2010 Wister Marsh Bird Survey

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Introduction

The Wister Unit (Wister) of the Imperial Wildlife Area is located along the southeastern shore of the Salton Sea in Niland, CA, and covers approximately 5,000 acres (Appendix A). Wister was established in 1954 for the protection of migratory birds, the alleviation of crop damage to adjacent farms, and for recreation. There are approximately 189 miles of levees and 27 miles of canals that form terraces between about 40 fields and reservoirs. Grants carried out by groups such as the California Waterfowl Association (CWA) and Ducks Unlimited (DU) help fund management and restoration projects within Wister.

Purpose

The California Endangered Species Act (Sections 2091 and 2092) requires the California Department of Fish and Game (CDFG) "to determine and specify reasonable and prudent alternatives consistent with conserving the species, which would prevent jeopardy to the continued existence of the species." Both the state-threatened and federally-endangered Yuma clapper rail (*Rallus longirostris yumenensis*), and the state-threatened black rail (*Laterrallus jamaicensis cortiurniculus*) utilize the marsh habitat at Wister. The purpose of the survey at Wister is to document marsh bird occurrence within areas managed for rails in order to monitor the population and evaluate the effectiveness of the management for rails.

According to the Biological Opinion that supports the Imperial Wildlife Area Wister Unit Management Plan (CDFG 1989), CDFG is required to manage 100 acres of every 800 acres of wetlands on Wister as "rail priority management areas." Within Wister's property, approximately 4,800 acres are actively managed wetland fields, which results in about 600 acres that require management for rails. Wister management aims for 600-1,000 acres of managed rail habitat each year. The Management Plan states that management practices for rails would occur on a 3-5 year schedule, and would be monitored annually. The plan also specifically states that fields S22, T14, U12, U14, W11C and W11D would be managed primarily for rails. Although S22 and W11C have consistently been managed for rails, the other listed fields are managed for waterfowl. Besides fields S22 and W11C, fields Y16D and 312D have been managed long-term for rails. The remainder of the required acreage has altered throughout the years due to variations in ability to disk and burn the fields.

Methods

Survey methodology followed the Standard North American Marsh Bird Monitoring Protocols (Conway 2005). The order in which the stations were surveyed was determined based on access between points, and remained the same for each round of surveys. The distance at which birds were recorded depended on the distance between points to prevent double-counting, which was the same methodology used in the past surveys. Although drains were not managed for rails, rails detected in drains adjacent to call stations were recorded and noted in the datasheet comment column as "behind in drain" (pers. comm. Lesley Fitzpatrick, 2010). Rails that were

detected behind the call station that were thought to have been missed in previous fields were recorded in the datasheet comment column as "behind," and were later evaluated as to whether they were already recorded at a previous point.

The National Marsh Bird Survey compact disk was provided in March 2010 at the National Marsh Bird Training in Yuma, AZ, conducted by Professor Courtney Conway of the Cooperative Fish and Wildlife Research Unit at the University of Arizona, which contained five minutes of silence followed by four minutes of calls from black rail (*Laterallus jamaicensis*), least bittern (*Ixobrychus exilis*), Virginia rail (*Rallus limicola*) and clapper rail (*Rallus longirostris*). This was the same 9-minute sequence used in previous surveys at Wister. Besides those species, common moorhen (*Gallinula chloropus*), American bittern (Botaurus lentiginosus), pied-billed grebe (*Podilymbus podiceps*) and sora (*Porzana carolina*) were also recorded on the datasheets. American coots (*Fulica americana*) are abundant at Wister but were not recorded in the survey because they are not a target for this project.

The marsh bird disk was transferred onto a Macintosh IPod 7.0 and broadcast with a 9V Radio Shack mini amplifier speaker. The first round of surveys followed the protocol of placing the speaker on the ground. It was determined that this method was possibly not very effective at Wister because of dense tamarisk trees that exist around some of the fields. The speaker was placed on top of the vehicle for the next two rounds of surveys for better broadcasting.

Site Selection

One hundred and seventy call stations were originally established in 2001 at 200m intervals at the perimeter of all of the Wister fields. In 2008, five new possible call stations were added at 200m intervals. For the 2010 survey, seven new possible call stations were established at 400m intervals as required by the survey protocol (pers. comm. Lesley Fitzpatrick, 2010).

Three survey rounds were completed. They occurred from March 22-March 26, April 19-22, and May 17-20.

To determine 2010 survey points, Wister fields were evaluated for potential use by Yuma clapper rails. Prior to the first survey, it was determined that 89 points in 14 fields were suitable for Yuma clapper rail. Some fields were in the middle or near completion of being drained for waterfowl management (T10, T12, T14, U10, and U12), but were surveyed because they were still considered suitable habitat for rails prior to complete draining.

The first round of surveys could not be completed in one week, leaving three points not surveyed in two fields (413B and 515C) in the northwestern-most part of Wister. After the first round of surveys, direction was given to survey only areas that were actively being managed for Yuma clapper rail (Appendix B); therefore, all survey areas were re-evaluated prior to the last two rounds of surveys. Wister management provided the locations of the managed fields and ponds, which were forwarded to our GIS person for mapping and calculating acreage.

Because the fields T10, T12, T14, U10, and U12 were being drained for waterfowl management, those points were removed from subsequent surveys. The call stations for Alcott Rd., Nofsinger Rd. marsh, Scaup Rd, and Spoony Rd. were removed because those areas of habitat occurred on

land owned by the Imperial Irrigation District (IID) with areas leased by the Department but outside of the Wister unit. Most importantly, the marshland there was actually created by IID drains not regularly maintained and not managed by Wister. The second and third surveys, therefore, were focused entirely on those areas that were considered managed to create suitable Yuma clapper rail habitat (Table 1), which in 2010 approximated 914.14 acres, resulting in 49 call stations.

In summary, 38 points remained the same for each of the three rounds of surveys (Appendix C). Six points were dropped after the first survey because they weren't being managed by Wister as rail habitat. Forty-five points were dropped after the first survey because they were being drained for waterfowl management. The three points missed in the first survey due to time were surveyed in the last two rounds. Eight new points were added and surveyed in the last two rounds, although one new point in field 515C proved very difficult to reach and will not be used in future surveys.

Table 1. 2010 Managed Rail Habitat on Wister

Field	Water Delivery	Acreage Managed for YUCR	Date of Last Management Activity (month, year)	Management Activity (disking, burning, draining, etc.)
S22	Delivery ditch	144.32	June 1997	Drain, burn, disk
W11A	Delivery ditch	63.81	June 2005	Drain, burn, disk
W11C	Delivery ditch	58.84	June 2005	Drain, burn
Y16A	Delivery ditch	45.37	June 2009	Drain, burn, disk
Y16D	Delivery ditch	158.29	June 2009	Burn
114C	Delivery ditch	38.74	June 2008	Drain, burn, disk
115B	Delivery ditch	66.47	June 2008	Drain, burn, disk
115C	Delivery ditch	71.94	June 2009	Drain, burn, disk
312B	Delivery ditch	32.81	June 2007	Drain, burn, disk
312C	Delivery ditch	48.34	June 2007	Drain, burn, disk
312D	Mix of delivery ditch and drain water	73.04	June 2008	Burn
413B	Delivery ditch	57.82	June 2009	Drain, burn, disk
515C	Mix of delivery ditch and drain water	54.35	June 2007	Drain, burn, disk

Results

The highest number of Yuma clapper rails was detected in the second survey (Table 2). The difference between the first and second survey was 11 rails. Despite the decrease in stations after the first survey, the average number of clapper rails per station increased from the first to second survey. This is probably due to focusing the survey on the areas within Wister that are actively being managed for the rails; therefore, the habitat should hold a higher value for them. It's also possible that the clapper rails that were detected in the fields being drained during the first survey had moved into the managed clapper rail habitat or into the marsh habitat adjacent to Wister.

On the contrary, Virginia rail detections greatly decreased after the first survey. Most detections of Virginia rails occurred in the fields that were being drained for waterfowl management. These fields had lower water depth and vegetation that was less dense than those actively managed for clapper rails, which is the type of habitat known to be used by Virginia rails (Conway 1995). Based on the detections in the second and third surveys, it does not appear that Virginia rails moved from the drained fields to the managed clapper rail habitat.

Table 2. Survey Results for Yuma Clapper Rail (CLRA), Least Bittern (LEBI), and Virginia Rail (VIRA).

SPECIES	SURVEY REPLICATE	TOTAL BIRDS DETECTED
CLRA	1	119
	2	130
	3	79
LEBI	1	5
	2	8
	3	9
VIRA	1	25
	2	2
	3	1

No black rails were detected in the 2010 survey.

Comparing bird detections between the passive and broadcast portions of the survey shows that the third round of surveys had the greatest difference for clapper rail (28.6%), with the majority of birds detected by broadcasting (Table 3). In contrast, Virginia rail detections were highest with broadcast in the first survey (72%).

Table 3. Survey Results for the Passive and Broadcast Sessions for CLRA, LEBI, and VIRA.

				MEAN # BIRDS/STATION		
SPECIES	**SURVEY REPLICATE**	**TOTAL PASSIVE**	**TOTAL BROADCAST**	**PASSIVE**	**BROADCAST**	**TOTAL BIRDS**
CLRA	1	88	87	1.0	1.0	116
	2	88	92	1.8	1.9	121
	3	30	50	0.6	1.0	70
LEBI	1	3	4	0.0	0.0	5
	2	5	7	0.1	0.1	8
	3	3	8	0.1	0.2	9
VIRA	1	6	24	0.1	0.3	25
	2	0	2	0.0	0.0	2
	3	0	1	0.0	0.0	1

This chart does not include birds detected immediately before or after the survey. No BLRA were detected in the 2010 survey.

Comparing bird detections between Table 2 and Table 3, it is clear that there were a number of clapper rails that were detected either just prior to or just after the survey but were not detected

during the survey. These additional bird detections for each survey round were 3, 9, and 9, respectively. It's possible that these birds were disturbed by the presence of the surveyor or by the survey, itself.

If only the 38 points that were surveyed in each round are compared, there is a 13-23% difference in the numbers of Yuma clapper rail detections (Table 4). Despite the fact that the surveys following the first one focused on the managed habitat, the clapper rail numbers did not increase overall for those 38 points. As mentioned earlier, only the average number of clapper rails per station increased after the first survey.

Least bitterns appear to have the greatest difference in detections for the 38 points surveyed, although there were so few of them that it's too difficult to make any assumptions. Virginia rail numbers are much lower for the managed clapper rail sites as evident when comparing the first survey data. Their numbers severely drop after the first survey, suggesting that over half of them occurred in the areas not managed for Yuma clapper rail, and perhaps preferred those waterfowl-managed areas.

Table 4. Comparison of Survey Results for CLRA, LEBI, and VIRA.

SPECIES	SURVEY REPLICATE	TOTAL BIRDS DETECTED		PERCENT DIFFERENCE
		ALL POINTS SURVEYED	SAME POINTS SURVEYED	
CLRA	1	119	93	22
	2	129	112	13
	3	79	61	23
LEBI	1	5	2	60
	2	8	3	63
	3	9	8	11
VIRA	1	25	12	52
	2	2	1	50
	3	1	1	0

No black rails were detected in the 2010 survey.

If the fields that are actively managed for Yuma clapper rail are compared by number of rail detections per acre, it seems that the most productive fields for rails are S22, 115 B/C, and 312 B/C/D (Table 5). It's interesting that S22, a field managed for rails for the most consecutive years, had the highest percent of rails/acre even though the last time it had experienced any management actions was in 1997. Field 115 B/C had ponds burned and disked in 2008 and 2009, while field 312 B/C/D had ponds burned in 2007 and 2008.

Table 5. Survey Results by Field for CLRA for the Managed Rail Habitat

FIELD	SURVEY REPLICATE	TOTAL BIRDS DETECTED	NUMBER BIRDS/ACRE
S22	1	34	0.24
	2	48	0.33
	3	30	0.21
W11A/C	1	3	0.02
	2	17	0.14
	3	5	0.04
Y16A	1	7	0.15
	2	3	0.07
	3	1	0.02
Y16D	1	2	0.01
	2	16	0.10
	3	10	0.06
114C	1	Not Surveyed	N/A
	2	4	0.10
	3	0	0.00
115 B/C	1	27	0.20
	2	46	0.33
	3	12	0.09
312 B/C/D	1	20	0.13
	2	25	0.16
	3	18	0.12
413B	1	Not Surveyed	N/A
	2	0	0.00
	3	2	0.03
515C	1	Not Surveyed	N/A
	2	1	0.02
	3	1	0.02

There were only three marsh birds detected in adjacent unmanaged drains, and all were located from the same point (B17C) from the same drain that runs south of field 312B. They included two clapper rails in the second round of surveys and one least bittern in the third round. These birds were not included in the calculations for this report, but are interesting to note because it shows that rails do use the drains at Wister, which was suggested in an early analysis of Imperial Wildlife Area habitat (Gelfand and Blankinship 1977).

Discussion

Based on the results of this survey, it appears that the Yuma clapper rail population at Wister has decreased since 2009. There are several factors that could account for this decline. Looking at the results of the past years, it is possible that the population is simply on a downward trend in a naturally fluctuating population (Figure 1). This possible trend is also somewhat mirrored in the annual count for all of the areas in the United States that are managed for Yuma clapper rails (Figure 2).

Figure 1. Yuma Clapper Rail Survey Results at Wister

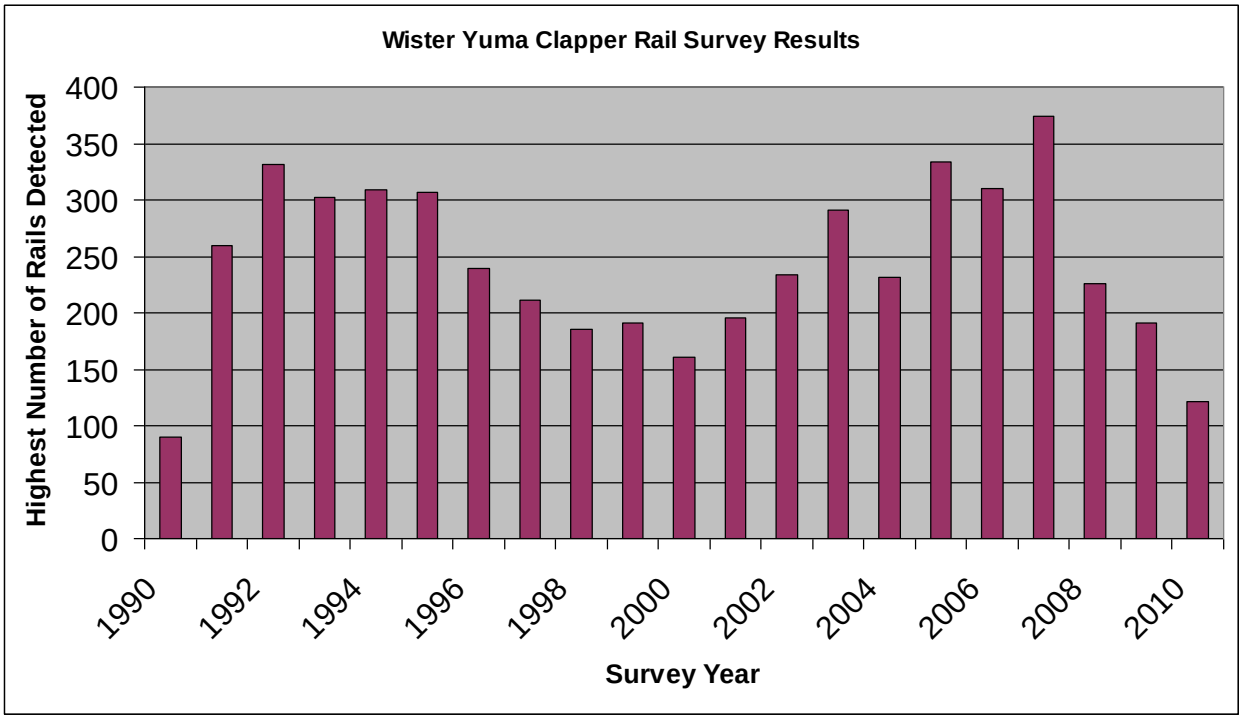
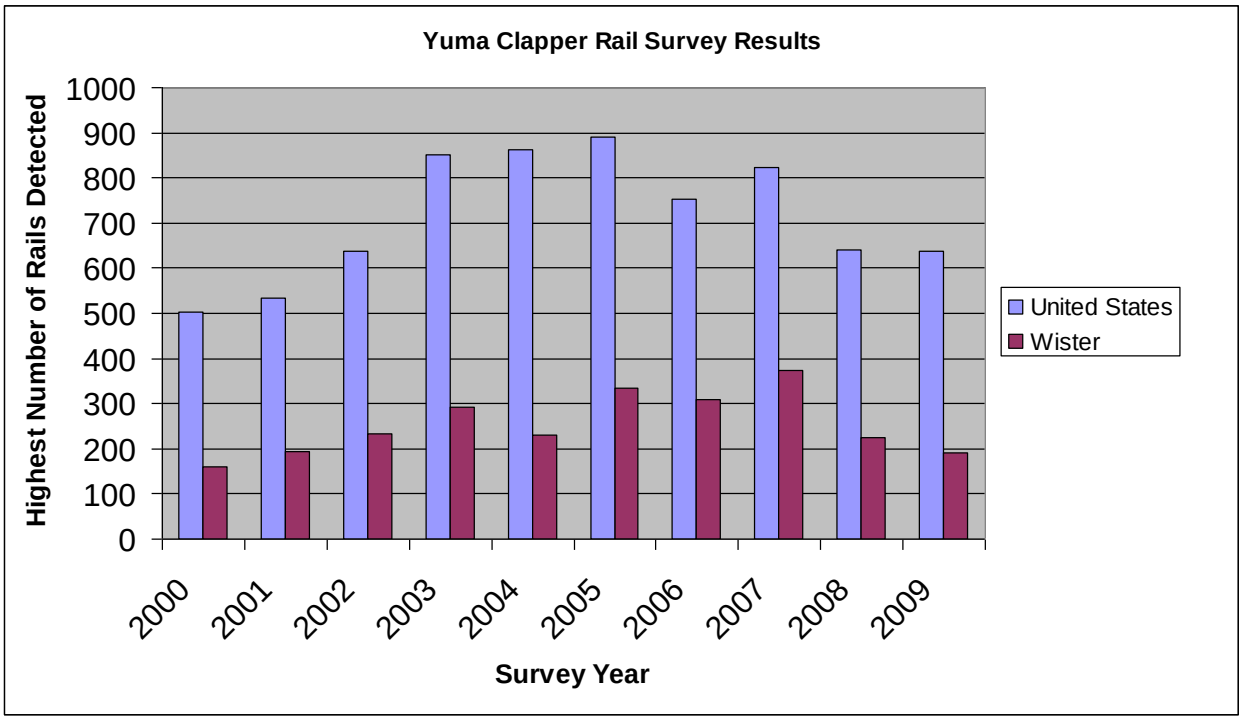


Figure 2. Comparison of Yuma Clapper Rail Survey Results at Wister to Managed Areas in the United States.



Source: Fitzpatrick, Lesley. 2009. Yuma Clapper Rail Survey Data 2000-2009. U.S. Fish and Wildlife Service

On the other hand, the only fields at Wister that are permanently managed for clapper rails every year are S22, W11C, Y16D, and 312D. The constant shuffling of clapper rail habitat makes it difficult to evaluate the effectiveness of the management. Management challenges occur, as well. Two of the ponds managed for Wister, 312D and 515C, are fed by a mix of delivery ditch and drain water. Drain water can't be actively managed, so controlling water for these fields is difficult. In addition, part of the acreage delineated in field 115 as managed rail habitat is actually the drainage ditch that runs along the north side of the field. Ponds in W11A and Y16A were considered managed Yuma clapper rail habitat, but they both contain reservoirs, which are much greater than the six inches found effective for clapper rails at Wister in the Imperial Valley Clapper Rail Survey (Smith 1974). All of these conditions lead to the belief that the area managed for rails is actually less than delineated.

Changes in water level could also contribute to a decline in rail numbers. Gould (1975) noted that constant fluctuations in water level were unfavorable to Yuma clapper rails. Fields once beneficial to rails and then drained within their breeding season could result in lost clutches.

The marsh habitat adjacent to Wister that is created by a backup of irrigation drain water has probably increased in acreage because the drains have not been cleared for the past several years. This area, located between Wister and the Salton Sea, was surveyed in the first round. All points within this area had detections of clapper rails (Appendix D). It's possible that this somewhat permanent, contiguous marsh habitat was being selected by clapper rails over the scattered areas managed at Wister. Regardless, the Wister managed rail habitat should still be able to support more clapper rails than were detected. If field S22 can support around 0.2-0.3 rails per acre, it is possible to manage the other fields to support just as many rails, if not more.

Because there was strong evidence that raccoons have been in and around the areas managed for Yuma clapper rail within Wister, a raccoon trapping and eradication project was begun on October 11, 2010 and is planned to continue. It was paused as of February 24, 2011, to avoid trapping during the bird nesting season. There were 14 trapping days total, which resulted in only one raccoon (dispatched) and one skunk (released), although raccoon tracks are still evident in the managed rail areas and observations have been made of large raccoons roaming the area. This has led to the assumption that the traps could be too small for the raccoons in the area and larger traps are currently being pursued, as well as possible assistance from the USDA Animal and Plant Health Inspection Service (APHIS).

Future Activities

Wister management is pursuing grants towards restoration of selected fields for waterfowl management. No grants have been made available for nongame habitat management, although some of the work performed for waterfowl may benefit rails.

IID currently oversees the Managed Marsh, a 949-ac marsh created as mitigation for IID activities that impact drain-covered species within IID jurisdiction. The Managed Marsh is being created to target Yuma clapper rail and black rail. Planting began in 2009, and the vegetation will possibly be mature enough for occupancy of rails in 2012. Surveys are anticipated for the 2012 marsh bird survey season. The marsh is located about a mile southeast of Wister and might

compete with Wister habitat at first, although ultimately it would be expected that the rail population would increase in this area because of its existence.

References

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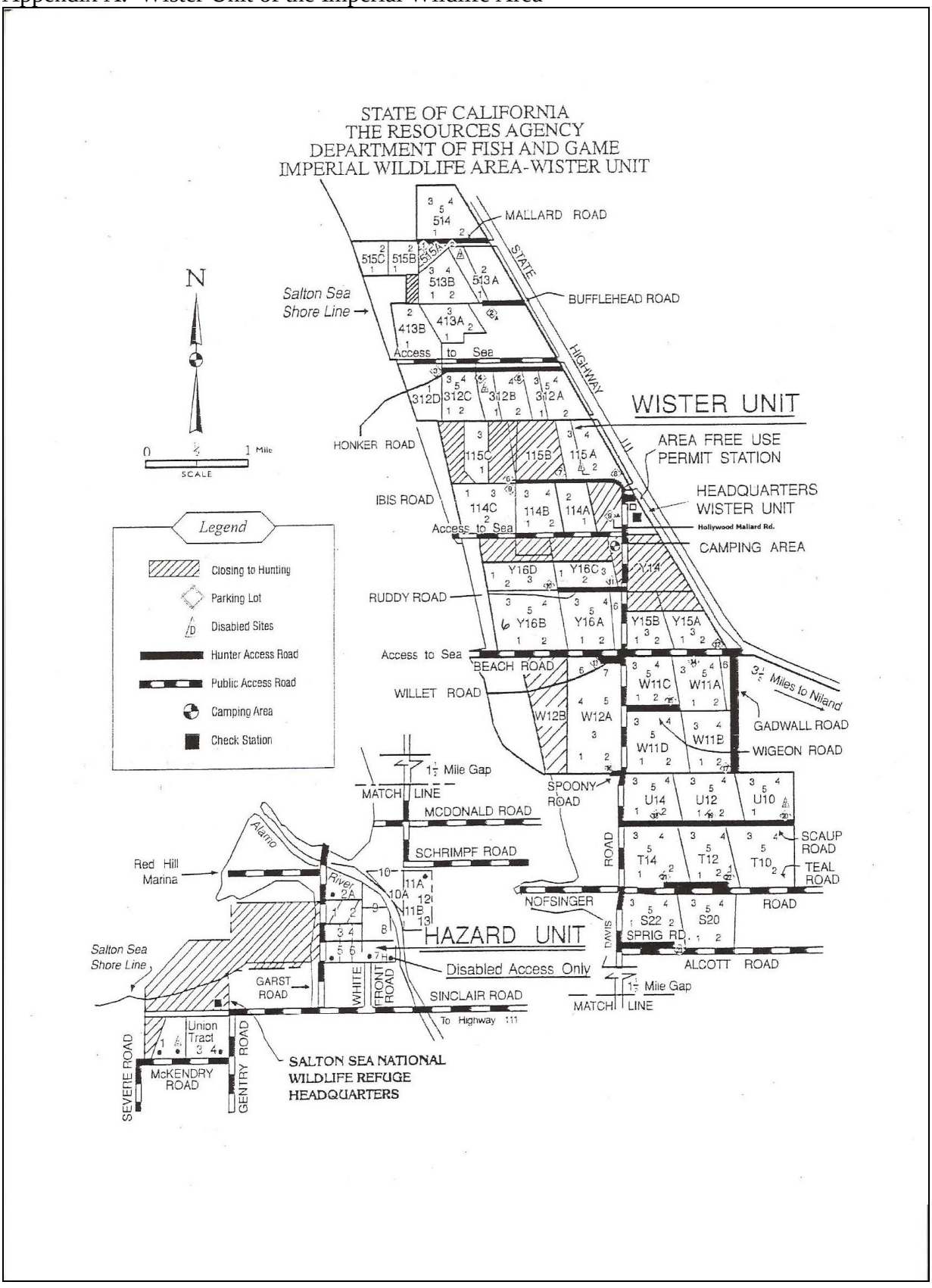
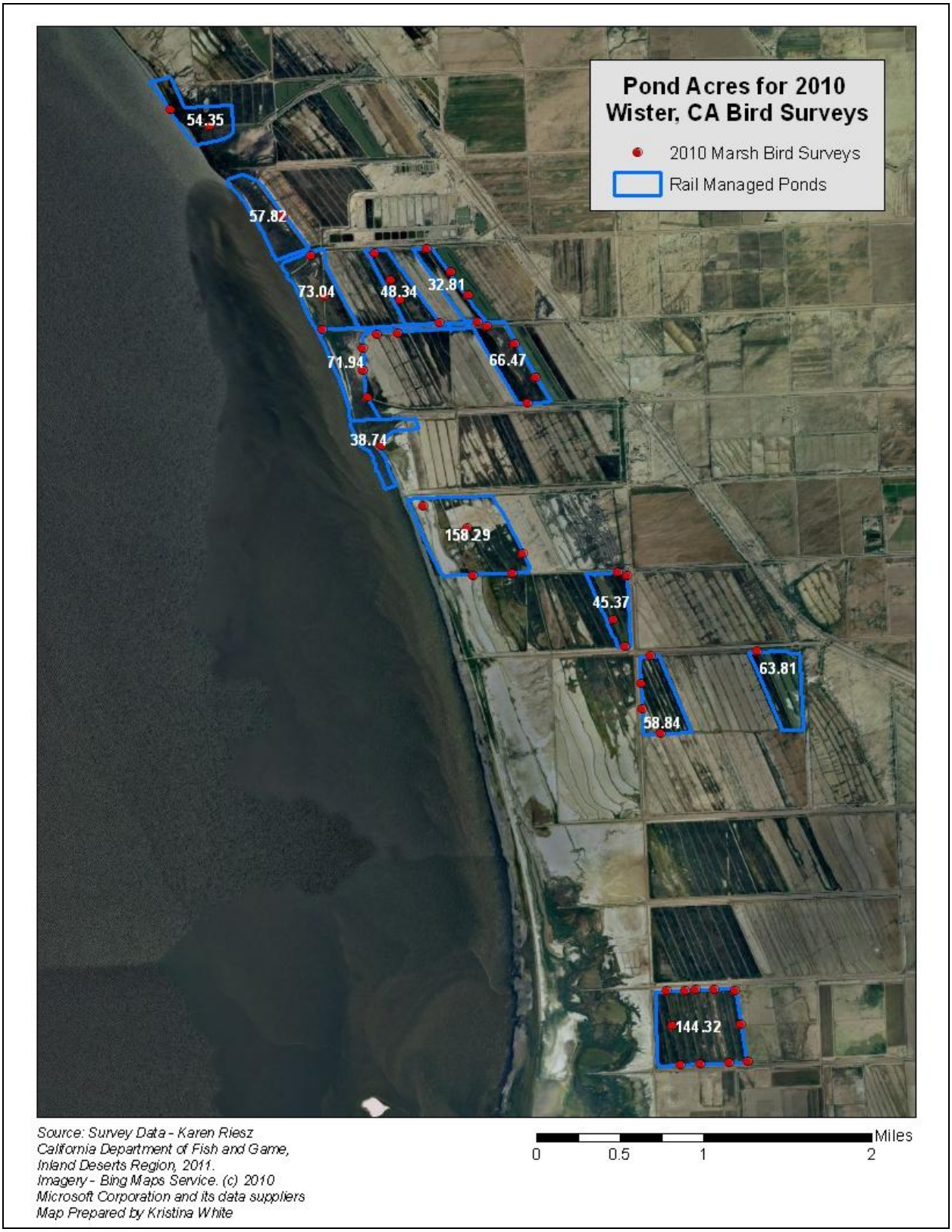
Appendix A. Wister Unit of the Imperial Wildlife Area



Appendix B. Marsh Bird Areas Managed for 2010 and Surveyed in the Second and Third Survey Rounds



Appendix C. Marsh Bird Stations Surveyed Per Field

Field	Survey Replicate 1	2	3	Situation
Alcott Rd Marsh	ALCOT1			IID leased land
	ALCOT2			IID leased land
S22	C9	C9	C9	Managed for Yuma clapper rail
	C6	C6	C6	Managed for Yuma clapper rail
	C7	C7	C7	Managed for Yuma clapper rail
	C1	C1	C1	Managed for Yuma clapper rail
	C8	C8	C8	Managed for Yuma clapper rail
	C3	C3	C3	Managed for Yuma clapper rail
	C4	C4	C4	Managed for Yuma clapper rail
	C4A	C4A	C4A	Managed for Yuma clapper rail
	C5	C5	C5	Managed for Yuma clapper rail
	C5A	C5A	C5A	Managed for Yuma clapper rail
	C9A	C9A	C9A	Managed for Yuma clapper rail
Noffsinger Rd Marsh	NOFF2			IID leased land
	NOFF1			IID leased land
T10, T12, T14	A1A			Managed for waterfowl
	A1			Managed for waterfowl
	A2			Managed for waterfowl
	A3			Managed for waterfowl
	A4			Managed for waterfowl
	A5			Managed for waterfowl
	Pin1			Managed for waterfowl
	A6			Managed for waterfowl
	A7			Managed for waterfowl
	A8			Managed for waterfowl
	A8A			Managed for waterfowl
	A13			Managed for waterfowl
	A14			Managed for waterfowl
	A15			Managed for waterfowl
	A16			Managed for waterfowl
	A17			Managed for waterfowl
	A18			Managed for waterfowl
	A19			Managed for waterfowl
	A23			Managed for waterfowl
	A24			Managed for waterfowl
Scaup Rd Marsh	SPOON1			IID leased land

Appendix C. (cont.)

U10, U12	A27			Managed for waterfowl
	A28			Managed for waterfowl
	A29			Managed for waterfowl
	A30			Managed for waterfowl
	A30A			Managed for waterfowl
	A34			Managed for waterfowl
	A35			Managed for waterfowl
	A36			Managed for waterfowl
	A37			Managed for waterfowl
	A38			Managed for waterfowl
	A39			Managed for waterfowl
	A40			Managed for waterfowl
W11A, W11C	A50D			Managed for waterfowl
	A50C	A50C	A50C	Managed for Yuma clapper rail
	A50B	A50B	A50B	Managed for Yuma clapper rail
	A50A	A50A	A50A	Managed for Yuma clapper rail
	A50	A50	A50	Managed for Yuma clapper rail
	A49			Managed for waterfowl
	A49A			Managed for waterfowl
		A53	A53	Managed for Yuma clapper rail
Spoony Rd Marsh	SPOON2			IID leased land
Y15A, Y15B	B37			Managed for waterfowl
	B36			Managed for waterfowl
Y16A	B38	B38	B38	Managed for Yuma clapper rail
	B38A	B38A	B38A	Managed for Yuma clapper rail
	B39	B39	B39	Managed for Yuma clapper rail
	B40	B40	B40	Managed for Yuma clapper rail
	B41			Managed for waterfowl
Y16D	B33	B33	B33	Managed for Yuma clapper rail
	B33B	B33B	B33B	Managed for Yuma clapper rail
		B33A	B33A	Managed for Yuma clapper rail
	B33C	B33C	B33C	Managed for Yuma clapper rail
	B33D	B33D	B33D	Managed for Yuma clapper rail
114A, 114B	B31A			Managed for waterfowl
	B29C			Managed for waterfowl
	B28A			Managed for waterfowl
	B29D			Managed for waterfowl
	B28C			Managed for waterfowl
	B28			Managed for waterfowl
114C		114C	114C	Managed for Yuma clapper rail

Appendix C. (cont.)

115 B, C	B49A	B49A	B49A	Managed for Yuma clapper rail
	B19A	B19A	B19A	Managed for Yuma clapper rail
	B19C	B19C	B19C	Managed for Yuma clapper rail
	B19B	B19B	B19B	Managed for Yuma clapper rail
	B19	B19	B19	Managed for Yuma clapper rail
	B20			Managed for waterfowl
		B25	B25	Managed for Yuma clapper rail
	B24	B24	B24	Managed for Yuma clapper rail
	B23A	B23A	B23A	Managed for Yuma clapper rail
	B23	B23	B23	Managed for Yuma clapper rail
312 B,C,D		B17D	B17D	Managed for Yuma clapper rail
		B17A	B17A	Managed for Yuma clapper rail
		B17B	B17B	Managed for Yuma clapper rail
		B17C	B17C	Managed for Yuma clapper rail
	B16A	B16A	B16A	Managed for Yuma clapper rail
	B16C	B16C	B16C	Managed for Yuma clapper rail
	B16B	B16B	B16B	Managed for Yuma clapper rail
	B16D	B16D	B16D	Managed for Yuma clapper rail
	B51	B51	B51	Managed for Yuma clapper rail
	B52	B52	B52	Managed for Yuma clapper rail
	B50	B50	B50	Managed for Yuma clapper rail
413		B144	B144	Managed for Yuma clapper rail
515C		B4	B4	Managed for Yuma clapper rail
		B4A	B4A	Managed for Yuma clapper rail
Total Points Surveyed	**89**	**49**	**49**	

Gray = Stations not surveyed.
Green = Stations that remained the same throughout the survey season.
Pink = Stations that were not surveyed in the first round of surveys.
Purple = Stations that did not formerly exist, but were created and surveyed in 2010.

Appendix D. Marsh Bird Stations Surveyed in 2010