent 1st	Silent 2nd	YCRA 3rd	YCRA 4th					

