

**State of California
Natural Resources Agency
Department of Fish and Game**

**Status and Distribution of the Light-footed Clapper Rail
in California
2012 Season**

By

Richard Zembal and Susan M. Hoffman

Final Report

To

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

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2012 Season

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Huntington Beach Wetlands Conservancy
24821 Buckboard Lane
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ABSTRACT

The thirty-third annual census of the Light-footed Clapper Rail in California was conducted mostly from 19 February to 10 June 2012. Thirty coastal wetlands were surveyed by assessing call counts from Mugu Lagoon in Ventura County, south to Tijuana Marsh National Wildlife Refuge (NWR) on the Mexican border.

A total of 520 pairs of Light-footed Clapper Rails exhibited breeding behavior in 20 marshes in 2012. This is the highest count on record, representing a 17.9% increase over the breeding population detected in 2011, and 17.4% larger than the former high count in 2007. Upper Newport Bay with 165 pairs was once again the largest subpopulation in California with 20.4% more rails exhibiting breeding behavior than in 2011 and only 5.5% fewer than the high count in 2005 of 174 pairs. Tijuana Marsh NWR was at its fourth highest recorded level with 101 breeding pairs, a 10.6% reduction from the 2011 breeding season and 28.9% lower than the record high of 142 pairs in 2007. The Newport subpopulation comprised 31.7% of the state population in 2012 and the subpopulation in the Tijuana Marsh NWR comprised 19.4%, together accounting for 51.1% of the breeding population of this rail in California.

Seven of the small subpopulations increased in size from the 2011 totals, increasing by a combined total of 73 breeding pairs in 2012. The subpopulation in Batiquitos Lagoon

¹ Zembal, R. and S.M. Hoffman. 2012. Status and Distribution of the Light-footed Clapper Rail in California, 2012. California Department of Fish and Game, Wildlife Branch, Nongame Wildlife Program Report, 2012-02, Sacramento, CA. 20 pp.

maintained its high total of 43 breeding pairs, ranking it as the fourth largest subpopulation in California surpassed in 2012 by San Dieguito with an all-time high count of 45 pairs. Four of the smaller subpopulations were reduced by 1 to 3 pairs. Point Mugu increased from 16 pairs in 2011 to 22 pairs in 2012, a record high and the Seal Beach tally increased to 42 pairs. Detectable breeding pairs doubled in San Elijo Lagoon reaching a high count of 31 breeding pairs and the U.C. Kendall-Frost Reserve was down slightly to 16 pairs. Excluding the 2 largest subpopulations, there were 7 subpopulations in double figures, ranging from 11 to 45 pairs and totaling 210 breeding pairs or 40.4% of the state total. The remaining 11 subpopulations ranged from 1 to 9 pairs and totaled 44 breeding pairs of clapper rails, or 8.5% of the total.

The annual increases in the population total of the Light-footed Clapper Rail between 2002 – 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. Another record high count, this of 520 pairs of Light-footed Clapper Rails in 2012 is a manifestation of this subspecies' resiliency with appropriate 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. 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, an increase to 376 pairs in 2010, and to 441 pairs in 2011.

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 2012 statewide survey of the Light-footed Clapper Rail.

METHODS

The thirty-third consecutive annual census of Light-footed Clapper Rails in California was conducted mostly from February 19 through June 10, 2012. 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 2012 and a pre-nesting high tide count was accomplished on October 26, 2011 on the Seal Beach NWR; a post-nesting high tide count will be scheduled for Fall/early winter 2012. 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 2 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 2012 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 "clappings" 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 2012 call counts were conducted on 41 dates and totaled approximately 391 field-hours, mostly from February 19 – June 10, 2012.

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 principle 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 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.

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 520 pairs of Light-footed Clapper Rails exhibited breeding behavior in 20 marshes in 2012 (Table 1). This is the highest count on record, representing a 17.9% increase over the breeding population detected in 2011 (Zembal et al. 2011), and 17.4% larger than the former high count in 2007. Upper Newport Bay with 165 pairs was once again the largest subpopulation in California with 20.4% more rails exhibiting breeding behavior than in 2011 and only 5.5% fewer than the high count in 2005 of 174 pairs.

The Tijuana Marsh NWR subpopulation was at its fourth highest recorded level with 101 breeding pairs, a 10.6% reduction from the 2011 breeding season and 28.9% lower than the record high of 142 pairs in 2007. The Newport subpopulation comprised 31.7% of the state population in 2012 and the subpopulation in the Tijuana Marsh NWR comprised 19.4%, together accounting for 51.1% of the breeding population of this rail in California. In addition, 7 subpopulations ranged in size from 11 to 45 pairs, totaling 210 breeding pairs or 40.4% of the state total. The remaining 11 subpopulations ranged from 1 to 9 pairs and totaled 44 breeding pairs of clapper rails, or 8.5% of the total.

Six egg nests were found in 2012 in Upper Newport Bay compared to 4 in 2011, 5 in 2010, 6 in 2009 and 2 in 2008. Nest searching effort has been similar from year to year and in the same locations with 3 observers spending 60 field-hours over 4 field-days in 2011. The effort in 2012

was greatly diminished because it was started too late in the season and the six nests found had already hatched. The Propagation Team has made the decision that the captive flock will be repopulated as needed using mostly hatchlings from Newport eggs. So, nest searching will be conducted in a more timely manner beginning in 2013.

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 demonstrate the growth and resiliency indicative of a secure subpopulation; this rebound constitutes a 240% recovery from the 2008 crash. The slight decrease in 2012 is insignificant. Four of the pairs detected in 2011 and 2012 were in the restored "Model Marsh" south of the river where nesting was confirmed in 2010 with the discovery of several hatched egg nests.

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 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 at 43 pairs, and that total was maintained into 2012. This subpopulation is well on its way to becoming a large, resilient mainstay of clapper rail recovery. In 2012, there were 4 breeding pairs vocalizing from habitat adjacent to the western tern island and one advertising female near the southeast corner of the island; 11 pairs along the north edge of the inner lagoon; 24 pairs along the southern edge; and a pair in the northeast corner of the basin just west of the freeway. 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 pair responded to the tape from freshwater reeds along the southeast creek at Levante and El Camino Real along with two additional pairs farther east on the creek in freshwater marsh stands. The furthest east was just east of Barcelona Road.

Table 1. Census of the Light-footed Clapper Rail in California, 1980-2012.

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, 1980-2012.
(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 - 2012.
(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 - 2012.
(continued) Part IV: 2011 - 2012.

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

- indicates that no census was taken.

* indicates a fall or winter occurrence.

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

The subpopulation of Light-footed Clapper Rails recently 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. A few of the rails in recent years were calling from habitat rimming 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 creek will be more thoroughly investigated in 2013.

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; 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.

The Seal Beach NWR subpopulation has probably been 20 pairs or slightly more for most of the 2000s until 2011 and 2012 when 34 and 42 pairs bred there. This is the highest total since 1996 and 36.4% and the fifth highest count ever. Annual rainfall amounts have been average or better over the past few years and the cordgrass has been tall and dense for rail breeding. Evening call count results have generally been dismal 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, there ought to be a much larger breeding population on the Seal Beach NWR than what there has been since the 1990s. Raptor predation is suspected to be limiting rail survival and raptor monitoring sessions have been reinitiated and are documenting very high raptor numbers; high tide counts have also continued. 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 2011 breeding season, before the 2012 season; the post-breeding high tide count will be done in early winter 2012. The pre-nesting count was on 26 October 2011 and 96 individuals were sighted (Table 2).

The pre-nesting high tide count in 2011 was about what would be expected given a subpopulation level of around 34 breeding pairs with some recruitment. Most of the recent high tide counts have not been what would be expected given the size of the breeding subpopulation. Since the subpopulation had been steady at about 19 - 25 pairs until 2011, lower counts may be indicative of some of the rails moving undetected into the marsh edges as the tide moves in and prior to being counted by the observers in canoes. In addition, there are patches of marsh that are not entirely inundated and some of the rails flatten out on the water surface and virtually disappear as observers approach; several of them could go undetected as well. As usual, potential rail predators were out in abundance during the count, 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*). Every so often Short-eared Owls (*Asio flammeus*) are also observed in the marsh. 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. Usually at least half of the rails counted during the winter high-tide counts have been sequestered on the rafts.

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. 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, 23 pairs were in the east basin including 4 in the northeast along the creek and 8 pairs were in the Central Basin. San Elijo received an augmentation of 8 captive-bred rails in 2004, 5 in 2006, 4 in 2007, and 16 in 2009 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.

Table 2. High Tide and Call Counts of Clapper Rails on the Seal Beach National Wildlife Refuge, 1975 - 2011.

| 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 | |
| 23 Nov 1999 | 7.0 | 17 | 30 | 20 | |

Table 2 (continued). High Tide and Call Counts of Clapper Rails on the Seal Beach National Wildlife Refuge, 1975 - 2011.

| Date | Tidal Height | Clapper Rails Counted | Breeding Pair Members | | Notes |
|-------------|--------------|-----------------------|-----------------------|-------|-------|
| | | | Before | After | |
| 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 | - | |

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 population was back up to 9 pairs in 2009, 12 pairs in 2010, a minimum of 16 pairs in 2011, and an all-time high of 22 pairs in 2012. There is an efficient predator management program in place, consistent rail and marsh management, and the Clapper Rails are still breeding, although this subpopulation is not as large as would be hoped for in this, the biggest contiguous patch of potential habitat in the state. There were at least two pairs detected in the eastern arm/central lagoon and two pairs 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 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. 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 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 shattered the old long-distance movement of 13.5 miles recorded for the subspecies *levipes* (Zemba et al. 1983). The distance from Point Mugu to Upper Newport Bay is approximately 90 miles along the coast. An even greater distance, 160 miles was traveled by a female banded

1065-39863, released at Point Mugu August 25, 2009 and recaptured on November 4, 2010 at the Chula Vista Nature Center where she was hatched and reared. The captive-bred rails appear to be more prone to movements between marshes than was previously observed in wild birds. Many more of the 107 rails released at Point Mugu, 2001 - 2007 probably moved as well.

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 has been positive although down slightly to 16 pairs in 2012. The height of rail occupation of the Reserve was in the early 1980s; 24 pairs bred there in 1984. This marsh is small, totally isolated, and bordered by urban housing, but it is 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 2012) and used heavily by the rails there since 1987. There have also been translocations of eggs and adults (5 in 2003 and 7 in 2009). This culminated in 2012 in the fifth largest breeding population on record in the Reserve and the seventh largest in the state.

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 the record high of 12 pairs in 2011 (4 of which were on the creek above the lagoon), and down by one pair to 11 pairs in 2012 (6 of which were above the lagoon on the creek). In wet years like 2011 and even in not so wet years like 2012, 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 captive-bred rails were released there 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.

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, but was back up to 9 pairs in 2012. There were 5 pairs in the eastern lagoon and 4 pairs in the western lagoon but only a male in the central lagoon out from the interpretive center along 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.

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 and hit an all-time high of 9 pairs in 2012. 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 captive-bred rails in 2004 and 6 in 2011 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.

Clapper Rail vocalizations were reported for Bolsa Chica and the San Joaquin Reserve in 2010 - 2012. 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 and one in 2012. With increased management for edge foraging habitat, this extensive freshwater marsh system has good future potential for rails.

Attempts to elicit responses to a tape-playback of a duet were unsuccessful at Bolsa Chica in 2011 and 2012, although as usual there were pre-breeding season reports of an isolated individual. This follows the first recent affirmation of Clapper Rail breeding behavior in the Bolsa Chica in 2010. As with this 2010 detection, nearly all of the rails seen and heard at Bolsa have been on the marsh edge adjacent to Pacific Coast Highway (PCH), which is a 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 is PCH at Bolsa Chica. Recent reports of rails vocalizing from south Bolsa below the bluffs in the freshwater reed stands there could not be confirmed.

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, and 6 pairs in 2010 - 2012 (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 in both 2011 and 2012 was calling from the largest patch of cordgrass in the center of the main marsh.

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 (*Juncus acutus*) 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. A pair was back again in the Brookhurst Marsh in 2012.

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.

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 two pairs defending inland freshwater marsh habitat in 2010 and three pairs in 2011 and 2012 (RZ). The freshwater marsh is being shaded out by willows and will probably not survive many more years unless the hydrology changes with large flows.

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 and 6 in 2011 and 2012. 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*. Captive-bred rails have been released in the cordgrass marsh to potentially spawn a larger, more viable subpopulation; 5 rails were released in each of three years, 2005, 2007, and 2010. Then in 2011, we released 11 more captive-bred rails, 5 of which were females.

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 tapes by birders). There was also another report of a Clapper Rail sighting at Famosa Slough by Jim Peugh in 2012.

Three of the breeding pairs of Clapper Rails reported for the Sweetwater Marsh NWR were actually inland along the Sweetwater River in freshwater marsh above 2nd Avenue. There was a single pair in the main marsh, below the volunteer parking and a pair in the E Street Marsh parcel. 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, and 1 in 2011 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. A pair was detected there in 2011 and 2012 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. As is typical of the sightings here, the single pair of rails detected in 2011 and 2012 was calling from the vicinity of the bike trail overcrossing of the channel just south of the salt works.

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, there was silence in 2008, a single pair again in 2009 – 2011, and three pairs calling in 2012. This small isolated marsh will be regularly occupied when the habitat base in the south bay is greatly increased 7 - 10 years or more after the implementation of the proposed restoration of the new NWR, depending upon how much planting is accomplished and how much is left to natural recruitment.

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. Unfortunately, in 2005 through 2012 the silence persists. 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 appears to be lacking. Marsh managers reported rail vocalizations from two different areas in the marsh but a site visit on 21 April 2012 yielded a long look at a foraging adult red fox in thick winter coat and no rail detections. Apparently, at least one red fox den location is known on the very edge of the marsh. Without dealing with the foxes in particular through consistent predator management, the chances for the rejuvenation of a viable subpopulation in Carpinteria Marsh are non-existent.

Twelve of the 20 marshes with breeding Clapper Rails in 2012 were male-skewed and one was female-skewed; 2 of the 11 male-skewed marshes also had one or more advertising females each, a situation that is probably very short lived. Minimum totals of 96 unmated males and 5 females were heard during the call counts including: 8 advertising males at Point Mugu; 36 single males on the Seal Beach NWR; 9 males at Upper Newport Bay; 2 males at the San Joaquin Reserve; 2 males at Buena Vista Lagoon; 2 males in Batiquitos Lagoon; 2 males in San Elijo Lagoon; 9 males in the San Dieguito River Valley; 1 male on Los Penasquitos Creek; 4 males in the Kendall-Frost Reserve; 1 female on the San Diego River; 1 male on the Sweetwater River; and 20 males and 3 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 - 2012. 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, a situation we will continue to explore. Steve Brad reported a Clapper Rail in Encinitas Creek under the Calle Barcelona Bridge in 2011; there are probably more on that creek but access is tough. 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 rebounded with a 37% increase in 2009 from a crash in 2008; another 17.5% increase in 2010 to the third highest total since 1980; in 2011 it recovered to within two pairs of the 2007 high count; and in 2012 it reached a new high adding 79 breeding pairs statewide. The typical Clapper Rail subpopulation today remains too small for long term viability; 14 subpopulations were 22 pairs or smaller in 2012. However, the subpopulation in Upper Newport Bay is stable, several subpopulations are expanding particularly in Batiquitos Lagoon, San Dieguito River Valley, San Elijo and Seal Beach NWR, and in the Tijuana Slough, good resiliency has been demonstrated in recent years. Sedimentation issues notwithstanding, if these trends continue perhaps one day we may need to reassess the degree of endangerment of one of yesterday's most imperiled California bird species.

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