

**State of California
Natural Resources Agency
Department of Fish and Wildlife
Wildlife Branch**

**Status and Distribution of the Light-footed (Ridgway's)
Clapper Rail in California**

2014 Season

By

Richard Zembal, Susan M. Hoffman, and John Konecny

Final Report

To

State of California
Department of Fish and Wildlife
South Coast Region
3883 Ruffin Road
San Diego, CA 92123

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Clapper Rail Recovery Fund
Huntington Beach Wetlands Conservancy
24821 Buckboard Lane
Laguna Hills, CA 92653

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ABSTRACT

The thirty-fifth annual census of the Light-footed Clapper Rail in California was conducted from 12 February to 12 July 2014. 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. This rail has been reclassified taxonomically and renamed by the American Ornithologist Union, ascribed to the Light-footed Ridgway's Rail, *Rallus obsoletus levipes*; formal wildlife agency recognition of this nomenclatural change is apparently pending.

For the third year in a row the California population of the Light-footed Clapper Rail exceeded 500 breeding pairs. A total of 528 pairs exhibited breeding behavior in 21 marshes in 2014. This is the highest count on record, representing an increase of three pairs from the breeding population detected in 2013, and 19.2% larger than the former high count in 2007. The tally at Upper Newport Bay was the highest ever recorded at 222 pairs. The Newport subpopulation was once again the largest in California with 16.2% more rails exhibiting breeding behavior than in 2013 which had yielded the highest count on record of 191 pairs, prior to the long standing high of 174 pairs manifest in 2005. The count in Tijuana Marsh NWR was poor, yielding only 75 breeding pairs but may have been more a product of count conditions than an actual reduction in numbers since nest searching in June and July yielded 49 nesting complexes over well less than one third of the available habitat in the Oneonta portion of the marsh. The Newport subpopulation comprised 42% of the state population in 2014 and the subpopulation in the Tijuana Marsh NWR comprised an absolute minimum of 14.2%, together accounting for 56.2% of the breeding population of this rail in California as compared to 56.4% in 2013.

¹ Zembal, R., S.M. Hoffman, and John Konecny. 2014. Status and Distribution of the Light-footed (Ridgway's) Clapper Rail in California, 2014. California Department of Fish and Wildlife, Wildlife Management, Nongame Wildlife Unit Report, 2014-05. Sacramento, CA 26 pp.

Seven of the small subpopulations increased in size from the 2013 totals, increasing by a combined total of 40 breeding pairs in 2014. The Seal Beach National Wildlife Refuge (NWR) subpopulation was up by 9 to 49 pairs, ranking it the third largest in state. Batiquitos Lagoon was down slightly from a record high of 45 breeding pairs in 2013, but at 40 pairs ranking as the fourth largest subpopulation in 2014. San Elijo was one pair off its record high of 31 pairs reached in 2012. Point Mugu was back to 2011 levels after increasing steadily from 16 pairs in 2011 to 22 pairs in 2012, and 23 pairs in 2013, a record high. There were declines totaling 37 pairs at 7 marshes including, most notably at San Dieguito Lagoon (-14 pairs), Los Penasquitos Lagoon (-7 pairs), and Mugu Lagoon (-7 pairs). Excluding the 2 largest subpopulations, there were 6 subpopulations in double figures, ranging from 16 to 49 pairs and totaling 181 breeding pairs or 34.3% of the state total. The remaining 13 subpopulations ranged from 1 to 9 pairs and totaled 50 breeding pairs of clapper rails, or 9.5% of the total.

The annual increases in the population total of the Light-footed Clapper Rail between 2002 and 2007 gave encouragement that restoration and management including captive propagation were contributing to the recovery of this endangered bird. The 2008 crash was presumably weather-related and a harbinger of what could be in store if wide weather fluctuations are the future norm. Record high counts of 520 pairs in 2012, 525 pairs in 2013, and at least 528 pairs in 2014 is a manifestation of this subspecies' resiliency with sound management.

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. This rail along with both of the other large rails of the western U.S. has been reclassified taxonomically and renamed by the American Ornithologist Union and ascribed to the Ridgway's Rail, *Rallus obsoletus* (Chesser et al. 2014). The common name for our southern California subspecies should soon be formally and legally adopted by the wildlife agencies in recognition of this nomenclatural change. The Light-footed Clapper Rail will then be called the Light-footed Ridgway's Rail, *R. obsoletus levipes*.

Loss and degradation of habitat threaten the continued existence of this bird, although recent management efforts are reversing those trends. 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. Since then, there were annual increases until the record high in 2007, when 443 breeding pairs were detected in 19 marshes. There was a population crash in 2008 followed by recovery of 37% in 2009 to 320 breeding pairs, and annual increases since then through 2013 when a new high total of 525 pairs was reached.

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 the small subpopulations and in supporting the expansion of many of them, particularly because of the release of captive bred rails. However, the benefits of the associated habitat restoration and management 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). 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, fostered by a caring public who support the management necessary to maintain the interconnectedness and viability of the system.

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, particularly population augmentation.

Population monitoring is essential in understanding the effects of our management efforts and in stewardship of this critically endangered bird toward recovery. Reported herein are the results of the 2014 statewide survey of the Light-footed Clapper Rail.

METHODS

The thirty-fifth consecutive annual census of Light-footed Clapper Rails in California was conducted from February 12 through July 12, 2014. 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 3 wetlands wherein such data were gathered in 2014 and a pre-nesting high tide count was accomplished on November 4, 2013 on the Seal Beach NWR; a post-nesting high tide count will be scheduled for fall/early winter 2014. This NWR is the only wetland inhabited by clapper rails that is inundated thoroughly enough during a 6.7 ft. tide or higher to get a relatively complete visual survey.

In the two marshes with abundant clapper rails, mapping spontaneous calls was the prevalent technique. In marshes with fewer 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 2014 counts, those at Seal Beach NWR, Tijuana Slough NWR and Kendall-Frost Reserve.

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 the 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 from 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 this closely-related species 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. 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 2014 call counts were conducted on 38 dates and totaled approximately 392 field-hours, mostly from February 12 – July 12, 2014.

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). Four of the current principal study areas are at the Naval Air Station Point Mugu (NASPM, also Point Mugu), the Seal Beach NWR, Upper Newport Bay Ecological Reserve, and Tijuana Slough NWR.

The marsh at Point Mugu is located in southeastern Ventura County on the 1,821 ha (4,500 acre) Naval Base Ventura County (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 a tidal amplitude of about 9 ft. The tides are dampened by constrictions at Laguna Road and farther west, resulting in an 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 Wildlife (CDFW), 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.

Tijuana Slough NWR consists of 427 ha (1,056 acres) of open water, tidal salt marsh, beach dune, riparian, and maritime scrub habitats in the City of Imperial Beach in the extreme southwest corner of the U.S. The NWR is part of the 1,024 ha (2,530 acre) Tijuana River National Estuarine Research Reserve (NERR), one of only 26 such NERRs in the country. The fully tidal coastal salt marsh (that is influenced by a 7 ft tide MLLW) comprises approximately 159 ha (392 ac) of the total area along with 41 ha (101 ac) of tidal creeks and mudflat. Tijuana Slough is the only coastal wetland in the southern California Bight that is not bisected or greatly impacted by a major paved road or the coast railroad.

RESULTS and DISCUSSION

A total of 528 pairs of Light-footed Clapper Rails exhibited breeding behavior in 21 marshes in 2014 (Table 1). This is the highest count on record, representing a three pair increase over the breeding population detected in 2013 (Zembal et al. 2013), and 19.2% larger than the former high count in 2007. Upper Newport Bay with 222 pairs was once again the largest subpopulation in California and at a record high for the second consecutive year with 16.2% more rails exhibiting breeding behavior than in 2013 and 27.6% higher than the former high count in 2005 of 174.

Following three years of 100 pairs +, the Tijuana Marsh NWR subpopulation count was 75 pairs in 2014. This is a 28.6% decrease from 2013 and 47.2% lower than the record high of 142 pairs in 2007. The Newport subpopulation comprised 42% of the state population in 2014 and the subpopulation in the Tijuana Marsh NWR comprised 14.2%, together accounting for 56.2% of the breeding population of this rail in California. In addition, six subpopulations ranged in size from 16 to 49 pairs, totaling 181 breeding pairs or 34.3% of the state total. The remaining 13 subpopulations ranged from 1 to 9 pairs and totaled 50 breeding pairs of clapper rails, or 9.5% of the state total.

The 2014 Newport count was taken on 10 dates in February during this third year of drought and the rails were responding to neighboring calls in unprecedented fashion yielding the highest count ever tallied in a single wetland. This was followed later in the spring by nest searching in order to re-verify the one to one relationship documented in the 1980s between calling and nesting; a pair's duet means there is, or shortly thereafter will be a nesting attempt in close proximity. Nest searching in Upper Newport Bay had been very unfruitful in recent years raising concerns. Four to six nests were found annually 2009 – 2013 with 60 field-hours or more of effort but few egg nests were discovered before hatching (none in 2013) and several had been depredated by raccoons, *Procyon lotor*. Apparently, the super abundance of raccoons (there are tracks and sign everywhere well out into the marsh) has been spawned in part by the illegal release of rehabilitated raccoons into Upper Newport Bay. Nest searches were done mostly by RZ in support of and with assistance from Michelle Barton, a graduate student at CSULB who is examining nest site characteristics. The searches started on Upper Island where 18 rail pairs vocalized in February. We found a total of 8 nesting sites there with about 30 hrs of searching over 8 dates, 20 March – 18 July, 10 nests shy of expectation.

Table 1. Census of the Light-footed Clapper Rail in California, 1980-2014.

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 River	-	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
Total: marshes										
	11	15	18	18	19	14	12	11	14	8

Table 1. Census of the Light-footed Clapper Rail in California, 1980-2014.
(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 River	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 - 2014.
(continued) Part III: 2000 - 2010.

Location	Number of Pairs Detected In:										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Santa Barbara County											
Goleta Slough	-	0	0	0	-	-	-	-	0	0	0
Carpinteria Marsh	1#	1#	2	0#	0#	0	0	0	0	0	0
Ventura County											
Ventura River Mouth	-	-	0	0	-	-	-	-	0	-	-
Santa Clara River Mouth	-	-	0	0	-	-	-	-	0	-	-
Mugu Lagoon	7#	7#	10#	14#	19#	14#	17#	15#	5#	9#	12#
Los Angeles County											
Whittier Narrows Marsh	-	-	0	-	-	-	-	0	-	0	0
Orange County											
Seal Beach NWR	10#	11#	24#	23#	16#	15#	21#	24#	17#	19#	25
Bolsa Chica	0	0	0*	0	0	0	*	*	*	*	1
Huntington Beach Wetlands	-	0	0	0	0	0	4#	4	1#	5#	6#
Upper Newport Bay	150#	124#	129#	144#	165#	174#	158#	165#	88#	148#	131#
San Joaquin Reserve	0	0	0	0	-	0	0	0	*	0	#
Carlson Rd Marsh	0#	0	0	0	-	0	0	0	0	0	0
San Diego County											
San Mateo Creek Mouth	0	0	0	0	0	-	-	-	0	-	-
Las Flores Marsh	0	0	0	0	0	-	-	-	0	-	-
Cocklebur Canyon Mouth	0	0	0	0	0	-	-	-	0	-	-
Santa Margarita Lagoon	0	0	1	2	1	2	1	1	1#	-	-
San Luis Rey River Mouth	0	0	0	0	0	0	0	0	0	0	2#
Guajome Lake Marsh	0	-	-	0	-	-	0	0	0	-	-
Buena Vista Lagoon	5#	3#	6#	5#	5#	6#	8#	8#	9#	9#	6
Agua Hedionda Lagoon	2	2	1	4	5	4#	7#	4	7	6	2#
Batiquitos Lagoon	2#	3#	3#	5	11	16#	19#	22	22	26#	36#
San Elijo Lagoon	1#	1#	2	7#	7#	6#	15#	12#	5#	8	15#
San Dieguito Lagoon	0#	0#	0	0#	6	12#	31#	15#	21#	12#	28#
Los Penasquitos Lagoon	1	1	2	1#	2#	2	7#	12#	2#	4#	9#
Kendall-Frost Reserve	4	4	5#	6#	14	14	5#	4#	2#	7	10#
San Diego River	3#	4	6	6#	8#	5	4	6	4#	3	7#
Paradise Creek Marsh	0	0	0	0	0	0	0	0	0	-	0
Sweetwater Marsh	2	3#	3#	1#	3#	1	4#	4#	3	5	6#
E Street Marsh	2	0	1	1	0	0	2	1	0	0	2
F Street Marsh	0	0	0	0	0	0	0	0	0	0	0
J Street Marsh	1	0	0	1	0	0	0	0	0	0	0
Otay River Mouth	1	1	1	0	0	1	2	1	0	1	1
South Bay Marine Reserve	0	0	0	0	0	0	1	2	0	1	1
Dairymart Ponds	-	-	-	2	1	1	0	1	-	0	0
Tijuana Marsh NWR	61#	52#	78#	64#	87	87#	102#	142#	47#	57#	76#
Total: pairs	253	217	274	286	350	360	408	443	234	320	376
marshes	16	14	16	16	15	16	18	19	15	16	19

- indicates that no census was taken.

* indicates a fall or winter occurrence.

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

Table 1. Census of the Light-footed Clapper Rail in California, 1980 - 2014.
(continued) Part IV: 2011 - 2014.

Location	Number of Pairs Detected In:			
	2011	2012	2013	2014
Santa Barbara County				
Goleta Slough	-	0	0	0
Carpinteria Marsh	0	0	0	0
Ventura County				
Ventura River Mouth	-	0	0	0
Santa Clara River Mouth	-	0	0	0
Mugu Lagoon	16#	22#	23	16 3K
Los Angeles County				
Whittier Narrows Marsh	-	-	-	-
Orange County				
Seal Beach NWR	34#	42#	40	49
Bolsa Chica	*	*	1	2 1K
Huntington Beach Wetlands	6#	6	7	9
Upper Newport Bay	137#	165#	191	222
San Joaquin Reserve	2#	1#	2	1 1KB
Carlson Rd Marsh	0	0	0	0
San Diego County				
San Onofre Creek Mouth	0	-	1	-
Las Flores Marsh	0	-	0	-
Cocklebur Canyon Mouth	0	-	0	-
Santa Margarita Lagoon	2	0	0	-
San Luis Rey River	3	3	4	5 1K
Guajome Lake Marsh	-	-	-	-
Buena Vista Lagoon	3#	9#	2	4
Agua Hedionda Lagoon	7	9	8	6 1KB
Batiquitos Lagoon	43#	43#	45	40 6KB
San Elijo Lagoon	15#	31#	20	30 1K
San Dieguito Lagoon	12#	45#	37	23 9K
Los Penasquitos Lagoon	12#	11#	12	5 1K
Kendall-Frost Reserve	19	16#	8	23 16K
San Diego River	6#	6#	10	9
Paradise Creek Marsh	0	0	0	0
Sweetwater Marsh	7#	4#	4	4 2KB
E Street Marsh	1	1	1	1
F Street Marsh	0	0	0	0
J Street Marsh	1	1	1	1
Otay River Mouth	1	1	1	1
South Bay Marine Reserve	1	3	2	2
Dairymart Ponds	-	0	-	0
Tijuana Marsh NWR	113#	101#	105	75 17K 2KB
Total: pairs	441	520	525	528
marshes	21	20	22	21

- indicates that no census was taken.

* indicates a fall or winter occurrence.

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

K = Kecking by advertising male; KB = keck-burr by advertising female.

Five of the eight Upper Island nests were on the very edge of the wetland in bulrushes, *Scirpus* spp. Another was on a raft of dislodged bulrushes further out in the marsh that was highly visible and was predated. The two remaining nests were in cordgrass and were washed out by the tides; one of those probably hatched first but the evidence was tough to read on the other. The cordgrass on Upper Island was stunted; tall enough patches to support a rail nest were very scarce. Even the bulrush cover was mediocre and late sprouting probably due to the lack of water. Furthermore, the island edges were festooned with thousands of smashed and eaten mussels with raccoon tracks everywhere; raccoon scat was draped off lodged tree stumps like macabre Christmas tree ornaments. With the threat of raccoon depredation, passable nest cover in flotsam, wrack, or on high marsh berms, places that have been used in the past, were not used in 2014. Alarmingly, the tidal series that washed out the cordgrass nests peaked at only 6.3 ft MLLW. It is unclear how or where the other 10 pairs of rails nested after vocalizing from Upper Island in February.

It would certainly appear that there are problems for nesting rails at Newport but it is unknown how localized these problems are. Moreover, the huge winter survival to spring of 2014 may be one positive aspect of having no winter storm flows ripping up the marsh. With so little nesting activity on Upper Island and the looming questions raised by that, we also searched further up the bay on the eastern side opposite the new island and in the vicinity of the old salt dike. Over three days and 12 hrs of nest searching I found 17 additional nesting sites in areas that held about that same number of vocalizing pairs in February. Nine of those nests were on the marsh edge in tall, thick bulrushes; five were in cordgrass; one was in pickleweed on an isolated high marsh berm; and one was on the base of the road berm in *Frankenia* spp. with a weak tumbleweed lodged over the top. It is astounding that this latter nest survived to hatching. Nesting rails at Upper Newport Bay are being increasingly affected by tidal wash with limited alternatives to reduced quality low marsh sites because of predator abundance, particularly raccoons.

Tijuana Marsh's subpopulation was 87 pairs for two consecutive years prior to the 2006 count of 102 breeding pairs, followed by the record count of 142 pairs in 2007. That 40-pair increase in 2007 was unprecedented at any marsh except Upper Newport Bay; likewise, the 95 pair crash in 2008 was simply unprecedented. This subpopulation had not been that small since 1991. The 19-pair increase in 2010 placed this subpopulation's size directly in mid-range for the 2000s up until then. The 37 pair increase in 2011 to 113 pairs and the second highest count in 32 years of surveys demonstrated the growth and resiliency indicative of a secure subpopulation; this rebound constituted a 240% recovery from the 2008 crash. The slight decrease in 2012 and increase in 2013 are insignificant in comparison. The reduction in 2014 was a product of survey conditions. The 2014 count was attempted on March 5 and again on April 12 and vocalizing was poor on both dates. It was cold, even foggy with too much helicopter activity for good hearing. Four of the pairs detected in 2011 - 2014 were in the restored "Model Marsh" south of the river where nesting was confirmed in 2010 with the discovery of several hatched egg nests.

Nest searching was conducted in Tijuana Marsh on June 6, 25, and July 12 as part of Michelle Barton's thesis project and to reaffirm suspicions that the call count results were low in 2014 due to count conditions. Searches were confined to the northern third or less of the Oneonta Lagoon section of the marsh and evidence of 49 mostly successful nesting sites was discovered,

indicative of 49 nesting pairs in the same area where 24 pairs were tallied during the call counts. This is a large enough sample to indicate clearly that the call count results under-represented the Tijuana Marsh subpopulation in 2014, perhaps by half.

Differences between observations of nesting and conditions in the Tijuana Marsh and Upper Newport Bay were compelling. Most of the nests in Tijuana Marsh were in cordgrass but 10 were in rank pickleweed isolated well out in the marsh; there was no evidence of tidal over-wash and little of predation or raccoon presence; and encounters with adult rails, adults displaying in defense of chicks, and with young of the year were very common in Tijuana Marsh and rare in Upper Newport Bay in 2014.

The Seal Beach NWR subpopulation was 20 pairs or slightly more for most of the 2000s until 2011 and 2012 when 34 and 42 pairs bred there. The 2012 total was the highest since 1996 and the fifth highest count ever. The 2013 total was just two pairs short of the 2012 counts with 40 pairs tallied combining the nesting rafts and call count data. The 2014 total of 49 pairs is now the new highest count since 1996 and the fifth highest count on record. Evening call count results have generally been poor and we have had to rely upon nesting data obtained through monthly visits to the nesting rafts, upon which most of this subpopulation nests.

With so much marsh available to the rails, a much larger breeding population than observed would be expected on the Seal Beach NWR. Raptor predation is suspected to be limiting rail survival and ongoing raptor monitoring sessions are documenting very high raptor numbers; high tide counts of rails and raptors have also continued. Another observation was made in 2013 by Kirk Gilligan of a rail attacked and eaten by a Northern Harrier (*Circus cyaneus*). Seal Beach is the only marsh currently occupied by Light-footed Clapper Rails that gets fully inundated during a high tide of about 6.7 ft (MLLW), or higher, which would render the rails vulnerable due to reduced cover. Tides of this height occur regularly in the late summer, usually in darkness, and in the fall and 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 predation and vehicle collision. However, the completeness of inundation also allows fairly dependable surveying of the subpopulation outside of the breeding season. Accordingly, the rails were counted again from canoes after the 2013, before the 2014 breeding season; the post-breeding high tide count will be done in early winter 2014. The pre-nesting count was on 4 November 2013 and 121 rails were counted (Table 2).

The pre-nesting high tide count of 121 rails in 2013 was the fifth highest on record. This total indicated good recruitment and survival up to November and with the mild winter, good survival continued into the breeding season. Potential rail predators were out in abundance during the winter count, hunting the marsh and edges, including Red-tailed Hawks (*Buteo jamaicensis*), Northern Harriers, Peregrine Falcon (*Falco peregrinus*), Cooper's hawk (*Accipiter cooperi*), American kestrels (*Falco sparverius*), and Short-eared Owls (*Asio flammeus*). 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. Seventy-three of the rails observed during this winter high-tide count were sequestered on the rafts.

Table 2. High Tide and Call Counts of Clapper Rails on the Seal Beach National Wildlife Refuge, 1975 - 2013.

Date	Tidal Height	Clapper Rails Counted	Breeding Pair Members		Notes
			Before	After	
2 Dec 1975	7.0	22	-	-	
31 Dec 1975	6.7	12	-	-	
21 Nov 1976	7.1	24	-	-	
20 Dec 1976	7.1	35	-	-	
21 Dec 1976	7.0	34	-	-	
10 Dec 1977	7.1	16	-	-	
11 Dec 1977	7.1	40	-	-	
18 Jun 1978	6.8	16	-	42	+6 youngsters
30 Nov 1978	6.7	38	-	42	
1 Dec 1978	6.7	32	-	42	
3 Sep 1979	6.4	20	42	60	Tide too low
3 Nov 1979	6.6	56	42	60	
2 Dec 1979	6.7	32	42	60	
3 Dec 1979	6.7	44	42	60	
21 Nov 1980	6.9	55	60	38	First red fox den found
29 Jun 1981	7.0	34	60	38	Tide too late, dark
12 Nov 1981	6.9	43	38	56	
29 Dec 1982	7.0	23	56	40	
18 Jan 1984	6.9	23	40	48	
21 Nov 1984	6.7	5	48	22	+ 7 red foxes
13 Nov 1985	7.1	2	22	10	+ 2 red foxes
12 Dec 1985	7.2	2	22	10	+ 2 red foxes
30 Dec 1986	7.2	7	10	14	Begin red fox trapping, 59 foxes removed in 1986
28 Jan 1987	7.0	7	10	14	63 red foxes removed in 1987
8 Aug 1987	7.3	8	14	14	Tide too late, dark
22 Nov 1987	6.7	12	14	28	
21 Dec 1987	7.0	8	14	28	+ 2 red foxes
16 Feb 1988	6.8	10	14	28	
22 Nov 1988	6.9	6	28	12	128 red foxes removed in '88
16 Oct 1989	6.9	59	12	32	Record High Tide Count; 25 red foxes removed in 1989
5 Oct 1990	6.4	57	32	56	Tide too low
2 Nov 1990	6.8	69	32	56	Record High Tide Count
22 Nov 1991	6.9	98	56	72	Highest Population Total
26 Oct 1992	6.8	159	72	130	Highest Population Total
15 Oct 1993	6.8	143	130	132	Highest Population Total
4 Nov 1994	7.0	150	132	102	220 Red-tailed Hawks counted On the NWS on 11 December 1994
25 Oct 1995	6.5	53	102	104	Tide too low
22 Nov 1995	6.9	55	102	104	
10 Dec 1996	6.7	55	104	74	
17 Oct 1997	6.6	40	74	32	
04 Nov 1998	6.8	30	32	30	

Table 2 (continued). High Tide and Call Counts of Clapper Rails on the Seal Beach National Wildlife Refuge, 1975 - 2013.

Date	Tidal Height	Clapper Rails Counted	Breeding Pair Members		Notes
			Before	After	
23 Nov 1999	7.0	17	30	20	
11 Dec 2000	6.9	30	20	22	
15 Nov 2001	6.7	35	22	48	
04 Dec 2002	7.1	62	48	46	
26 Oct 2003	6.7	96	46	32	
12 Nov 2004	6.7	52	32	30	
15 Nov 2005	6.7	57	30	42	
09 Oct 2006	6.6	103	42	48	
06 Nov 2006	7.0	95	42	48	
26 Oct 2007	7.1	32	48	34	
12 Nov 2008	6.9	20	34	38	
01 Dec 2009	6.8	50	38	50	
05 Nov 2010	7.0	51	50	68	
26 Oct 2011	6.9	96	68	84	
14 Nov 2012	7.1	145	84	80	
04 Nov 2013	6.7	121	80	98	

The rails increased gradually in Batiquitos Lagoon as the ecological functionality of the wetland continued to improve over time following the major restoration project implemented there by December 1996. The lagoon has remained tidal and rail habitat has been generally 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. Clapper Rail numbers grew to 22 pairs in 2007 and 2008 and Batiquitos Lagoon was the third largest subpopulation in the state 2008 - 2010. New annual high counts continued into 2011 and 2012 with 43 pairs detected each year and a new recorded high of 45 pairs was documented in 2013. The decrease to 40 pairs in 2014 was hopefully just a one year dip but there were also advertising females calling. We covered the marsh over multiple evenings with one or two observers and call playback because of the failure in 2013 to get a decent count with multiple observers mostly without playback. The multiple observer approach to surveying is very dependent on conditions on the day of the survey. In 2014, there were 6 breeding pairs vocalizing from habitat adjacent to and south of the western tern island; 12 pairs along the north edge of the inner lagoon; 20 pairs along the southern edge along with 6 advertising females; and a pair in the northeast corner of the middle basin just west of the freeway in the extensive reed stand there. The cordgrass in the west basin is extensive and looks vigorous, although most of it is too submerged during higher tides to provide adequate nest cover. Finally, a single pair responded to the tape from freshwater reeds along the southeast creek at Levante and El Camino Real. Batiquitos Lagoon received rails bred in the Zoological facilities in 2004 and 2005 (8 rails each year) and again in 2013 (6 rails).

The San Elijo Lagoon subpopulation was back up to its former record high level of 15 nesting pairs in 2010 and 2011; the former high was more than doubled in 2012 with the detection of 31 breeding pairs; was down to 20 pairs in 2013; and back up to one pair shy of the record high in

2014 at 30 pairs. San Elijo Lagoon has had major efforts to restore tidal function and the suitable habitat in the central lagoon has expanded greatly. Unfortunately, the lagoon still closes to the ocean with regularity resulting in wide fluctuations in habitat suitability for Clapper Rails particularly inland of the weir during high rainfall years. Of the total, 16 pairs were in the east basin including one and a male along the creek and 14 pairs were in the Central Basin. San Elijo received an augmentation of 8 captive-bred rails in 2004, 5 in 2006, 4 in 2007, 16 in 2009, and 7 in 2012 mostly at the weir in the inner lagoon. One of the 2004 rails was re-sighted near the railroad tracks in the central lagoon on December 13, 2004, 6 months following release, and one of the 2006 rails was observed repeatedly over 6 months off of the Rios Avenue trail. However, there have been no reported re-sightings of live banded rails since then. A dead rail was retrieved in May of 2010 that was banded and released into San Elijo on June 16, 2009.

The subpopulation in the University of California Reserve at Kendall-Frost rebounded well in 2004 and 2005 but was significantly reduced in 2006 - 2008. At 7 pairs in 2009, 10 pairs in 2010, and 19 pairs in 2011, the recent trend had been positive but the total dropped slightly to 16 pairs in 2012 and then was cut in half to 8 pairs in 2013 before rallying to one pair lower than the record high in 2014. The highest total pair count in the Reserve was in 1984 when 24 pairs were in evidence but the count in 2014 included 16 males rendering 2014 the year of the highest rail count ever. The annual subpopulation total in the Reserve fluctuates widely. This marsh is small, very isolated, and bordered by urban housing, but it is also well managed under the University of California Reserve System. The stewardship includes appropriate predator management, habitat restoration, and research management to assure minimal human disturbance to the rails and their habitat. Additionally, nesting rafts have been provided (22 rafts in 2014) and used heavily by the rails there since 1987. There have also been translocations of eggs and adults bred in Zoological facilities (5 rails in 2003, 7 in 2009, and 14 rails were released there in 2013). Additional monitoring of this remnant Mission Bay wetland is planned for 2014 with winter high tide counts with the aid of the San Diego Audubon Society. A count conducted from kayaks on December 4, 2013 revealed 28 Clapper Rails at least 2 of which were banded, undoubtedly in 2013.

The subpopulation of Light-footed Clapper Rails discovered in the San Dieguito River Valley in 2004, inland of the lagoon and El Camino Real, was first reported at 6 breeding pairs and then conservatively, at 12 pairs in 2005. In 2006, there was abundant calling indicative of at least 31 breeding pairs. This ranked San Dieguito as the third largest subpopulation of Light-footed Clapper Rails in 2006 and the largest ever reported in a freshwater marsh system. Calling was poor in 2007 when only 15 pairs were detected but slightly better in 2008 resulting in a count of 21 pairs; this freshwater marsh system fared better than the tidal marshes in the crash year of 2008. The count was poor again in 2009 and the population estimate was only 12 pairs along with 13 advertising males. In 2010, the second highest count for this little wetland was tallied at a minimum of 28 breeding pairs. The count in 2011 demonstrated major problems with a count of only 12 pairs along with 33 advertising males. Such an abundance of unmated males is indicative of female-skewed predation, probably suffered during egg depredation. Raccoon sign is very abundant along the marsh. In 2012, the count of 45 pairs was the record high for this freshwater marsh system and ranked this subpopulation as the third largest in the state. The count was down by eight pairs in 2013, still remarkable for a freshwater system at 37 pairs but

then down again in 2014 to 23 pairs and 9 advertising males. Such widely fluctuating annual totals are indicative of a general lack of stability in this subpopulation probably because of extreme vulnerability to predators in this type of wetland. As usual, at least one pair was calling from habitat edging ponds on the golf course. Additional Clapper Rail detections are still being reported from the San Dieguito Creek Watershed but have yet to be corroborated since they would not respond to callback. Reported locations have included Lusardi Creek, the pond at 4S Ranch Community Park on Dove Creek Road, and at 4 Gee Road just north of Camino Del Sur.

The freshwater marsh system in San Dieguito Creek above El Camino Real is enigmatic in the broad swings in rail abundance. However, it is paramount to maintain this important freshwater marsh system for the rails. When the largest rail subpopulations crashed in 2008, the one in San Dieguito went up 40%. The current hydrologic regime provides the conditions sustaining this one-of-a-kind wetland; the current hydrology needs to be understood and maintained. The invasion of non-native plants needs to be countered-managed; the marsh is succeeding slowly toward a woodland. The most pervasive invader is *Tamarix* sp., occurring along with pampas grass (*Cortaderia* sp.), eucalyptus (*Eucalyptus* sp.), palms (mostly *Washingtonia* sp.), and more limited giant reed (*Arundo donax*), and castor bean (*Ricinus communis*). The tamarisk in particular provides cover, shelter, and perch sites for raccoons; it needs to be removed.

Since doubling in size between 2001 and 2003, the Point Mugu subpopulation fluctuated between 14 and 19 pairs, from 2003 - 2007. It had been much smaller, 3 - 7 pairs for nearly 20 years until augmentations with captive-bred rails fostered its growth. There was a crash in 2008 back to 5 pairs, but the subpopulation was back up to 9 pairs in 2009, 12 pairs in 2010, a minimum of 16 pairs in 2011, 22 pairs in 2012, an all-time high of 23 pairs in 2013, and back to 16 pairs in 2014. There is an efficient predator management program in place, consistent rail and marsh management, but issues, perhaps mostly raptor predation, prevent this subpopulation from exploding into full occupation of the largest contiguous patch of potential habitat in the southern California. There was no activity detected in the eastern arm/central lagoon and only one pair attempted to breed in freshwater marsh vegetation on the west side along Perimeter Road. Raptor depredation appears to have been a long standing issue in Mugu. Consequently, the rails depend upon the heavy cover provided by spiny rush (*Juncus acutus leopoldii*) but many of the spiny rush stands are greatly degraded by competing vegetation that should be weeded out of these stands. In addition, the freshwater marsh dewateres in dry years and could be kept viable through the entire breeding season with flood irrigation if possible there.

There were regular re-sightings of banded rails at Point Mugu up until 2008 when captive-bred rails were no longer released there. Although some of the captive-bred rails appeared to have stayed in Mugu, some definitely left after release. In 2008, for example, Martin Ruane re-sighted a banded rail 4 days after its release on August 22 near the release site. However, at least one banded rail, a female banded 1035-8878, did not stay at Point Mugu. A photograph was taken of this rail at Upper Newport Bay on December 12, 2004 by Steve Metz. This female was 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 shattered 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. The long distance record, 160 miles was traveled by a female banded 1065-39863, released at Point Mugu August 25, 2009 and recaptured November 4, 2010 at the Chula Vista Nature Center (now Living Coast Discovery Center). Amelia had returned to the facility where she was hatched and reared.

The cordgrass continues to expand and dominate a significant portion of the western end of the San Diego River at the bay and an all-time high of 8 pairs of breeding Light-footed Clapper Rails were there in 2004. The numbers have varied greatly since then with 7 breeding pairs detected in 2010, 6 in 2011 and 2012, a new record of 10 pairs in 2013, and now 9 pairs in 2014. One of the 9 pairs was detected in little Famosa Slough, south of the 8 Fwy and breeding was confirmed. One of the pairs detected in 2010 was well west of the others, close to the ocean at the dog park. A previously unknown population of Salt Marsh Bird's Beak, *Cordylanthus maritimus maritimus*, was also discovered there in 2010 just off one of the foot trails. There were several hundred plants but unfortunately they are being smothered out by the clumped invasive Algerian Sea Lavender, *Limonium ramosissimum*. Rails bred in the Zoological facilities have been released in the cordgrass marsh to potentially spawn a larger, more viable subpopulation. Five rails were released in each of three years, 2005, 2007, and 2010; 11 rails were released in 2011 including 5 females; and 9 more were released in 2012.

The habitat in the river west of the 5 Freeway appears quite suited for rails but management may be required to reach full potential. There are large rat and ground squirrel populations inhabiting the riprap along the channel, a known drop and feeding station for bolstering the tortured lives of feral domestic cats, and a large raccoon population. We are examining the prospects of filling and vegetating the riprap with pickleweed and maritime scrub, limiting the habitat suitability for egg-eating rats and expanding native habitat. However, the river is operated in part for flood control and regular high flows in wet years could greatly affect the rails therein. Any potential project would need to be well coordinated among many agencies. As usual, there were multiple reports of Clapper Rail detections 13 miles inland at Kumeyaay Lake. Again, reports from the lakes could not be verified by us (probably because these inland rails have been conditioned by rampant over-use of playback calls by birders). There were multiple sightings of the Clapper Rails in Famosa Slough reported to and by Jim Peugh in 2014 including chicks.

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 and listed in Table 1 under the Huntington Beach Wetlands (HBW). Four pairs were detected there in 2006 and 2007, only a single pair in 2008, 5 pairs again in 2009, 6 pairs in 2010 – 2012, 7 pairs in 2013, and a record 9 pairs in 2014 (again including one pair in the Brookhurst Marsh). The Santa Ana Marsh is at the southern terminus of the Huntington Beach Wetland Complex, comprised of 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. This cordgrass marsh is extremely well-developed and patches have grown into the main marsh as well. Although the main marsh area is heavily impacted by human residents

and their dogs from just across the main channel, one of the pairs detected each year in 2011 - 2013 was calling from the largest patch of cordgrass in the center of the main marsh. This pair was not enticed into calling in 2014.

Restoration of the Huntington Beach Wetlands is continuing and one of the pairs counted in the tally for this marsh complex was actually in the Brookhurst Marsh in 2010. Lena Hyashi reported a pair on April 19, 2010 vocalizing and observed along the larger stand of Spiny Rush near the dunes and PCH. This was the first record for Clapper Rails potentially breeding in the HBW Complex outside the Santa Ana River Marsh since the 1970s. Unfortunately, late in the 2010 season and in 2011 we were only able to elicit “kecking” from a male, so breeding was not confirmed. However, a pair was back again in the Brookhurst Marsh in 2012 - 2014.

The marsh at Agua Hedionda Lagoon previously held a maximum of 7 pairs of Light-footed Clapper Rails during three different years including 2011. The count was down to 6 pairs in 2009, only 2 pairs and a lone male in 2010, was back up to 7 pairs in 2011, hit an all-time high of 9 pairs in 2012, was just under that in 2013 with 8 pairs, and was down to 6 pairs and an advertising female in 2014. 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 during an early season count. Given the usual presence of unmated males in this little wetland, the female likely found a mate and bred. With the recently increased 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 2012. This subpopulation was augmented with the release of 5 rails from the breeding program in 2004, 6 in 2011, 16 in 2012, and 9 in 2013 on the inland edge of the inner lagoon. Although none of these banded rails has been re-sighted since, rails are being detected around the edge of the lagoon from marsh patches previously unoccupied.

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 and the rails currently appear to be using mostly the freshwater marsh habitat. The detection of 12 pairs was a record high for this wetland in 2007. The number plummeted to only 2 pairs in 2008, 4 pairs in 2009, 9 pairs in 2010, back up to 12 pairs in 2011 (4 of which were on the creek above the lagoon), down by one pair to 11 pairs in 2012 (6 of which were above the lagoon on the creek), again at 12 pairs in 2013 (4 were on the creek), but down to only 5 pairs (2 on the creek) and a male in 2014. In most years but particularly wet ones like 2011, the lagoon fills with runoff and much of the marsh remains inundated until late spring. Under these conditions, the rails do not call much and are difficult to detect until the marsh drains, later in the season; the conditions are too lake-like for breeding and foraging for a good part of the spring and early summer. Four rails bred at the Zoological facilities were released into Los Penasquitos in 2004, 4 more in 2007, and 9 in 2009. There was a re-sighting of a banded female hatched at the Wild Animal Park and released in 2007 at Los Penasquitos. She was photographed with her mate and 3 downy chicks on the edge of the pond below the San Diego Water Utilities Pump Station on Sorrento Valley Road on July 10, 2009 by Eric Kallen.

Historic detections of Clapper Rails on the San Luis Rey River have been rare and mostly confined to the freshwater marsh at the river mouth in Oceanside. Past reports of inland sightings could not be corroborated until recently when John Konecny found 2 pairs defending inland freshwater marsh habitat in 2010, 3 pairs in 2011 and 2012 (RZ), 4 pairs in 2013, and 5 pairs and a male in 2014. The freshwater marsh is being shaded out by willows and will probably not survive many more years unless the hydrology changes with higher flows.

The highest rail count on record for Buena Vista Lagoon was 9 pairs in both 2008 and 2009. The number was lower by one-third in 2010, by half to 3 pairs in 2011, back up to 9 pairs in 2012, but plummeted to only 2 pairs in 2013 and 4 pairs in 2014. Two pairs were detected in the eastern lagoon; and a pair each in the big central lagoon out from the Nature Center and in the small lagoon west of there, adjacent to the railroad tracks. There had been a 4-ac fire in the marsh adjacent to the interpretive center in 2013 but the vegetation recovered; the entire wetland abounds with extremely abundant raccoon sign. 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 people. In order to potentially bolster the subpopulation in this freshwater system, there was a release of 15 captive-bred Clapper Rails on July 19, 2011; all were released into the central lagoon. No releases have been allowed since then and probably won't be until the planned restoration is completed or the Department supports a release of radio-carrying rails.

Clapper Rail vocalizations were reported for Bolsa Chica and the San Joaquin Reserve in 2010 - 2014. The calling reported in the Reserve was likely an unmated male in 2010 but in 2011 breeding was documented by Barry Nerhus. A 9-egg nest was found in the southwest corner of cell 6 in bulrush in April; it subsequently hatched and chicks were observed. At least two pairs bred in the Reserve in 2011, one in 2012, two again in 2013 along with advertising males, and there was a pair and advertising female in 2014. With increased management for edge foraging habitat, this extensive freshwater marsh system has good future potential for rails, marauding raccoons notwithstanding.

Attempts to elicit responses to a tape-playback of a duet were unsuccessful at Bolsa Chica in 2011 and 2012, when only males were detected. Clapper Rail breeding behavior was observed definitively in the Bolsa Chica in 2010, 2013, and again in 2014 when a record two pairs bred. There was a pair on either side of the boardwalk parking lot along with a male down coast. All of the rails seen and heard recently at Bolsa have been on the marsh edge near the boardwalk and adjacent to Pacific Coast Highway (PCH), which is a potential death trap for the rails. The near constant noise masks predator cues and the fast moving vehicles would dispatch any rail that flushes that way. Unfortunately, a flushed rail would fly low and tend to flush into the adjacent uplands, which at Bolsa Chica is PCH. Recent reports of rails vocalizing from south Bolsa below the bluffs in the freshwater reed stands again could not be confirmed but there were multiple reports and photos of rails and young near the boardwalk in 2014.

The salt marsh at the mouth of the Santa Margarita River typically held a single pair of nesting rails for many years and occasionally there have been two. These pairs are invariably in the same spots from year to year; at the river mouth in freshwater marsh in the Sweetwater Marsh section of the estuary and/or between Stuart Mesa Road and the railroad tracks on the north side of the river in the freshwater marsh that rims a pond. Unusually, in 2008 a single pair was located on the channel surrounding the least tern island at the junction of the inlet channel. We did not gain access to do surveys in 2009 or 2010 but did a base-wide survey of the potential habitat on base in 2011. Once again, John Konecny found two nesting pairs in the Sweetwater Marsh section of the river mouth and nothing in the many little pocket wetlands scattered along the Pendleton coast. The Sweetwater Marsh Complex was checked once by Barry Nerhus in 2012 with negative results. Tom Ryan checked the Pendleton coast in 2013 and reported three points of calling to the state. Two points were south of the river along the little channels in the vicinity of the tern island and were described as a “purr” which must mean two advertising females; the third rail apparently uttered a single clapping at the mouth of San Onofre Creek. Access was again not gained in 2014.

None of the breeding pairs of Clapper Rails reported for the Sweetwater Marsh NWR were inland along the Sweetwater River in 2013. They had been detected annually for many years along the river above 2nd Street. In 2014 there was a single pair on the river again along with two pairs in the main marsh near the bay and main channel, one pair below the rail exhibit along with a female, and a pair in the E Street Marsh parcel. Breeding was documented on two rafts in 2013 with signs of partial hatches coupled with some depredation; no activity was documented in 2014. The Sweetwater Marsh Complex is endowed with a thriving raptor population, fully in evidence on every visit with ample good hunting perches spaced regularly along the marsh edge. The marsh growth is low and the rails are quite vulnerable. Four captive-bred Clapper Rails were released into Sweetwater in 2002, 11 in 2005, 6 in 2008, 14 in 2010, 3 in 2011, and 9 in 2012 (8 of 9 in Paradise Marsh) but none has been re-sighted.

The J Street Marsh parcel is the marsh just north of the power plant and salt works, dominated by cordgrass, probably has regular presence by Clapper Rails but is difficult to access and survey. Single pairs were detected annually in 2011 - 2014 next to the small park at the north terminus of the marsh. This little wetland currently sports some of the most vigorous cordgrass growth in the south bay and should be a focus site for future management.

The Otay River is channelized, typically 100 ft wide or less where it runs under the 5 Freeway, coursing northwest for about 3,200 ft to the salt works. Most of the vegetation along this stretch is dominated by cattails with willow over-story near the freeway. The channel continues another 10,200 ft until it opens to south San Diego Bay. This latter, longer stretch is dominated by upper salt marsh plants. Single pairs of rails were detected in 2011, 2012, 2014 and in many previous years calling from the vicinity of the bike trail overcrossing of the channel just south of the salt works. No presence was detectable there in 2013 but a single clapping and a male were heard on Otay Lake on a north finger near Route 9 and Otay Lake Road. The lake is lined with a narrow fringe of reeds that may harbor more rails than detected but the habitat is narrow and marginal. Reports of rails have been annual in recent years on a developing marsh portion of the

river where it flows into the salt works; the area is most easily accessible by kayak.

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 were breeding rails in the Reserve. In 2007, both a pair and a single responded to the tape; the rails were unresponsive in 2008; a single pair was heard again during three annual surveys 2009 – 2011; three pairs were vocal in 2012; and in 2013 and 2014 there were two pairs. This small isolated marsh has been regularly occupied by 1 – 3 pairs of rails poised to expand into a restored south bay over the 7 - 10 years following restoration of the new NWR.

The last known 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. Occasional reports of Clapper Rail vocalizations have been investigated in 2005 through 2014 but could not be corroborated. This northern wetland is plagued with domestic cats in the marsh and other predators of concern, most notably red fox. At least one red fox den location is known on the very edge of the marsh. Without consistent predator management, the chances for the reoccurrence of a viable subpopulation in Carpinteria Marsh are poor.

Nine of the 21 marshes with breeding Clapper Rails in 2014 were male-skewed and four were female-skewed; 1 of the 9 male-skewed marshes also had two advertising females, a situation that is probably very short lived. Minimum totals of 61 unmated males and 11 females were heard during the call counts including: 3 advertising males at Point Mugu; 12 single males on the Seal Beach NWR; 1 male at Bolsa Chica; 1 female at the San Joaquin Reserve; 1 male on the San Luis Rey River; 1 female at Agua Hedionda; 6 females in Batiquitos Lagoon; 1 male in San Elijo Lagoon; 9 males in the San Dieguito River Valley; 1 male in Los Penasquitos Lagoon; 16 males in the Kendall-Frost Reserve; 1 female in Swetwater NWR; and 17 males and 2 females in Tijuana Marsh. The usual condition has been a slight male bias during most years in most marshes. An extreme male skew or even a slight female skew could indicate major issues, unfortunately of an unknown nature but probably involving heavy depredation.

The continued annual release of captive-bred Clapper Rails is co-occurring with increased detections of rails in new locations, particularly inland sites on creeks, rivers, and lake edges. Some of the recent detections of interest are as follows. Rachel Woodfield photographed a single Clapper Rail at the Ballona Wetlands in August 2008; however, a portion of the marsh was checked in 2009 with negative results. There have been repeated sightings on the edge of Point Mugu at Ormond Beach 2009 - 2014. A Clapper Rail was heard and observed in Bolsa Chica at the foot bridge in October 2009, bred near there in 2010, and there are annual reports of sightings since then. There was also a rail reported in brackish marsh on Aera Energy property below Sea Point Avenue. Sue Hoffman flushed a single Clapper Rail adjacent to the mouth of the Santa Ana River in the plover yard at the Huntington State Beach California Least Tern nesting colony in 2008; a dead rail was reported between PCH and the Tern Colony in July 2009. A rail was reported from the lake at Laguna Niguel. Clapper Rails are still reportedly vocalizing in the reeds

at Kumeyaay Lake on the San Diego River including at least one advertising female in 2011. Clapper Rails are reported regularly in the San Dieguito River Watershed well inland of the Polo Club. Steve Brad reported a Clapper Rail in Encinitas Creek under the Calle Barcelona Bridge in 2011. Paul Lehman reported seeing a Clapper Rail at the northern end of Upper Otay Lake on April 20, 2009 and there have been occasional reports there for many years.

The Light-footed Clapper Rail population in California increased annually beginning in 2001, coincidentally the year of the first release of captive-bred rails into the wild, to a high count of 443 pairs in 2007 followed by the crash of 2008. The state population recovered from the crash with a 37% increase in 2009, growing annually thereafter to within two pairs of the 2007 record in 2011. In 2012 it reached a new high, for the first time exceeding 500 pairs statewide and has maintained 500+ breeding pairs annually for three consecutive years. However, many of the extant Clapper Rail subpopulations today remain too small for long term viability; 14 of 21 subpopulations were 16 pairs or fewer in 2014. On the other hand, the subpopulation in Upper Newport Bay is at a record high; Tijuana Slough exceeded 100 breeding pairs for at least three consecutive years recently; Batiquitos Lagoon has supported 40+ breeding pairs for four consecutive years; and several subpopulations are either expanding, holding, or fluctuating but at relatively high totals compared to the past, particularly in the Seal Beach NWR, Mugu Lagoon, San Elijo, Kendall-Frost, and San Dieguito River Valley. The future outlook for the Light-footed Clapper Rail is stronger now than at any other former time.

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LITERATURE CITED

- Chesser Terry R., Richard C. Banks, Carla Cicero, Jon L. Dunn, Andrew W. Kratter, Irby J. Lovette, Adolfo G. Navarro-Sigüenza, Pamela C. Rasmussen, J. V. Remsen, Jr., James D. Rising, Douglas F. Stotz, and Kevin Winker. 2014. Fifty-Fifth Supplement to the American Ornithologists' Union *Check-list of North American Birds*. The Auk: October 2014, Vol. 131, No. 4, pp. CSi-CSxv.
- Massey, B.W., and R. Zembal. 1980. A comparative study of the Light-footed Clapper Rail in Anaheim Bay and Upper Newport Bay, Orange County, CA. Contract Rep., End. Sp. Office, U. S. Fish and Wildl. Serv., Sacramento, CA. 69 pp.
- Massey, B.W., R. Zembal, and P.D. Jorgensen. 1984. Nesting habitat of the Light-footed Clapper Rail in southern California. *J. Field Ornithol.* 55: 67-80.
- Soule, M.E., D.T. Bolger, A.C. Alberts, J. Wright, M. Sorice, and S. Hill. 1988. Reconstructed dynamics of rapid extinctions of chaparral-requiring birds in urban habitat islands. *Conservation Biology* 2(1): 75 - 92.
- U. S. Fish and Wildlife Service. 1985. Recovery Plan for the Light-footed Clapper Rail. Portland, OR. 121 pp.
- Zembal, R., and B. W. Massey. 1981. A census of the Light-footed Clapper Rail in California. *West. Birds* 12: 87-99.
- Zembal, R., J.M. Fancher, C.S. Nordby, and R.J. Bransfield. 1983. Intermarsh movements of Light-footed Clapper Rails indicated in part through regular censusing. *California Fish and Game* 71: 164 - 171.
- Zembal, R., and B.W. Massey. 1985. Distribution of the Light-footed Clapper Rail in California, 1980 - 1984. *Amer. Birds* 39: 135-137.
- _____. 1987. Seasonality of vocalizations by Light-footed Clapper Rails. *J. Field Ornith.* 58: 41 – 48.
- Zembal, R., B.W. Massey, and J.M. Fancher. 1989. Movements and activity patterns of the Light-footed Clapper Rail. *J. Wildl. Manage.* 53: 39 – 42.
- Zembal, R. 1992. Light-footed Clapper Rail census and study, 1991. Contract Report to Calif. Dep. Fish and Game, Wildl. Manage. Div., Nongame Bird and Mammal Section Rep. 92-08. 32pp.

_____. 1993. The need for corridors between southern California's coastal wetlands and uplands, in J. E. Keeley, ed., *Interface between Ecology and Land Development in California*, Symposium proceedings, Southern California Academy of Sciences meetings at Occidental College, 1992.

Zemal, R., S.M. Hoffman, and J. Konecny. 2013. Status and distribution of the Light-footed Clapper Rail in California, 2013. CA Department of Fish and Game, Nongame Wildlife Unit Report, 2013-01. Sacramento, CA. 21 pp.