

Temporal and Spatial Patterns in Population Trends in California Clapper Rail (*Rallus longirostris obsoletus*).



Photo by J. Evens

**2005 Progress Report
PRBO Conservation Science
Agreement No. P0430009
October 31, 2005**

Mark Herzog¹, Len Liu¹, Jules Evens², Nadav Nur¹, and Nils Warnock¹

¹PRBO Conservation Science, 4990 Shoreline Highway 1, Stinson Beach, CA 94970

²Avocet Research Associates, 65 3rd St., Suite 25, Point Reyes, CA 94956

Introduction

The California Clapper Rail (*Rallus longirostris obsoletus*) is one of the most endangered species in California. The species has been in decline for many years and there has never been a complete survey of its population and distribution within the San Francisco Estuary. However, in 1992/1993, synoptic Clapper Rail surveys were performed within San Pablo and Suisun Bays.

In 2005, PRBO Conservation Science (PRBO) and Avocet Research Associates (ARA), in collaboration with California Department of Fish and Game, East Bay Regional Park District, the Invasive Spartina Project, the San Pablo Bay National Wildlife Refuge, and San Francisco Bay National Wildlife Refuge (Table 1), completed the first field season of a two year study to conduct an estuary-wide survey and examine the temporal and spatial patterns in California Clapper Rail populations. This document is provided to California Department of Fish and Game to update the status of that research.

Methods

Censuses were conducted from January through April in 2005. Most marshes were surveyed 2-3 times using a linear transect method, with 10 minutes per listening station. Listening stations were placed 200-400m apart. All Clapper Rail vocalizations were recorded with the time, direction and distance from the listening station. If no Clapper Rail had been detected at a listening station on three previous censuses, tape playback of California Clapper Rail vocalizations was used to stimulate a response. Vocalizations were assumed to represent 1-2 rails, except when known to be a single individual or a pair.

For a preliminary estimate of our 2005 data, a mean based on the minimum and maximum number of Clapper Rails detected was calculated for each survey site. The mean number of Clapper Rails at each survey point was then used to calculate an approximate density, by assuming that for each point a 200m radius area of marsh was surveyed. The average density across the survey points within each marsh was then multiplied by the total marsh area to arrive at an approximate number of Clapper Rails per marsh.

Results

In 2005, researchers surveyed 50 sites in the San Francisco Estuary for Clapper Rails. Basic information on 46 of the sites where PRBO or ARA performed the surveys or where we have received summarized data from our collaborators is presented (Table 1, Fig. 1).

Of these 46 surveys, we did not detect rails at 19 sites, including all 9 Suisun Bay sites. At those sites where rails were detected densities varied between 0.1 and 3.0 birds per hectare (Table 1). Where we have comparable data from past surveys, trends of rails varied substantially between the surveys done in the early 1990s and 2005 (Fig. 2-7).

In the Gallinas Creek region (Fig. 2), Clapper Rail numbers generally increased or remained the same. Conversely, in the Napa River, numbers appeared to remain the same or decrease (Fig. 3). No Clapper Rails were detected at Fagan Slough, where 10 were detected in 1992. In the two sites in north San Pablo Bay surveyed in 1992/1993 and 2005, trends in rail numbers are not consistent (Fig. 4). At Petaluma River Mouth we detected a large number of rails in 1993 and 2005. However, at the mouth

of Sonoma Creek, where nearly 25 Clapper Rails were detected in the early 1990s, no rails were detected in 2005. Sites in Southeast San Pablo Bay showed similar patterns (Fig. 5). At Pt. Pinole, a low density site in 1992/1993, no rails were detected, and Wildcat Creek showed a substantial decline in numbers. In South Marin, numbers increased 2.5 – 5 times at Heerdt and Muzzi marshes respectively, but at a very low density site (Richardson Bay) we did not detect any Clapper Rails (Fig. 6). Finally, at Suisun Bay we did not observe any Clapper Rails in 2005, including at Point Edith, whereas a large number of Clapper Rails were detected in the early 1990s (Fig. 7).

These preliminary results show significant changes in Clapper Rail densities among sites within the San Francisco Estuary since the early 1990s, but it is still too early to tell whether the overall population of Clapper Rails has changed. While Clapper Rails may have disappeared from Suisun Bay and Clapper Rail numbers in San Pablo Bay are variable, it is generally believed that numbers in San Francisco Bay have increased, especially in some areas of South San Francisco Bay. The final compilation of 2005 survey numbers (which include a large number of San Francisco Bay sites) as well as 2006 survey data, should provide a more detailed picture of the current Clapper Rail population. We plan to survey a number of new sites as well as repeat a number of sites surveyed in 2005, these surveys and will help us further define the spatial and temporal variation in Clapper Rail populations from the early 1990s to the present.

Products

This year PRBO and ARA presented preliminary Clapper Rail results at two conferences:

Liu, L., J. Evens, M. Herzog, N. Nur, and H. Spautz. 2005. California Clapper Rail population trends in the San Francisco Bay Estuary. Presented at the 123rd American Ornithologists' Union, Santa Barbara, CA.

Liu, L., J. Evens, M. Herzog, D. Stralberg, N. Nur, H. Spautz, C. Wilcox. 2005. California Clapper Rail population trends in the San Francisco Bay Estuary. Presented at the 7th Biannual State of the San Francisco Estuary Conference, Oakland, CA.

Abstracts and reprints of these posters are available upon request.

Acknowledgements

During 2005, PRBO benefited greatly from collaboration from a number of other organizations and agencies (Table 2).

We would also like to thank P. Abbaspour, M. Flett, R. Keck, A. Robinson, H. Spautz, and E. Strauss for their valuable help in our 2005 field collection, and California State Parks, Chevron, City of Palo Alto, and Pacific Gas & Electric (PG&E) for site access.

Table 1. Preliminary list of Clapper Rail Surveys that occurred in 2005 and have a known location. Density estimates are minimum and maximum densities based on methods describe in progress report.

#	Survey Sites	Area Estimated Density			#	Survey Sites	Area Estimated Density		
		(ha)	Low	High			(ha)	Low	High
Central San Francisco Bay					22	Wildcat Marsh south	34	0.1	0.2
1	San Bruno (SamTrans Peninsula)	14	2.0	2.6	22a	Wildcat Marsh north	40	0.1	0.2
1a	San Bruno Point	9	2.3	3.0	23	Point Pinole North	24	0.0	0.0
2	Bothin Marsh, Richardson Bay	38	0.0	0.0	24	Pinole Creek mouth	10	0.0	0.0
3	Muzzi Marsh	46	0.7	0.8	Suisun Bay				
4	Heerdts Marsh	24	1.4	1.7	25	Peyton Slough	50	0.0	0.0
5	Meeker Slough, Inner Richmond Harbor	11	0.1	0.2	26	Point Edith	150	0.0	0.0
San Pablo Bay					27	Reserve Fleet/Goodyear Slough	60	0.0	0.0
6	Gallinas Creek, north fork	11	0.6	0.8	28	Suisun Slough mouth	100	0.0	0.0
7	Gallinas Creek, south fork	13	1.6	1.8	29	Cordelia Slough	20	0.0	0.0
8	Gallinas Creek mouth, south (China Camp State Park)	47	0.2	0.2	30	2nd Mallard Slough	15	0.0	0.0
9	Gallinas Creek mouth, north	36	1.5	1.8	31	Cutoff Slough	75	0.0	0.0
10	Gallinas Ck. North (Hamilton south)	36	0.8	1.0	32	1st Mallard Slough	30	0.0	0.0
11	Hamilton Field	29	0.0	0.1	33	Hill Slough	23	0.0	0.0
12	Bahia Lagoon	8	2.0	2.8	South San Francisco Bay				
13	Bahia channel-Toy marsh	55	0.1	0.1	34	Sanchez Marsh (Burlingame Lagoon)	2	0.0	0.0
14	Carl's Marsh	24	0.1	0.2	35	Coyote Point Marina	4	0.0	0.0
15	Port Sonoma Marina	4	0.7	0.8	36	Seal Slough, San Mateo	24	0.2	0.3
16	Sonoma Creek	27	0.0	0.0	36a	Joinsville Marsh	6	0.0	0.0
17	Skaggs Is. Bridge	5	0.0	0.0	37	Outer Bair East (channels)	100	0.1	0.1
18	(White Slough N)	99	0.1	0.1	37a	Outer Bair East (levees)	56	0.1	0.1
18a	(White Slough S)	45	0.0	0.1	38	Middle Bair East	41	0.4	0.6
19	Pond 2A	92	0.0	0.0	39	Greco Island North	111	0.2	0.3
20	Coon Island	76	0.1	0.2	40	East Palo Alto	33	0.6	1.1
21	Bull Island	60	0.0	0.0	41	Palo Alto Baylands	30	0.2	0.5
					42	Dumbarton West	84	0.1	0.1
					43	Mowry Slough	34	0.2	0.3
					44	Newark Slough	30	0.0	0.1

Note: There are still several sites not included on this list and corresponding map (see Figure 1), as we have not received data and/or specific locations for that marsh from our collaborators prior to completion of this progress report, but anticipate the data will be available for use in the final product.

Table 2. List of collaborators in 2005 that collected California Clapper Rail (*Rallus longirostris obsoletus*) data that will be used in final bay wide analyses.

<i>Collaborators</i>	<i>Region of Data Collection</i>	<i>Contacts</i>
California Department of Fish and Game	San Francisco and Suisun Bays	S. Estrella, J. Krause
East Bay Regional Park District	San Francisco Bay	S. Bobzein
Invasive Spartina Project	San Francisco Bay	P. Olofson
San Pablo Bay National Wildlife Refuge	San Pablo Bay	G. Downard
San Francisco Bay National Wildlife Refuge	San Francisco Bay	J. Albertson

Figure 1. Map of San Francisco Estuary and preliminary 2005 survey site locations. Original map courtesy of San Francisco Estuary Institutes EcoAtlas version 1.50b4.

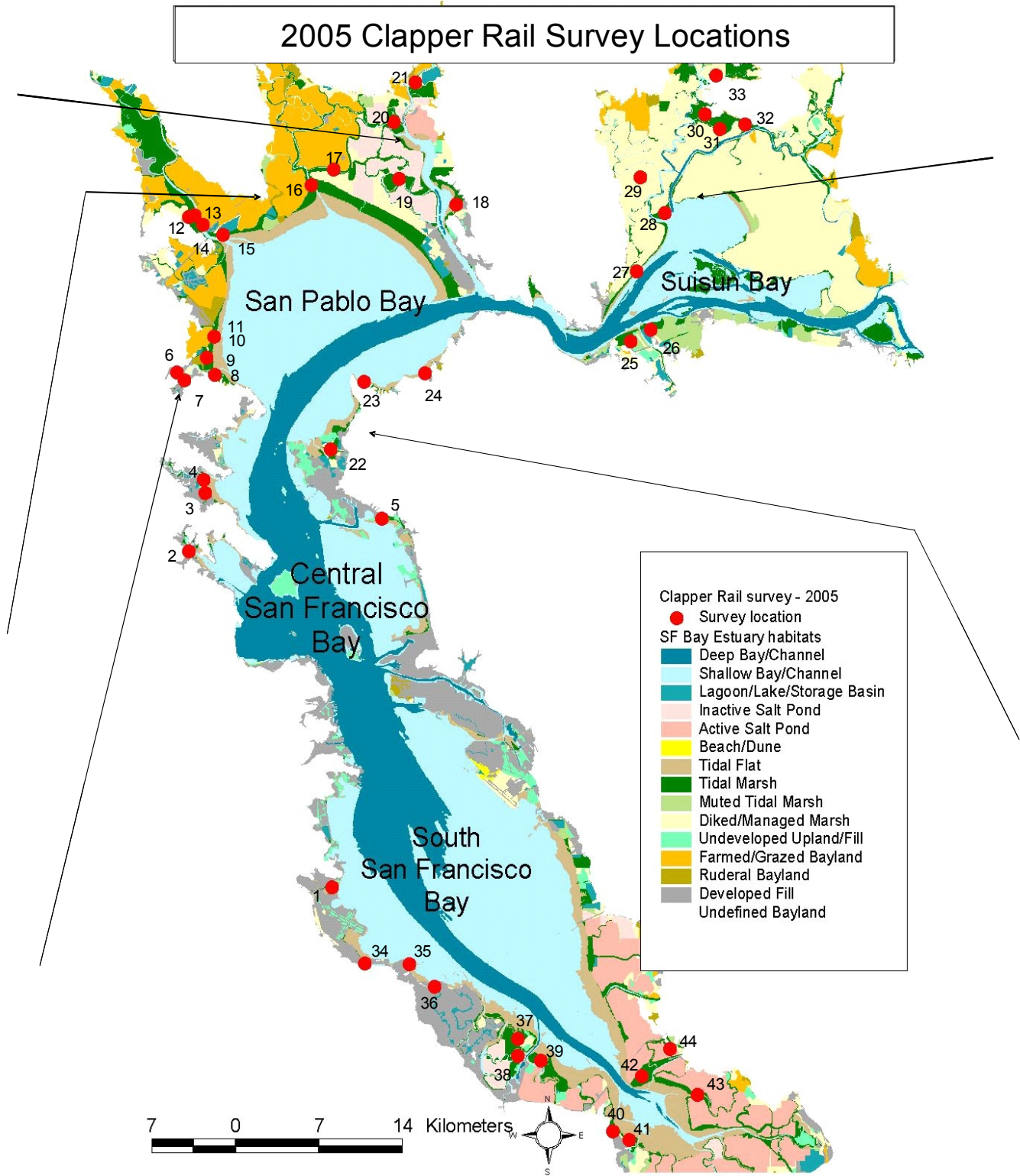


Figure 2. Comparison of Clapper Rail populations between 1992/1993 surveys and 2005 for area near Gallinas Creek.

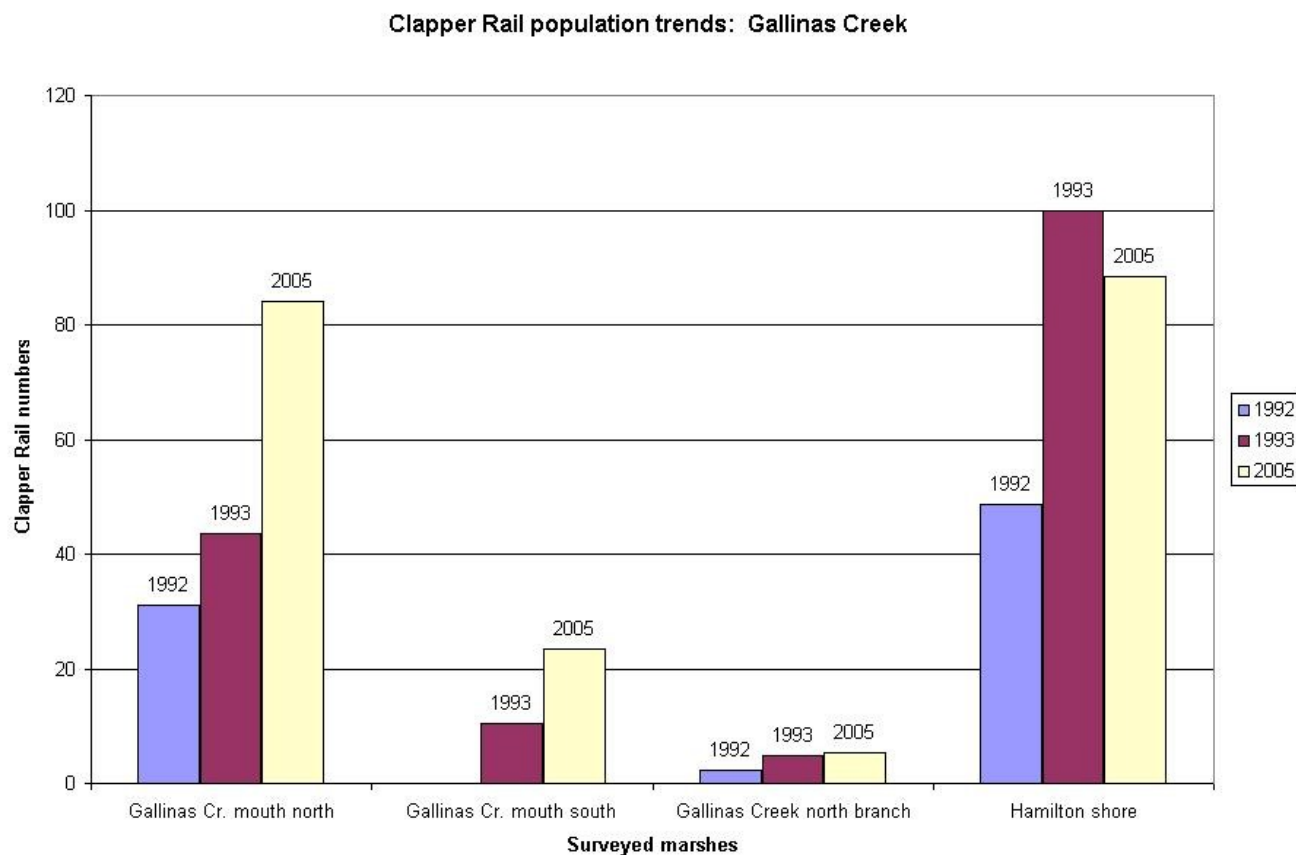


Figure 3. Comparison of Clapper Rail populations between 1992/1993 surveys and 2005 for area near Napa River.

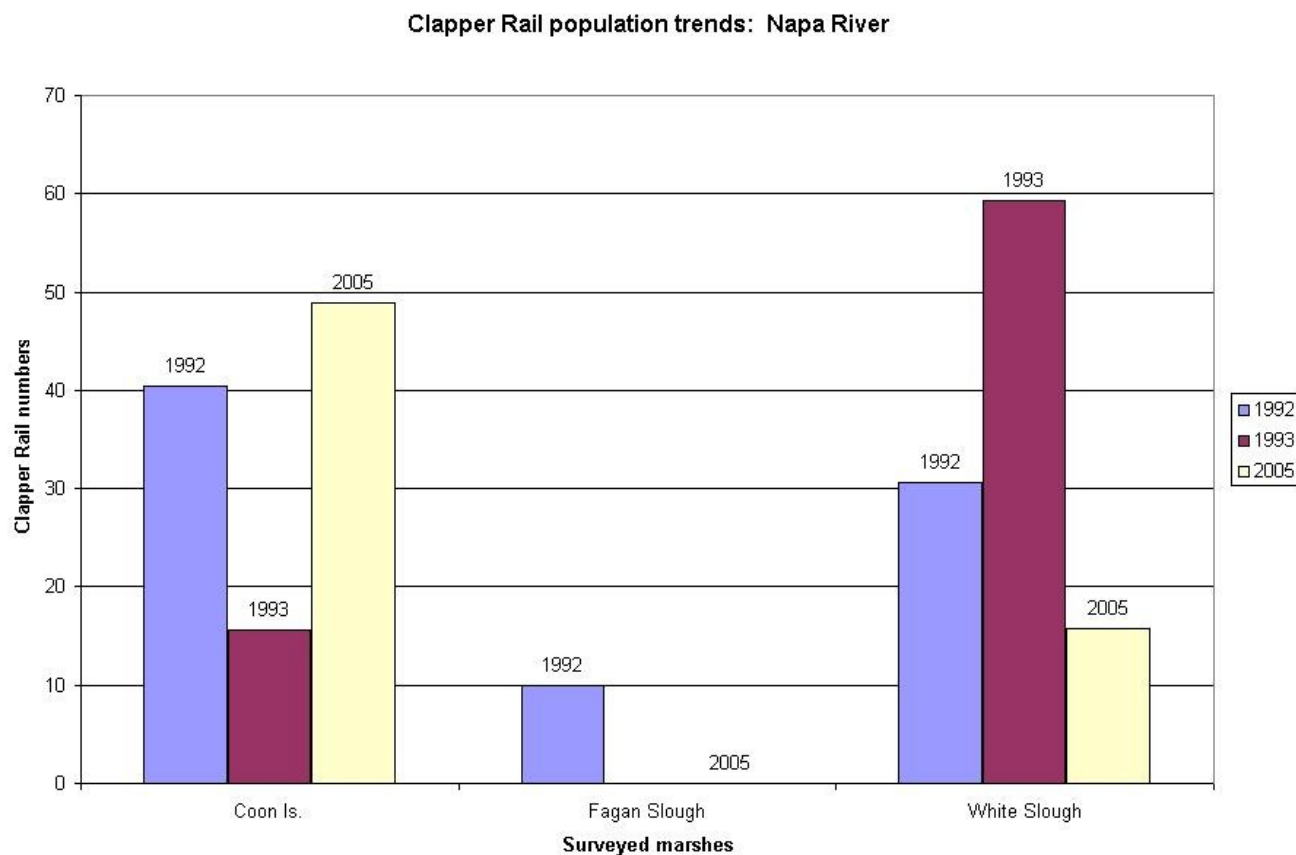


Figure 4. Comparison of Clapper Rail populations between 1992/1993 surveys and 2005 for area near north San Pablo Bay.

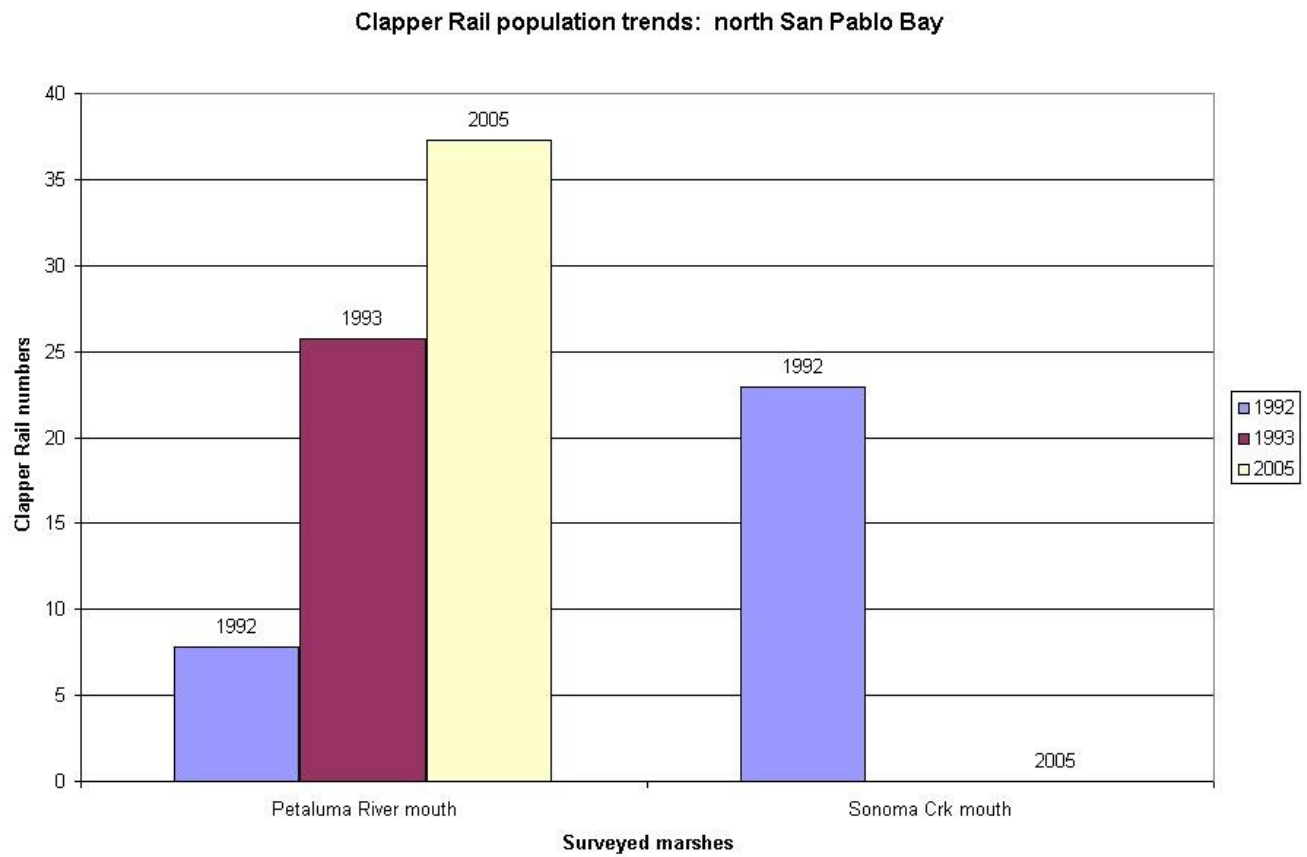


Figure 5. Comparison of Clapper Rail populations between 1992/1993 surveys and 2005 for area near southeast San Pablo Bay

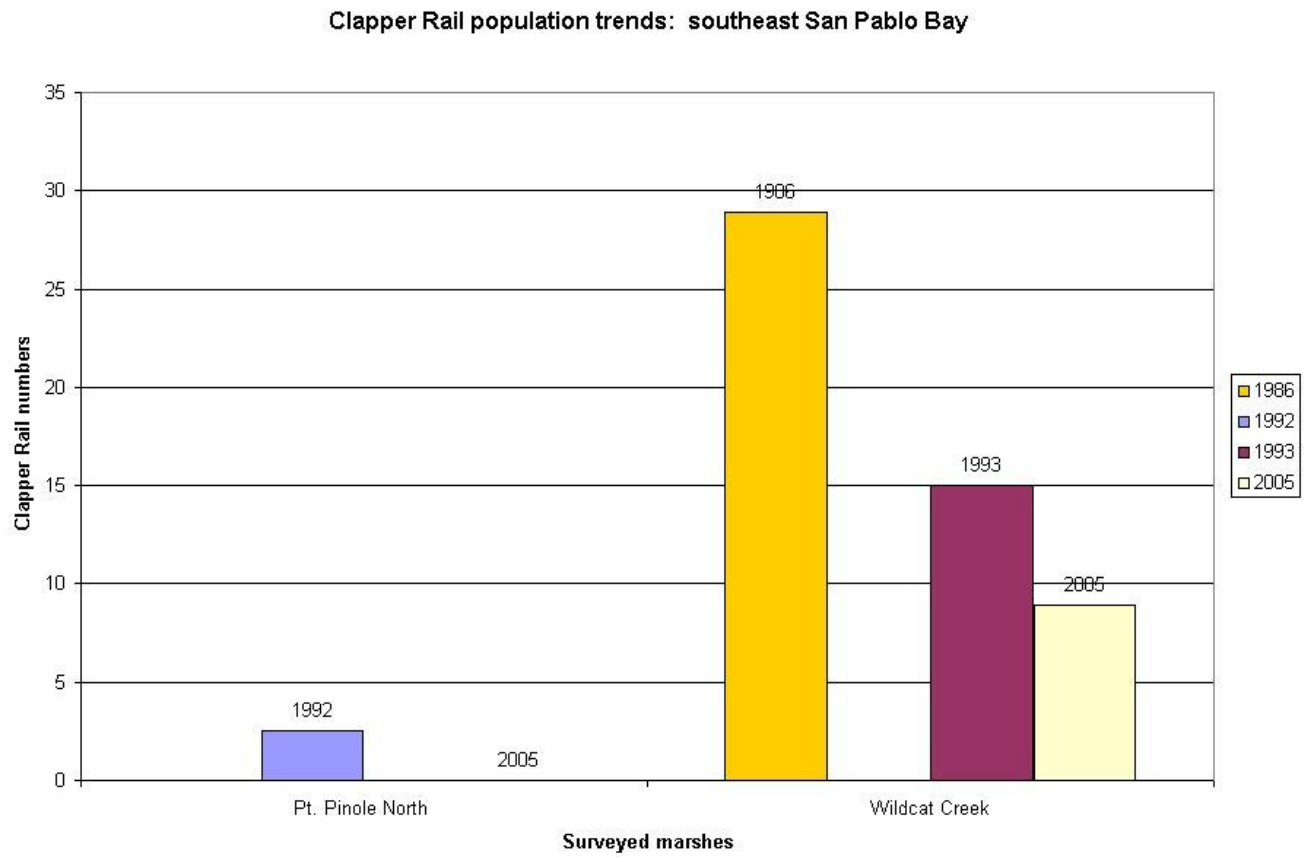


Figure 6. Comparison of Clapper Rail populations between 1992/1993 surveys and 2005 for area near south Marin.

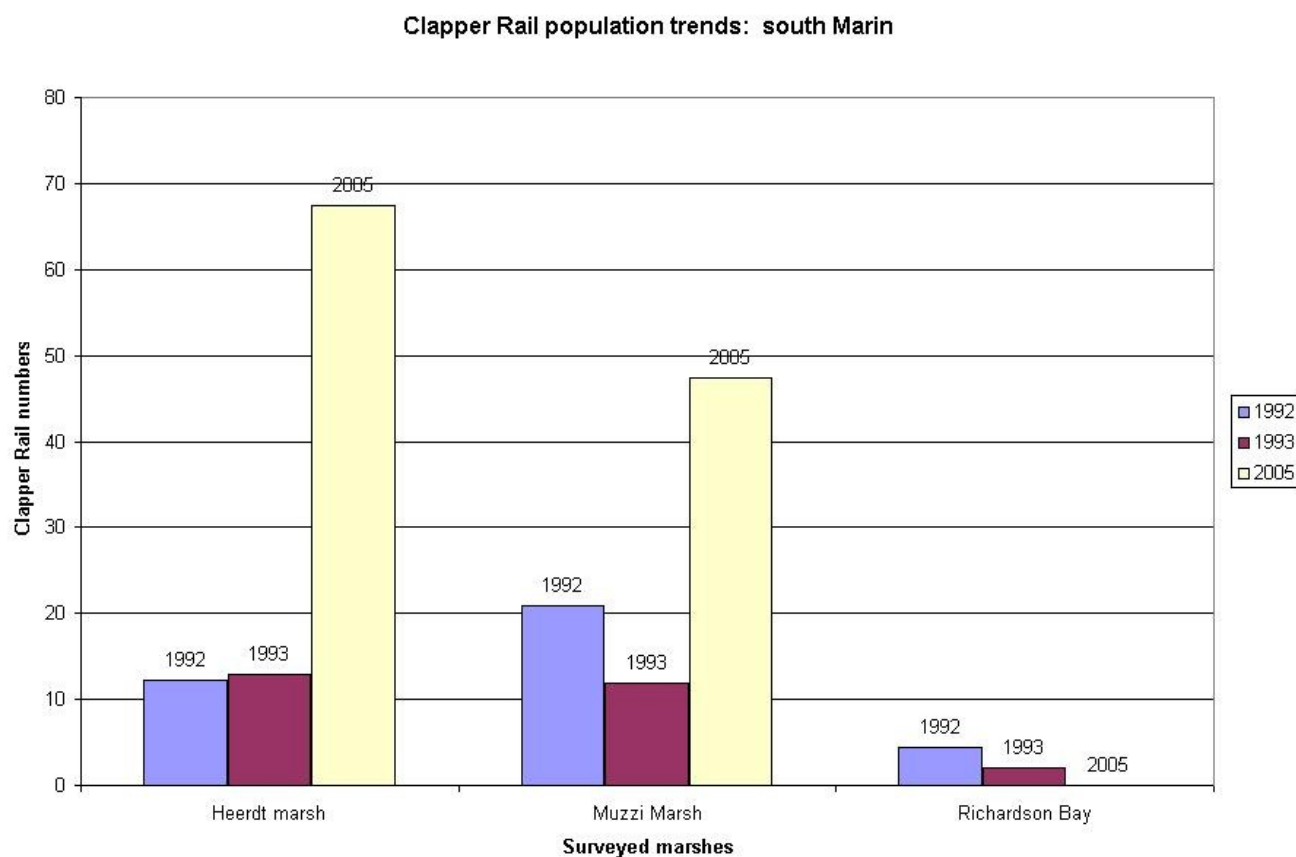


Figure 7. Comparison of Clapper Rail populations between 1992/1993 surveys and 2005 for area near Suisun Bay.

