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A STUDY OF THE CALIFORNIA CLAPPER RAIL IN ELKHORN SLOUGH^{1/}
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by
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ABSTRACT

An attempt to census the population of California clapper rails (Rallus longirostris obsoletus) in Elkhorn and Moro Cojo Sloughs, Monterey County, California was initiated. No evidence of rails was found in Moro Cojo Slough. A minimum population was set at 14 birds for Elkhorn Slough. A detailed description of a nest site is presented. Survey techniques, including rope drags, broadcasting of taped rail calls and observations on rail "runways", are discussed relative to their feasibility and validity. Data are presented on 5 captured chicks. Recommendations are made to insure the protection of the limited rail population in Elkhorn Slough.

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RECOMMENDATIONS

To assure the protection of the limited population of endangered California clapper rail in Elkhorn Slough, the following recommendations are made:

- (1) A follow-up study be initiated in March, 1973, well before courtship ends, making it possible for:
 - (a) A more accurate population estimate.
 - (b) More detailed observations on mated birds.
 - (c) More complete data on hatching and fledging success.
- (2) The environmental impact study of the proposed rerouting of State Highway 1 take into consideration the project's effect on the California clapper rail and measures to be taken to assure its protection.

INTRODUCTION

Elkhorn Slough and its environs provide a suitable habitat for many species of migrant and resident birds (Browning, 1972). One resident bird in this area of particular interest is the endangered California clapper rail (Rallus longirostris obsoletus). The California clapper rail was first reported as a resident of Elkhorn Slough by Grinnell, et al (1918). Since that time no one has studied, to any extent, the biology of the California clapper rail in Elkhorn Slough.

This study was undertaken to determine: (1) number of California clapper rails present in Elkhorn Slough; and, (2) location of nesting sites.

STUDY AREA

Elkhorn Slough, located in Monterey County, California, is a shallow estuary. The primary study area (Figure 1) included 1,860 acres of mudflats and salt marsh in Elkhorn Slough. The secondary study area in Moro Cojo Slough, a relatively small estuary located approximately 1 mile south of Elkhorn, included 21 acres of mudflats and salt marsh.

The predominant marsh plant of both sloughs is pickleweed (Salicornia virginica). Also of significance are the isolated clusters of salt grass (Distichlis spicata) and gumplant (Grindelia humilis).

METHODS AND MATERIALS

The study was conducted from April 9 to June 23, 1972. The study areas were traversed on foot. Birds were located by rope drag or by their response to taped clapper rail calls. Areas where California clapper rails responded consistently to taped calls were assigned station numbers (Figure 1). All such designated stations were sampled serially in groups to avoid duplicate counts. The limits of a station's primary channel frontage were established at the farthest points rail tracks could be found in either direction of the tape's central location. This distance, estimated from an aerial photograph, defined the length of a sample station. Width of a station was arbitrarily determined; thusly, making territorial acreage estimates impossible.

RESULTS

Moro Cojo Slough

No California clapper rails nor signs of rails were found in Moro Cojo Slough. The mudflats and salt marsh were found to be unsuitable as rail habitat in that there were no undercut mudbanks nor sufficient food items.

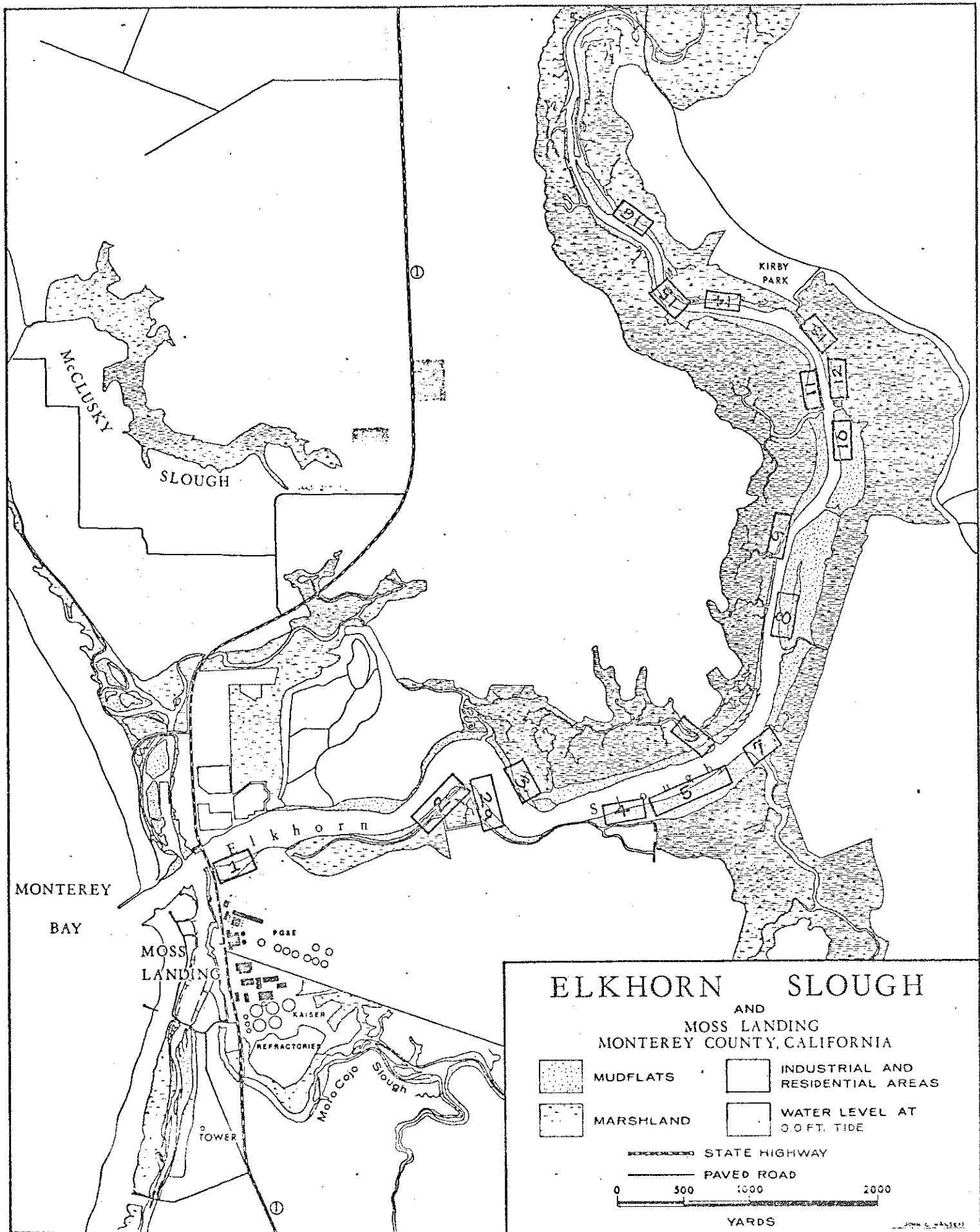


Figure 1. Sample stations in Elkhorn Slough, Monterey County, California.

Elkhorn Slough

Population estimate

Table 1 represents the frequency of occurrence of rails at selected sample sites in Elkhorn Slough. As Table 1 indicates, rope drags flushed only 3 clapper rails. None of these birds was found to be nesting within a 20 meter radius of the flush point. Broadcasting of taped clapper rail calls from a boat yielded the best results. A minimum population estimate of 14 California clapper rails was established for Elkhorn Slough by adding the number of birds noted on April 21 (stations 7-16) and April 30 (stations 1-8). Although more than a week separated these two sample days, it is believed that duplicate counts were avoided. Stations 6 and 10 are approximately 1 mile apart and no rails were noted at stations 7, 8 or 9 on either sample day.

Nest sites

Subsequent investigations of sample sites frequented by rails revealed only 1 nest at station 10 (Figure 1). The nest, which was found on May 5, contained 6 eggs averaging 44 mm in length and 29.5 mm in width. On each of 2 successive visits, May 6 and 7, an additional egg was noted making a total of 8 eggs. This clutch size is comparable to the mean clutch size (7.62) of 4 studies conducted in south San Francisco Bay (Gill, unpublished).

The nest was centered 15 meters from the primary channel and 2 secondary channels. The nest was situated on a slightly higher piece of ground under a Salicornia bush.

There was nothing distinctly different about the nest site which would distinguish it from the typical salt marsh habitat of Elkhorn Slough except for the presence of Distichlis and Grindelia scattered in small clumps around the nest site. The nest, a perfect saucer shape, was lined with Distichlis and dead Salicornia twigs. The canopy was constructed by the intertwining of a few of the upper branches of the Salicornia bush. On May 28, a rail was found incubating. It would not flush from the nest until gently touched on the back. On June 5, the nest was empty. Close examination of the undercut mudbanks in the area revealed both adult rails and 4 chicks. Data on the 4 chicks are in Table 2. Also on June 5, a larger chick was captured and banded at station 2a, (Figure 1).

Feeding

California clapper rails were observed foraging on 3 separate occasions. In all instances, the birds were feeding on striped shore crabs (Pachygrapsus crassipes) which they procured from under the mudbanks. They would place the crab on the mud; then, using the bill like a jackhammer, crack the crab open to expose the meat and entrails.

"Runways"

Tidal flow in the primary channel of Elkhorn Slough is sufficient to undercut the bordering mudbanks. These undercut mudbanks were extensively used as

Table 1. Adult California Clapper Rails Sighted at Elkhorn Slough, Monterey County, California

Date	Stations																	
	1	2	2a	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
April 15																		1*
April 16											2*							
April 18	0	2	0	1	1	2												
April 21								0	0	0	2	1	1	0	1	0	0	
April 22	0	1	0	1	0	2												
April 30	0	2	1	1	1	3	1	0	0	0								
May 1	0	1	0	0	0	1												
May 5											1	0	0	1	1	0	0	
May 12	0	0	3															
May 13																		0
May 16	0	1	1	1														
May 18					0	1												
June 5	0	0	1															
June 12					0	0												
June 16																1	0	
June 20							0											

* Indicates rails that were flushed using a rope drag

Table 2. Data on California Clapper Rail Chicks Captured in Elkhorn Slough, Monterey County, California.

Chick No.	Station No.	Weight	Wing Length
		gr	mm
1	10	15.0	25.0
2	10	15.0	23.0
3	10	15.0	28.0
4	10	16.0	27.0
5*	2a	100	302.0

* No. 5 chick was banded. Band No. = 765-27501

"runways" by California clapper rails. Neither tracks nor rails were noted in secondary channels which are not nearly as undercut as the primary channel. When tides are high enough (>+5.5 feet) the "runways" are flooded, thus blocking the escape route of the rails. They then can be readily trapped on higher ground in the vicinity of the "runway". On one occasion, a rail, cornered in this manner, swam across a channel 30 meters wide to reach safety on an opposite levee. The propensity of California clapper rails to use these "runways" and the fact that no signs of rails were noted in secondary channels indicate that the territory of a breeding pair of rails must include frontage on the primary channel. At all sample stations, except station 10, where the breeding pair were recorded, each rail averaged approximately 300 meters of primary channel frontage.

DISCUSSION

Nest location is essential to any future clapper rail study at Elkhorn Slough. At a distance, different areas of salt marsh look identical; i.e., it appears the only plant form present is Salicornia. On closer examination, however, one can find isolated clusters of Distichlis and Grindelia located on slightly higher ground. These can indicate prime nesting areas. To find clapper rail nests by walking randomly selected sites would not only be time-consuming but highly unproductive. The most feasible method of locating nesting California clapper rails in Elkhorn Slough is through the use of taped calls. The chorus effect, as described by Gill (unpublished), is not a problem. There are relatively fewer rails in Elkhorn Slough than in south San Francisco Bay. When, during the breeding season, paired birds are consistently drawn out of an area of salt marsh, one can assume that nesting activities are beginning in that area. This assumption coupled with observations noting the amount of rail activity under the primary channel mudbanks, can lead to the establishment of a definite area to be examined more closely for Distichlis and Grindelia patches.

This study was started too late to lend much credence to the aforementioned technique. It is my contention that by the time the tape was employed (April 18) most of the California clapper rails were already nesting. It is suspected that nesting rails are less responsive to calls and it would therefore be more difficult to find a vocalizing pair of birds near their nest site. This is supported by the fact that out of 33 encounters with vocalizing rails in Elkhorn Slough, only 1 encounter was with paired birds.

ACKNOWLEDGEMENTS

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APPENDIX

Table A. Survey of birds in Elkhorn Slough, Monterey County, California. Species counts were made at 4 selected stations and are represented, for any one survey date, as the sum of birds noted at all 4 stations.

Species Code	AOU No.	Date									
		Apr 12	Apr 15	Apr 18	Apr 21	Apr 30	May 5	May 12	Jun 5		
AA	225	1	6		2		1	2		1	
BRB	174	2									
COOT	221	3	7	4							
CLL	204	1	4		1					1	
DWS	231	2	3	5		18		2			
DL	243				1		1				
EGS	197	13	11								
EG	349		1								
FP	356			1							
G	135		2								
GWM	249	16	13	143	131	62					
GRE	004	1		1		2					
GRH	003	1									
GRW	001	3		6	2	2					
G UW	049	4	7	22	13	26		7	3	5	
HEGB	194	3									
LC	007	6									
PRW	223		1				1				