

Status and Distribution of The Light-footed Clapper Rail in California, 2006.

Report To

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Abstract

The twenty-eighth annual census of the Light-footed Clapper Rail in California was conducted from 2 March to 1 June 2006. Thirty coastal wetlands were surveyed by assessing call counts from Carpinteria Marsh in Santa Barbara County, south to Tijuana Marsh National Wildlife Refuge (NWR) on the Mexican border.

A total of 408 pairs of Light-footed Clapper Rails exhibited breeding behavior in 18 marshes in 2006. This is the largest statewide breeding population detected since the counts began in 1980, representing a 13.3% increase over the former high count in 2005 and a 25.5% increase over the longer standing high in 1996. This is the third year in succession of record-breaking high counts. Upper Newport Bay was once again the largest subpopulation in California but was 9% smaller than in 2005. Tijuana Marsh NWR was at an all-time high level of 102 pairs, a 17% increase over 2005. The Newport subpopulation comprised 38.7% of the state population in 2006 and together with the subpopulation in the Tijuana Marsh NWR totaled 260 pairs, or 63.7% of the breeding population of this rail in California.

The subpopulation on the San Dieguito River became the third largest in the state with 31 pairs, the largest ever recorded in a freshwater marsh. Point Mugu was back up to 17 pairs, its second highest total, after inexplicably dropping from 19 pairs in 2004 to 14 pairs in 2005. The Seal Beach tally was up slightly at 21 pairs, and Batiquitos Lagoon with 19 pairs and San Elijo Lagoon with 15 pairs were at their highest recorded levels. Three other small subpopulations were at record or recent highs including Buena Vista Lagoon with 8 pairs, Agua Hedionda with 7 pairs, and Los Penasquitos with 7 pairs. In addition, another new subpopulation was documented in the Santa Ana River Marsh comprising a minimum of 4 breeding pairs.

Excluding the 2 largest subpopulations, there were 5 subpopulations in double figures, ranging from 17 to 31 pairs and totaling 103 breeding pairs or 25.2% of the state total. The remaining 11 subpopulations ranged from 1 to 8 pairs and totaled 45 breeding pairs of clapper rails, or 11% of the total. The rebounding of several of the small subpopulations gives reason to believe that restoration and management can work for the Light-footed Clapper Rail.

Introduction

The Light-footed Clapper Rail (*Rallus longirostris levipes*) is a State and Federally listed endangered species that is resident in coastal wetlands in southern California and northern Baja, California, Mexico. Loss and degradation of habitat threaten the continued existence of this bird, although management efforts now offer some promise of eventual recovery. The California population of this endangered rail was at a former high of 325 pairs in 15 marshes in 1996, the largest number detected breeding since statewide annual surveys were begun in 1980 until 2004 when 350 pairs were detected in 15 marshes.

One of the first major investigations of this rail identified the lack of suitable nesting habitat as a major, widespread limiting factor (Massey and Zembal 1980). Subsequent work demonstrated the need for emergency actions and recommended management strategies to stem the alarming population decline of this endangered bird in southern California. The actions taken have included: 1) habitat restoration, particularly through enhancement of tidal action to former wetlands; 2) study and control of introduced predators and unnaturally high predator populations; 3) provision of nesting sites in marshes with good habitat but limited options for protected nesting locations; 4) studies that have led to adaptive management strategies, benefiting the rail and the other co-inhabitants of these biologically rich ecosystems; 5) development of a protocol for captive breeding and genetic and demographic augmentation of smaller subpopulations; and 6) surveys of the California population, in part to track the effects of management on annual recruitment.

Implementation of these measures has succeeded in protecting and maintaining most of the small subpopulations and in supporting the expansion of a few. However, the benefits of this attention go far beyond this single species. These endangered birds thrive in our most productive, remaining coastal wetlands. Measures that benefit this rail and its environs enhance conditions for a myriad of other species as well, including people. These places and the wildlife are cherished by hundreds of thousands of southern Californians for their inherent aesthetic, recreational, economic, scientific, educational, and ecological values. Furthermore, there are essential links between the coastal wetlands and vast acres of diverse upland habitats and wildlife located many miles from the coast (Soule et al. 1988, Zembal 1993). Consequently, restoring and maintaining the diversity and vital productivity of the coastal wetlands, while achieving the recovery of the Light-footed Clapper Rail, may only be possible in an environment that includes coastal southern California's complete wildlife heritage.

Hundreds of wetland acres have undergone, or are being planned for restoration. However, full recovery and functionality of a coastal wetland may take decades to achieve. In the meantime, habitat suitability for the clapper rail may be quite marginal. All but a few of the current subpopulations of Light-footed Clapper Rails depend upon a marginal habitat base and are too small to be expected to maintain themselves without management.

Population monitoring is essential in understanding the effects of other management efforts and in stewardship of this critically endangered bird toward recovery. Reported herein are the results of the 2006 statewide survey of the Light-footed Clapper Rail.

Methods

The twenty-eighth consecutive annual census of Light-footed Clapper Rails in California was conducted from March 2 through May 31, 2006. Thirty coastal wetlands were surveyed by mapping territorial pairs based on their calls (Zembal and Massey 1981, 1985; Zembal 1992). All of the coastal marshes with known or suspected rail subpopulations were surveyed until an evening or early morning with good calling activity was encountered. Small wetlands with no recent clapper rail sightings that again yielded negative results were surveyed at least twice as

were marsh parcels with lower than expected results on the first call count. Additionally, nesting data were considered in the assessment of the subpopulations inhabiting the 5 wetlands wherein such data were gathered in 2006 and a high tide count was accomplished on November 15, 2005 on the Seal Beach NWR. This NWR is the only wetland inhabited by clapper rails that is inundated thoroughly enough during a 6.5 ft. tide or higher to get a relatively complete visual survey of the rails.

In the 4 marshes with abundant clapper rails, mapping spontaneous calls was the prevalent technique. In marshes with few rails and along long, narrow strips of habitat, playbacks of taped "dueting" were used sparingly to elicit responses. In the Tijuana Marsh NWR, enough observers were stationed within potential hearing range of any calling rail to cover the entire marsh on a single evening. However, most of the marshes were surveyed by a single observer visiting discrete patches of habitat on consecutive evenings until all available habitat had been covered. Most of the observations were those of three observers, but primarily the principal investigator. Additional observers participated primarily in three of the year 2006 counts, those at Seal Beach NWR, Tijuana Slough NWR and Sweetwater Marsh NWR.

The more movement required of an observer during a survey, the more likely that breeding, but infrequently calling, rails would be missed. Calling frequency and the detection of calls are influenced by observer's hearing ability and experience with the calls, the stage of breeding of individual pairs, rail density, and weather conditions (Zembal and Massey 1987). Many surveys attempted on stormy, windy days needed to be repeated. When calling frequency is high with many rounds of calling as adjacent pairs respond to one another, it is possible to map the rails accurately and move on to survey more marsh. However, under usual circumstances approximately 20 ha (50 acres) of marsh can be adequately covered during a single survey.

Surveys are usually conducted in the 2 hrs before dark, but some are done at first light to about 2 hrs after sunrise. In the past, early morning and late evening surveys have been comparable, although evening calling by the rails is more intense and often ends with one or more flurries of intense calling (Zembal et al 1989).

The playback of a taped "clapping" call appears to be responded to by the rails as if a living pair is calling nearby. However, work done with Yuma Clapper Rails (*Rallus longirostris yumanensis*) strongly suggests that those closely related rails can become conditioned to the tape if it is used excessively (B. Eddleman, pers. comm.). During prime calling times in the evening or early morning, a playback sometimes elicits a single response or a round of calling. However, there are sometimes no vocal responses to the tape. If played at a time of day when the rails are not particularly prone to call, the only response likely to be elicited is that of the territorial pair intruded upon. Sometimes the response is non-vocal investigation by the pair or one member. Repeated playbacks are likely to elicit aggression. In one instance, a clapper rail attacked and knocked over a decoy that was set near a repeating tape. In another instance, a male attacked another rail, presumably a female, forcefully copulating with her while pecking at the head and neck, dislodging feathers. We finally disturbed these birds (RZ) to divert the male's aggression. Subsequently, playbacks have been used sparingly and with caution.

When used only once per year at a given marsh and with minimal repetition, playbacks have yielded important results. Unmated clapper rails, for example, often respond at considerable distances and may approach the tape. Isolated single rails often approach very closely and remain in the vicinity unless displaced.

In assessing the rail population, duets and some single "clapperings" were treated as territories. Since advertising singles are not indicative of an occupied territory with reproductive potential at the time of the survey, they are not included in the population total. However, a single "clapping" is as good an indicator of a territory as a duet, when advertising is not heard later from the same territory. Eventually, during a 2 – 4 hr census period, pairs often dueted from territories where only single pair members had called earlier. However, the fewer rails in a marsh, the more important it is to count only duets as pairs to avoid over-estimating the breeding subpopulation.

The 2006 call counts were conducted on 37 dates and totaled 329 field-hours.

Study Areas

Descriptions of all the marshes recently occupied by Light-footed Clapper Rails are available (U.S. Fish and Wildlife Service 1985 and Zembal and Massey 1981). Three of the current principle study areas are at the Naval Air Station Point Mugu (NASPM, also Point Mugu), the Seal Beach NWR, and Upper Newport Bay State Ecological Reserve.

The marsh at Point Mugu is located in southeastern Ventura County on the 1,821 ha (4,500 acre) NBVC, about 13 km (8 miles) west of the Los Angeles County line. There are 1,012 ha (2,500 acres) of jurisdictional wetlands in Point Mugu (USACOE/EPA 1994), including the largest functioning salt marsh in coastal southern California today. Considering the combined acreages of marshes that are regularly occupied, the vegetated marsh and most closely associated habitats at Mugu Lagoon represent more than 25% of the clapper rail's potential habitat base. The marsh is subject to nearly full tidal action in the central and eastern arms with an amplitude of about 9 ft. The tides are dampened by constrictions at Laguna Road and farther west, resulting in a tidal amplitude of only 4 - 5 ft. The wetland vegetation is dominated by pickleweed (*Salicornia virginica*) but scattered stands of spiny rush (*Juncus acutus* ssp. *leopoldii*) are critical for rail nest placement.

The Seal Beach NWR covers 369 ha (911 acres) of the 2,024 ha (5,000 acre) Seal Beach Naval Weapons Station in Orange County near the City of Seal Beach. About 299 ha (739 acres) of the refuge lands are subject to regular inundation by the tides. There are about 229 ha (565 acres) of salt marsh vegetation, 24 ha (60 acres) of mudflats that are exposed daily, and 46 ha (114 acres) of channel and open water. The wetlands are fully tidal, with a range of about - 0.5 m (1.7 ft) to + 2.2 m (7.2 ft) MLLW, and very productive with a high diversity and abundance of wildlife.

Upper Newport Bay is an Ecological Reserve of the California Department of Fish and Game (CDFG), located approximately 22 km (13.7 mi) down coast of the Seal Beach NWR.

Approximately 304 ha (750 acres) are fully tidal, including 105 ha (260 acres) of marsh. The bay is bordered by bluffs, 9 - 18 m (30 - 59 ft) high, and surrounded by houses and roads. There are approximately 100 ha (247 acres) of shrublands remaining undeveloped on the edge of the wetlands and two local drainages with some cover along them coursing into the bay.

Results and Discussion

The twenty-eighth annual census of the Light-footed Clapper Rail in California was conducted 2 March – 1 June 2006. Thirty coastal wetlands were surveyed by assessing call counts from Carpinteria Marsh in Santa Barbara County, south to Tijuana Marsh on the Mexican border. Reports of additional recent sightings were solicited and investigated.

A total of 408 pairs of Light-footed Clapper Rails exhibited breeding behavior in 18 marshes in 2006 (Table 1). This is a 13.3% increase over the former high count in 2005 and a 25.5% increase over the longer standing high in 1996. This is the third consecutive year of record-breaking high counts. The subpopulation in Upper Newport Bay was once again the largest in California but was 9% smaller than its record high in 2005. The Tijuana Marsh NWR subpopulation reached a record level with 102 pairs, a 17% increase over the former high set in 2004 and 2005. The Newport subpopulation comprised 38.7% of the state total in 2006 and together with the Tijuana Marsh NWR totaled 260 pairs or 63.7% of the breeding population of the Light-footed Clapper Rail in California. In addition, 5 marshes held 15 – 31 pairs each for a combined total of 103 pairs or 25.2% of the state total.

The spring of 2006 was not very conducive climatologically to consistent clapper rail breeding activity, or therefore successful call counts. The winter was relatively dry but it was unseasonably wet and cold through most of spring. Surveys planned for Baja California, Mexico were postponed twice and finally cancelled due to the weather. Many surveys were re-scheduled at least once due to rain. On some days the rails were very vocal, on others there was little activity. Sites that would normally be completed in a single visit were re-visited twice or three times before vocalizing was consistent enough to justify confidence in the survey results. At Upper Newport Bay, for example the counts normally require 8 early mornings or late evenings to complete. In 2006, the Newport counts were started on March 2 and not completed until March 23 because of the extreme variability in vocalizing. Furthermore, at least one of the areas of concentrated rail activity in Newport may have been under-counted because of the lack of synchrony in breeding condition among the birds rather than an actual 9% decrease in their numbers.

Tijuana Marsh's subpopulation was 87 pairs strong for two consecutive years prior to the 2006 high count of 102 breeding pairs. The 15-pair increase was not attributable to one single area but fairly well distributed throughout the marsh. There were several more rails manifesting territoriality on the western edge of the Oneonta Slough portion of the marsh, adjacent to the paved road and apartments; a few more were counted in the southern part of Oneonta Slough; there were two on the northern edge of the river; and three in reed beds. Rails were again detected in the restoration area, the model marsh south of the river.

Table 1. Census of the Light-footed Clapper Rail in California, 1980-2006.

Part I: 1980 - 1989

Location	Number of Pairs Detected In:									
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Santa Barbara County										
Goleta Slough	0	0	-	0	-	-	-	-	0	0
Carpinteria Marsh	16	14	20	18	26	7	4	5#	2#	0
Ventura County										
Ventura River Mouth	-	-	0	0	-	-	-	-	-	0
Santa Clara River Mouth	-	-	0	-	-	-	-	-	-	0
Mugu Lagoon	-	0	-	1	3	7	6	7#	7#	5
Los Angeles County										
Whittier Narrows Marsh	-	-	-	*	0	-	-	-	-	0
Orange County										
Seal Beach NWR	30	19	28	20	24	11	5	7	14	6#
Bolsa Chica	0	0	0	0	-	-	-	*	0	0*
Huntington Beach Wetlands	-	0	-	-	-	-	0	0	0	0
Upper Newport Bay	98	66	103	112	112	87	99	119	116	116
San Joaquin Reserve	-	-	5	4	1	2	1	0	0	0
Carlson Rd Marsh	-	-	5	4	2	0	0	1#	0	0
San Diego County										
San Mateo Creek Mouth	-	-	0	0	-	-	0	-	0	0
Las Pulgas Canyon Mouth	-	-	0	0	0	-	-	-	-	0
Las Flores Marsh	-	-	0	0	0	-	0	-	0	0
French Canyon Mouth	-	-	-	0	0	-	-	-	-	0
Cocklebur Canyon Mouth	-	-	1	0	0	-	-	0	0	0
Santa Margarita Lagoon	0	0	2	1	2	1	1	1	1	0
San Luis Rey River Mouth	-	-	0	0	-	-	0	0	0	0
Guajome Lake Marsh	-	-	0	1	2	0	0	0	0	0
Buena Vista Lagoon	0	0	0	*	0	-	-	-	0	0
Agua Hedionda Lagoon	1	2	1	7	6	1	0	0	0	0
Batiquitos Lagoon	0	0	0	0	0	-	-	-	-	0
San Elijo Lagoon	-	5a	4	4	10	1	0	2	5#	7#
San Dieguito Lagoon	-	-	-	-	-	-	-	*	0	0
Los Penasquitos Lagoon	-	0	-	0	0	-	0	-	1a#	0
Kendall-Frost Reserve	18	16	6	20	24	17	12	6a#	4a#	4#
San Diego Riv F. C. C.	-	3	1	2	2	1	0	0	1a#	0#
Paradise Creek Marsh	1	2	3	1	1	0	0	0	0	0
Sweetwater Marsh	4	5	7	6	14	3	9	5a#	5	5#
E Street Marsh	3	1	3	3	2	2	2	0a	1#	0
F Street Marsh	-	1	1	0	1	0	0	0	0	0
J Street Marsh	-	1	0	0	-	-	0	0	0	0
Otay River Mouth	3	4	5	3	5	1	1	0	0	0
South Bay Marine Reserve	3	3	1	1	2	1	1a	2#	5	5#
Dairymart Ponds	-	-	-	-	-	-	0	*	1a	0#
Tijuana Marsh NWR	26	31	25	41	38	0	2	23a#	14a#	15a#
Total: pairs	203	173	221	249	277	142	143	178	177	163
marshes	11	15	18	18	19	14	12	11	14	8

Table 1. Census of the Light-footed Clapper Rail in California, 1980-2006.
(continued) Part II: 1990 - 1999

Location	Number of Pairs Detected In:									
	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Santa Barbara County										
Goleta Slough	0	0	0	0	-	-	0	0	-	-
Carpinteria Marsh	0	0	0	0#	0	2#	3#	5#	3#	2#
Ventura County										
Ventura River Mouth	0	0	0	0	0	0	0	-	0	-
Santa Clara River Mouth	0	0	0	0	0	0	0	-	0	-
Mugu Lagoon	6#	4#	5#	5	6#	5#	3#	4#	4#	4#
Los Angeles County										
Whittier Narrows Marsh	-	-	-	0	0	-	0	0	-	-
Orange County										
Seal Beach NWR	16	28	36	65	66	51#	52#	37#	16#	15#
Bolsa Chica	0#	0*	0#	0#	0*	0*	0*	0*	0*	0
Huntington Beach Wetlands	0	0	0	0	0	0	0	0	0	-
Upper Newport Bay	131	128	136	142	129	117	158	149#	105#	104#
San Joaquin Reserve	0	0	0#	0	0	0	0	0	-	0
Carlson Rd Marsh	0	0	0	0	0	0	0	0	-	0#?
San Diego County										
San Mateo Creek Mouth	0	0	0	0	0	0	0	-	-	-
Las Flores Marsh	0	0	0	0	0	0	0	-	-	-
Cocklebur Canyon Mouth	0	0	0	0	0	0	0	0	0	0
Santa Margarita Lagoon	0	0	0	0#	0	0	0	0#	0	0
San Luis Rey River Mouth	0#	0	1	0	-	0	0	0	0	0
Guajome Lake Marsh	0	0	0	0	-	0	0	0	-	-
Buena Vista Lagoon	0a#	2#	5	2#	3#	1#	6#	7#	4	5#
Agua Hedionda Lagoon	0	0	0	0	0	0	0	1?	1	0
Batiquitos Lagoon	0#	0#	0	1#	1#	0#	2	2	1	3
San Elijo Lagoon	5#	5	4#	6#	1#	3#	3#	8	3#	5#
San Dieguito Lagoon	0	0	0	0	0	0	0	0	0	-
Los Penasquitos Lagoon	0	0#	0#	0#	1	1	1	2	2#	2
Kendall-Frost Reserve	5#	9	11	5#	5#	4#	1#	2	2	4#
San Diego Riv F. C. C.	2	5	1a	5	5#	6b	5	5#	4	3
Paradise Creek Marsh	0	0	1a	0a	0	1	2	0	0	0
Sweetwater Marsh	2#	4a	4a	3a	7#	7	8	3#	4	3
E Street Marsh	0	1a	1a	1	0#	2	1	1	1	2
F Street Marsh	0	0	0	0	0	0	0	0	1	0
J Street Marsh	0	0	0	0	0	0	0	0	0	0
Otay River Mouth	0	0	0	0	0	1	3	3	2	1
South Bay Marine Reserve	5	2	3a	1	0	0	0	1#	1	0
Dairymart Ponds	0a#	0#?	0#	1a	0	-	-	-	-	-
Tijuana Marsh NWR	17a#	47a	67a	63a	64	61	77	77#	68#	80#
Total: pairs	189	235	275	300	288	262	325	307	222	233
marshes	9	11	13	13	11	14	15	16	17	14

- indicates that no census was taken.

* indicates a fall or winter occurrence.

indicates the detection of unpaired rails (used beginning in 1987).

a Paul Jorgensen Unpublished data; b 2 pairs are in Famosa Slough.

Table 1. Census of the Light-footed Clapper Rail in California, 1980 - 2006.
(continued) Part III: 2000 - 2006.

Location	Number of Pairs Detected In:						
	2000	2001	2002	2003	2004	2005	2006
Santa Barbara County							
Goleta Slough	-	0	0	0	-	-	-
Carpinteria Marsh	1#	1#	2	0#	0#	0	0
Ventura County							
Ventura River Mouth	-	-	0	0	-	-	-
Santa Clara River Mouth	-	-	0	0	-	-	-
Mugu Lagoon	7#	7#	10#	14#	19#	14#	17#
Los Angeles County							
Whittier Narrows Marsh	-	-	0	-	-	-	-
Orange County							
Seal Beach NWR	10#	11#	24#	23#	16#	15#	21#
Bolsa Chica	0	0	0*	0	0	0	*
Huntington Beach Wetlands	-	0	0	0	0	0	4#
Upper Newport Bay	150#	124#	129#	144#	165#	174#	158#
San Joaquin Reserve	0	0	0	0	-	0	0
Carlson Rd Marsh	0#	0	0	0	-	0	0
San Diego County							
San Mateo Creek Mouth	0	0	0	0	0	-	-
Las Flores Marsh	0	0	0	0	0	-	-
Cocklebur Canyon Mouth	0	0	0	0	0	-	-
Santa Margarita Lagoon	0	0	1	2	1	2	1
San Luis Rey River Mouth	0	0	0	0	0	0	0
Guajome Lake Marsh	0	-	-	0	-	-	0
Buena Vista Lagoon	5#	3#	6#	5#	5#	6#	8#
Agua Hedionda Lagoon	2	2	1	4	5	4#	7#
Batiquitos Lagoon	2#	3#	3#	5	11	16#	19#
San Elijo Lagoon	1#	1#	2	7#	7#	6#	15#
San Dieguito Lagoon	0#	0#	0	0#	6	12#	31#
Los Penasquitos Lagoon	1	1	2	1#	2#	2	7#
Kendall-Frost Reserve	4	4	5#	6#	14	14	5#
San Diego Riv F. C. C.	3#	4	6	6#	8#	5	4
Paradise Creek Marsh	0	0	0	0	0	0	0
Sweetwater Marsh	2	3#	3#	1#	3#	1	4#
E Street Marsh	2	0	1	1	0	0	2
F Street Marsh	0	0	0	0	0	0	0
J Street Marsh	1	0	0	1	0	0	0
Otay River Mouth	1	1	1	0	0	1	2
South Bay Marine Reserve	0	0	0	0	0	0	1
Dairymart Ponds	-	-	-	2	1	1	0
Tijuana Marsh NWR	61#	52#	78#	64#	87	87#	102#
Total: pairs							
	253	217	274	286	350	360	408
marshes							
	16	14	16	16	15	16	18

- indicates that no census was taken.

* indicates a fall or winter occurrence.

indicates the detection of unpaired rails (used beginning in 1987).

When a new Light-footed Clapper Rail subpopulation was recently discovered in the San Dieguito River Valley in 2004, inland of the lagoon and El Camino Real, the number reported was 6 breeding pairs. That population estimate was probably low due to the lateness of the census. There is about one mile of fresh water marsh habitat along the river between a golf course and the Polo Club that was surveyed again on March 31, 2005. Estimating the breeding population in 2005 at 12 pairs was still conservative; a total of 15 clapping singles, 7 dueting pairs, and 6 advertising males were heard during the survey. Most of the single clapping was well away from any advertising male and probably represented breeding pairs. In the absence of more focused study, this subpopulation was comprised of 10 – 20 pairs in 2005 and conservatively estimated at 12 pairs. Finally in 2006, the survey on April 1st revealed 25 dueting pairs, 12 singles clapping, and 5 advertising males. The rails were extremely vocal during the survey, making them easy to count, and another swath of occupied habitat was discovered on the southeast side of the Morgan Run Golf Course. Although most of the singles were well removed from advertising, conservatively half were counted as paired for a total breeding population estimate of 31 pairs. This ranks San Dieguito as the third largest subpopulation of Light-footed Clapper Rails in 2006 and the largest ever for a freshwater marsh system.

Although the Seal Beach NWR subpopulation nearly maintained its size in 2003 after more than doubling from 2001 to 2002, it suffered a 30% decline in 2004 and a 6% decline in 2005 but was up to near 2003 levels in 2006. There is still major concern for the viability of this subpopulation and no new clues about what limits the rails on the NWR although raptor predation is suspected. This is the only marsh currently occupied by Light-footed Clapper Rails that gets fully inundated during a high tide of about 6.5 ft (MLLW), or higher. Tides of this height occur regularly in the late summer usually in darkness and in the fall or winter in the early morning. The rails are forced onto debris or to the edge of the marsh where there is little cover and busy roads just beyond. This greatly exposes the rails to potential predators and may be part of the problem at Seal Beach. However, the completeness of inundation also allows fairly dependable surveying of the subpopulation outside the breeding season. Accordingly, the rails were counted again from canoes on 15 November 2005 and 57 individuals were sighted. Potential rail predators were also out, hunting the marsh and edges, including Red-tailed Hawks (*Buteo jamaicensis*), Northern Harriers (*Circus cyaneus*), Peregrine Falcon (*Falco peregrinus*), Cooper's hawk (*Accipiter cooperi*) and American kestrels (*Falco sparverius*). Continued upgrading and maintenance of the artificial rafts on the Seal Beach NWR is essential to the protection of the wintering rails and success of the breeding rails. Forty of the rails counted during the winter high-tide count were sequestered on rafts and afforded much better protective cover thereby.

Although the clapper rails in Seal Beach increased to 21 breeding pairs in 2006, this subpopulation was again most heavily male-skewed with 30 advertising males. Both the extraordinary abundance of unmated males and the inability of this subpopulation to return to mid-1990s levels are of concern. In the past there has been evidence of heavy, probably female-skewed winter losses. The Seal Beach subpopulation has had the advantage of genetic augmentation through translocations of adults and eggs but heavy predation or a similar inimical factor continues. Seal Beach NWR received 6 captive-bred rails in 2002; 8 eggs from Newport

stock were swapped and hatched by a Seal Beach pair and their 7 eggs were incubated, the young were reared, and returned to Seal Beach in 2003; and 5 captive-bred rails were released into the NWR in 2004. No additional augmentation has happened since 2004 because of the extreme male-skew and continued uncertainties.

The subpopulation in Batiquitos Lagoon at 19 pairs was the fifth largest in the state in 2006. The rails are thriving and the subpopulation is increasing gradually because the ecological functionality of the wetland is improving dramatically over time due to the major restoration project implemented there. In December 1996, the mouth of the lagoon was opened to the ocean, the final step in a \$57 million restoration project and since then the carrying capacity for clapper rails has been on the rise. The lagoon has remained tidal and rail habitat has been increasing and improving. Breeding rails were detected on the north side of the lagoon for the first time in 2004 and a total of 11 pairs was detected. In 2006 there were at least two breeding pairs vocalizing from the edge of the western tern island and the rails were well distributed around the inner lagoon, although concentrated in the western third (10 pairs) and southeastern corner (4 pairs). The cordgrass in the west basin is extensive and looks vigorous, although much of it appears to be regularly over-washed. There was one detection there in 2006 in the northwest corner in a reed bed bordered by the tallest cordgrass in the west basin. Marsh restoration appears to be working for this endangered bird in Batiquitos Lagoon, increasing expectations for a large, thriving population there within a decade or so. In support of this possibility 16 captive bred rails have been released into this marsh since 2004.

Whereas Point Mugu comprised the third largest subpopulation in the state with 19 pairs in 2004, it dropped to 14 pairs in 2005, and is back up to 17 pairs in 2006. This subpopulation fluctuated between 3 and 7 pairs for nearly 20 years until recent augmentations fostered its growth. There is an efficient predator management program in place, consistent rail and marsh management, and the Clapper Rail breeding population expanded in 2002 through 2004. For example, for the first time in many years, a pair of rails was observed attempting to breed in the eastern arm of the lagoon in 2004. Intensive monitoring, demographic and genetic augmentation, and provision of additional nesting cover should continue to foster the growth of this northern subpopulation.

There have been occasional re-sightings of banded rails at Point Mugu, indicating that some of the captive-bred rails remained local after being released into the marsh. However, at least one of them, a female banded 1035-8878 did not. A photograph was taken of this rail at Upper Newport Bay on December 12, 2004 by Steve Metz. This female was captive-bred at the Chula Vista Nature Center and released into the eastern arm of Point Mugu on August 28, 2004, 106 days before her picture was taken at Newport. This shatters the old long-distance movement of 13.5 miles recorded for the subspecies *levipes* (Zembal et al. 1983). The distance from Point Mugu to Upper Newport Bay is approximately 90 miles along the coast. This indicates that at least one and probably others of the captive-bred rails are more prone to movements between marshes than was previously observed in wild birds.

The San Elijo Lagoon subpopulation was the seventh largest in the state in 2006 with a record 15 pairs of breeding clapper rails. Although San Elijo Lagoon has had major efforts to restore tidal

function, the lagoon still closes to the ocean with regularity. Eight of the rail pairs were in the inland lagoon in fresh water marsh; 4 pairs were in the lagoon west of the freeway on the north side; and 3 pairs were found along Escondido Creek. San Elijo received one augmentation of 8 captive-bred rails in 2004 at the dike in the inner lagoon. Although one of these rails was re-sighted near the railroad tracks in the central lagoon on December 13, 2004, 6 months following release, none was observed since.

Several additional of the small subpopulations were at their highest recorded levels in 2006 including Buena Vista Lagoon, Agua Hedionda Lagoon, and Los Penasquitos Lagoon. It was unexpected that these little subpopulations could persist as long as they have without much more intensive management. Genetic bottlenecking (poor genetic diversity due to inbreeding) is undoubtedly an issue for each of them and two have received captive-bred rails.

The actual 2006 count in Buena Vista Lagoon was 5 pairs, 7 singles clapping, and 4 unmated males. At least 3 of the singles were most likely paired bringing the total to a minimum of 8 pairs. Of these 4 pairs were in the central lagoon, 3 were in the inner lagoon, and there was 1 pair detected in the little outer lagoon. There are many management issues at this little freshwater marsh and they are shared with most of the other coastal wetlands including abundant non-native trees and shrubs that harbor perching predators and homeless humans.

The marsh at Agua Hedionda Lagoon has held a maximum of 7 pairs of Light-footed Clapper Rails, once in 1983 and again in 2006. The brackish marsh inland of the inner lagoon was greatly impacted by a change in drainage in the mid-1980s and the rails were barely detectable through the 1990s. The 5 pairs located in 2004 was the highest level observed since then and this level was probably sustained in 2005 when 4 pairs and an advertising female were detected. Given the early count date and abundant, interfering rain, the female likely found a mate and bred. With the recently increasing street runoff from adjacent housing, the main freshwater marsh has rejuvenated to some extent, perhaps to the benefit of the rails as evidenced by the record number in 2006. Five captive-bred rails were released into Agua Hedionda Lagoon in 2004 on the inland edge of the inner lagoon but none has been re-sighted since.

Los Penasquitos Marsh is dominated by vegetation indicative of prolonged closure to the ocean, particularly pickleweed. However, fresh water influence and freshwater marsh edge are increasing. Each of the record high of 4 pairs was in freshwater reed beds on the eastern edge of the marsh. However, for the first time in many years a single and an advertising male were heard west of the railroad. The single was not counted as a pair because it could have been the same bird that advertised shortly after the single clapping was heard. In addition to the 4 pairs in the main marsh a minimum of 3 pairs and an advertising male were detected on Los Penasquitos Creek east of the freeway. The two of these pairs furthest upstream are in a 20-acre+ mitigation site that is only one year old. Five captive-bred rails were released in 2004 but there have been no re-sightings.

The subpopulation in the University of California Reserve at Kendall-Frost rebounded significantly in 2004 and 2005 but was significantly reduced in 2006. Although this marsh is

small, totally isolated, and surrounded by urban housing, it is managed under the University of California Reserve System. The stewardship includes appropriate predator management, habitat restoration, and people, particularly researcher management to assure minimal disturbance to the rails and their habitat. Additionally, nesting rafts have been provided and used heavily by the rails since 1987. There have also been translocations of eggs and adults. This culminated in 2004 and 2005 breeding populations of 14 pairs, the highest total there since 1985 but it was not sustained in 2006. In spite of the appropriate management of the marsh, it may always be a struggle for the rails in such a tiny, isolated wetland. For example, a Cooper's Hawk was observed powering through the main tidal channel; just one such animal remaining local and hunting from the adjacent high-rise condominiums would have excellent visual access to the entire wetland and take a major toll on the rails. One of them was video-taped in 2006 crashing into pickleweed after a clapper rail at Bolsa Chica.

Three of the breeding pairs of clapper rails in the Sweetwater Marsh NWR and environs were on the eastern end of the marsh, including two in the "E" Street Marsh, and three were on the river upstream of the freeway. Subsequent visits led to observations of successful breeding by the pair in the pond just east of the volunteer parking lot. Charles Gailband observed the pair and 9 chicks 10 – 14 days old swimming across the pond on 28 May and 8 chicks at the same location on 7 June. The numbers for the Sweetwater complex were up slightly and because eleven clapper rails were released to Sweetwater in 2005, the adult rails sighted were checked for bands but none was seen.

The cordgrass continues to expand and dominate a significant portion of the San Diego River Flood Control Channel and an all-time high of 8 pairs of breeding Light-footed Clapper Rails were there in 2004. However, this was not sustained in 2005 when only 5 pairs were detected but the channel was full with heavy runoff caused by the second wettest year on record. Although the cordgrass survived these high flows, the number of breeding rails detected in 2006 was low. Otherwise, based upon the extent and current condition of the habitat, it should abound with rails. However, regular floods may limit the habitat suitability for the rails there. It should be noted that multiple call counts were attempted on the channel in 2006 and none was very convincing; responses to the tape were very brief and distant.

The salt marsh at the mouth of the Santa Margarita River typically held a single pair of nesting rails. However, in 2002 and 2003 there were two pairs, one at the river mouth and another between Stuart Mesa Road and the railroad tracks. Both were in brackish marsh in the midst of salt marsh patches. In 2004 only the pair at the river mouth was detected, both pairs were back in evidence again in 2005, but only one was detected in 2006, at the more inland of the two sites.

An adult clapper rail and a chick were observed in the South Bay Marine Reserve in 2005 after the survey report was compiled. In 2006, there was a strong clapping response to the tape by a single rail with no following advertising, indicating that for the second consecutive year there are breeding rails in the Reserve.

One of the highlights of the 2006 survey of Light-footed Clapper Rails was the discovery of yet

another breeding location in the Santa Ana River Marsh, also previously known as Newport Slough. The 4 pairs detected there are noted on Table 1 under the Huntington Beach Wetlands. The Santa Ana Marsh is at the southern terminus of the Huntington Beach Wetland Complex, several wetland patches strung along the coast totaling more than 200 acres. The 92-acre Santa Ana Marsh was restored as part of the Federal Flood Control Project on the Santa Ana River. Dampened tidal influence was re-established and cordgrass was planted primarily along a narrow eastern portion of the marsh that lies between an oil field and the south dike of the river. The rails were detected there on the morning of 16 March and re-visited to fully survey that same evening when 4 pairs, 1 single, and 1 keck-burring female were heard. Subsequent visits to the marsh revealed successful reproduction when on 28 May at least one 2 – 3 week-old juvenile was following an adult along the edge of the cordgrass.

The last know clapper rail call from Carpinteria Marsh was from an unmated female vocalizing constantly with no answering call in 2003. In 2004, there was total silence until April 13 when two males were released in the hope that the female was still alive. Unfortunately, in 2005 and 2006 the silence persisted. This northern wetland is plagued with domestic cats in the marsh and other predators of concern. The Carpinteria subpopulation and wetland are in major need of intensive management but the wherewithal and interest appear to be lacking. A local resident recently reported red foxes actively denning at the southern end of the dirt road extension of Esteros Way on the very edge of the marsh. Without dealing with the foxes in particular through consistent predator management, the chances for a viable subpopulation in Carpinteria Marsh are non-existent.

Thirteen of the 18 marshes with breeding Clapper Rails in 2006 had skewed sex ratios and 11 of those were male-skewed. A total of 79 advertising males and 4 females were heard during the call counts including 6 unmated males at Point Mugu, an incredible 30 single males on the Seal Beach NWR, 1 female in the Santa Ana Marsh, 10 males and 2 females (having both there is a great indicator of how disrupted breeding synchrony was in 2006) at Upper Newport Bay, 4 males in Buena Vista, 1 female in Agua Hedionda Lagoon, 1 male in Batiquitos Lagoon, 4 males in San Elijo, 5 males in the San Dieguito River Valley, 2 males in Los Penasquitos Lagoon, 8 males in the Kendall-Frost Reserve, 2 males in Sweetwater Marsh, and 7 single males in Tijuana Marsh. As in 2006, the usual condition has been a slight male bias during most years in most marshes. An extreme male skew like that at the Seal Beach NWR indicates major ongoing issues, unfortunately of an unknown nature; this is one of several marshes in need of additional observation.

Additional reports of clapper rail detections were investigated in 2006; the following is the most noteworthy of them. Mary Beth Stowe reported hearing three individual clapper rails at Kumeyaay Lake on 25 April in Mission Trails Park on the San Diego River. A follow-up visit on 30 April to determine the breeding status of the rails she heard was unsuccessful; the only respondents to the taped calls were Virginia rails. The continued annual release of additional captive-bred clapper rails is expected to result in increased numbers of rails including increased incidental occupation of inland sites. The further investigation of Los Penasquitos Creek, east of the freeway led to the detection of 3 additional breeding pairs of clapper rails and 1 advertising

male.

There is one, large viable subpopulation of Light-footed Clapper Rails in existence in California today. Only the subpopulation at Upper Newport Bay has demonstrated the resilience to rebound quickly following weather-induced catastrophes in the past 30 years. The subpopulation in the Tijuana Marsh NWR is the second most viable but the lack of sediment control in the Tijuana River Watershed, other water quality issues therein, and the lack of an emergency response plan and funding to deal quickly with river mouth closure are problematic. Major sediment deposition occurred in the area of the river mouth in 2004/2005 and the marsh restoration site that held 5 breeding pairs of Clapper Rails in 2004 before the causative storms was devoid of breeding rails in 2005 but abounded with thick, newly deposited sediment (It should be noted that at least 2 single rails were back in the restored patch in 2006). There were 5 other subpopulations with 15 - 31 pairs each in 2006 and 11 with 1 - 8 pairs each. Those 11 totaled 45 pairs of rails or 11% of the state population. Four wetlands held just one or two pairs each; these smallest subpopulations are in serious jeopardy. Without restoration and species-specific management in these wetlands, there is little likelihood of the clapper rail's recovery in them.

The Light-footed Clapper Rails in California have reached a population high for the third consecutive year. This has been the result of management efforts for the rails and major habitat restoration. With significantly greater management efforts and restoration, we could likely recover the Light-footed Clapper Rail.

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