STATUS AND MANAGEMENT OF LIGHT-FOOTED CLAPPER RAILS IN COASTAL SOUTHERN CALIFORNIA

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1992 TRANSACTIONS OF THE WESTERN SECTION OF THE WILDLIFE SOCIETY 28:1-5

Abstract: Population monitoring of endangered light-footed clapper rails (*Rallus longirostris levipes*) from Carpinteria Marsh in Santa Barbara County to Tijuana Marsh in San Diego County, California was conducted from 1980 to 1991. Annual spring call counts ranged from 277 pairs in 19 marshes in 1984, to 142 pairs in 14 marshes in 1985. In 1991, 235 pairs were detected in 11 marshes, the historic northern subpopulation in Carpinteria Marsh had been extirpated, and up to 71% of the entire U.S. population was concentrated in one marsh, Upper Newport Bay, Orange County. Nesting rafts were provided at the Seal Beach National Wildlife Refuge (SBNWR) beginning in 1987 and by 1991 the 60 rafts available held 37 nests and 30 clutches of eggs with an overall hatching success of 72%. Red foxes (*Vulpes vulpes*), were problematic non-native predators of clapper rails and were trapped, beginning in 1986 and through 1989, 275 foxes were removed from the SBNWR and surrounding 4,000 acres. From 6 breeding pairs in 1989, the clapper rail population at Seal Beach increased to 28 pairs by the spring of 1991. A post-breeding high tide count in November, 1991 revealed a minimum of 98 clapper rails, the highest count ever recorded in this marsh.

Light-footed clapper rails are reclusive residents of some of the coastal wetlands of southern California with an historic U. S. range extending from Carpinteria Marsh in Santa Barbara County to the Tijuana Estuary NWR in San Diego County on the border of Mexico. These rails also occur in two large marshes in Baja California, Mexico.

Loss and degradation of habitat led to the listing of this subspecies as endangered in 1973. Although coastal marshes were never very extensive in southern California (Barbour and Major 1977), an estimated 10,522 ha (26,000 acres) of coastal wetlands have been reduced to fewer than 3,440 ha (8,500 acres) (Speth 1971). Less than half of the available habitat has recently supported clapper rails and in most occupied marshes, they occur in very low densities (Zembal and Massey 1985). The Recovery Plan for this subspecies identifies an increase to 4,047 ha (10,000 acres) of habitat as an objective (U.S. Fish and Wildlife Service 1985). This will be quite costly and could take more time than the rails are likely to survive without active management.

In this paper I report the status and distribution of this endangered species and recent successful manamgement efforts in providing nesting sites and reducing predation on the Seal Beach National Wildlife Refuge (SBNWR).

STUDY AREA

The marshes occupied recently by light-footed clapper rails were described by the U.S. Fish and Wildlife Service (1985) and Zembal and Massey (1981). The SBNWR covers 369 ha (911 acres) of the 2,024 ha (5,000 acre) Seal Beach Naval Weapons Station (Station). 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.

METHODS

Population Status

About 40 coastal wetlands were censused annually from 1980 to 1991, throughout the range of the light-footed clapper rail. The locations of vocalizing rails were mapped at each marsh in the spring time for an accurate estimate of breeding population size (Zembal and Massey 1981, 1985). Call counts were conducted mostly in the 1-2 hrs before dark, a time of day when vocalizing appears to be most persistent (Zembal and Massey 1987). In small marshes, in those with no recent record of clapper rails, and where the rails have been found in very low density, playbacks of taped "clappering" (Massey and Zembal 1987) were used sparingly to elicit responses. On the SBNWR, annual post-breeding counts were also made from 1975 to 1991, on early fall or winter mornings during extreme high tide. Under such conditions, the rails are forced from cover and can be sighted by observers.

Nesting Site Management

Nesting rafts were installed on the SBNWR beginning with 28 in 1987 and increasing to 60 by 1991. The pine rafts measure 1.3 m (4.25 ft) by 0.6 m (1.8 ft) and are made of four pieces of 2x4-in wood with two cross pieces at either end. A tumbleweed fastened with braided nylon cord provides the nesting cover. Two dowels were partly embedded vertically in the substrate to allow the rafts to float up and down but not away. The rafts were checked about every three weeks from March to August of each year.

Table 1. Census of the light-footed clapper rails in California, 1980-1991. Dashes indicate no censuses were conducted.

	Number of Pairs Detected In:											
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Santa Barbara County												
Goleta Slough	0	0	-	0	-	-	-	-	0	0	0	0
Carpinteria Marsh	16	14	20	18	26	7	4	5[2]	2[2]	0	0	0
Ventura County												
Ventura River Mouth	-	-	0	0	-	-	-	-	-	0	0	0
Santa Clara River Mouth	-	-	0	-	-	-	-	-	-	0	0	0
Mugu Lagoon	-	0	-	1	3	7	6	7[2]	7[2]	5	6[2]	4[2]
Los Angeles County												
Whittier Narrows Marsh	-	-	-	0[1]	0	-	-	-	-	0	-	-
Orange County												
Seal Beach NWR	30	19	28	20	24	11	5	7	14	6[2]	16	28
Bolsa Chica	0	0	0	0	-	-	-	0[1]	0	0[1]	0[2]	0[1]
Huntington Beach Strand	-	0	-	-	-	-	0	0	0	0	0	0
Upper Newport Bay	98	66	103	112	112	87	99	119	116	116	131	128
San Joaquin Reserve	-	-	5	4	1	2	1	0	0	0	0	0
Carlson Rd Marsh	-	-	5	4	2	0	0	1[2]	0	0	0	0
San Diego County												
San Mateo Creek Mouth	-	-	0	0	-	-	0	-	0	0	0	0
Las Pulgas Canyon Mouth	-	-	0	0	0	-	-	-	-	0	-	0
Las Flores Marsh	-	-	0	0	0	-	0	-	0	0	0	0
French Canyon Mouth	-	-	-	0	0	-	-	-	-	0	-	0
Cocklebur Canyon Mouth	-	-	1	0	0	-	-	0	0	0	0	0
Santa Margarita Lagoon	0	0	2	1	2	1	1	1	1	0	0	0
San Luis Rey River Mouth	-	-	0	0	-	-	0	0	0	0	0[2]	0
Guajome Lake Marsh	-	-	0	1	2	0	0	0	0	0	0	0
Buena Vista Lagoon	0	0	0	0[1]	0	-	-	-	0	0	0[2,3]	2[2]
Agua Hedionda Lagoon	1	2	1	7	6	1	0	0	0	0	0	0
Batiquitos Lagoon	0	0	0	0	0	-	-	-	-	0	0[2]	0[2]
San Elijo Lagoon	-	5[3]	4	4	10	1	0	2	5[2]	7[2]	5[2]	5
San Dieguito Lagoon	-	-	-	-	-	-	-	0[1]	0	0	0	0
Los Penasquitos Lagoon	-	0	-	0	0	-	0	-	1[2,3]	0	0	0[2]
Kendall-Frost Reserve	18	16	6	20	24	17	12	6[2,3]	4[2,3]	4[2]	5[2]	9
San Diego Riv FCC	-	3	1	2	2	1	0	0	1[2,3]	0[2]	2	5
Paradise Creek Marsh	1	2	3	1	1	0	0	0	0	0	0	0
Sweetwater Marsh	4	5	7	6	14	3	9	5[2,3]	5	5[2]	2[2]	4[3]
E Street Marsh	3	1	3	3	2	2	2	0[3]	1[2]	0	0	1[3]
F Street Marsh	-	1	1	0	1	0	0	0	0	0	0	0
J Street Marsh	-	1	0	0	-	-	0	0	0	0	0	0
Otay River Mouth	3	4	5	3	5	1	1	0	0	0	0	0
South Bay Marine Reserve	3	3	1	1	2	1	1[3]	2[2]	5	5[2]	5	2
Dairymart Ponds	-	-	-	-	-	-	0	0[1]	1a	0[2]	0[2,3]	0[2]
Tijuana Marsh NWR	26	31	25	41	38	0	2	23[2,3]	14[2,3]	15[2,3]	17[2,3]	47[3]
Total:												
Pairs	203	173	221	249	277	142	143	178	177	163	189	235
Marshes	11	15	18	18	19	14	12	11	14	8	9	11

[1] Fall or winter occurrence

[2] Detection of unpaired rails (used beginning in 1987).

[3] Data are from Paul Jorgensen's field notes.

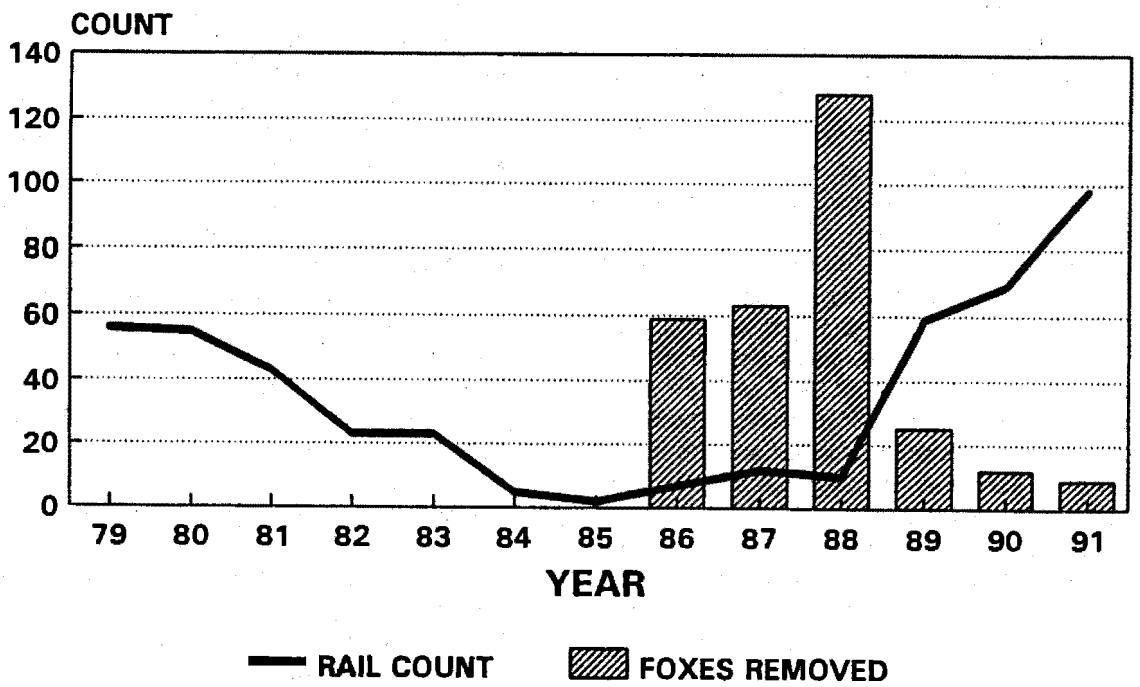

Fig. 1. Light-footed clapper rails counted during high-tide surveys and red foxes removed from Seal Beach NWR.

Table 2. Light-footed clapper rail use of nesting structures and hatching success at Seal Beach NWR, 1987-1991. Figures for 1990 include data for all nests, and in parentheses, for nests placed in staked tumbleweeds.

	1987	1988	1989	1990		1991
Number of nests	18	24	17	36	(15)	37
Spring call count	7	14	6	16	(-)	28
Number inubation nests	12	13	4	20	(8)	25
Percent nests with eggs	67	54	24	56	(53)	68
Perecnt hatching success[1]	75	8	75	65	(38)	68
Number of renests[2]	4	2	-	3	(2)	5
Renest percent hatching sucess	75	0	-	100	(100)	90

[1]Hatching success is based on post-hatching sign which is sometimes rated at an intermediate probability (0.5) between certain hatching (1) and no hatching (0).

[2]A renest is defined here as a second clutch in the same nest.

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