

**2010 Annual Report: California Clapper Rail (*Rallus longirostris obsoletus*)  
TE-807078-12**

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## **INTRODUCTION**

The California Clapper Rail (*Rallus longirostris obsoletus*) is one of the most endangered species in California. The species is dependent on tidal wetlands, which have decreased over 75% from the historical extent in San Francisco Bay. A complete survey of its population and distribution within the San Francisco Bay Estuary was begun in 2005.

In 2010, PRBO Conservation Science (PRBO) completed the sixth year of field work designed to provide an Estuary-wide abundance estimate and examine the temporal and spatial patterns in California Clapper Rail populations. Field work was performed in collaboration with partners conducting call-count surveys at complementary wetlands (Avocet Research Associates [ARA], California Department of Fish and Game [CDFG], California Coastal Conservancy's Invasive *Spartina* Project [ISP], and U.S. Fish and Wildlife Service [USFWS]).

This report details PRBO's California Clapper Rail surveys in 2010 under U.S. Fish and Wildlife service permit TE-807078-12.

## **METHODS**

Call-count surveys were initiated January 15 and continued until April 15. PRBO surveyed 52 marshes in the Estuary; 31 sites were in San Pablo Bay, 8 sites in Central San Francisco Bay, and 13 sites in South San Francisco Bay (Table 1, Figures 1 and 2). Sites were surveyed 3 to 5 times by experienced permitted biologists using a point transect method, with 10 minutes per listening station. Pond 2A on the Napa River was visited twice due to logistical difficulties in accessing the site. Sites which were accessible by only 1 to 2 stations (Mitchell Fragment and American Canyon Creek mouth in San Pablo Bay) were surveyed using a stationary point method, with 30 minutes per listening station. Listening stations primarily were located at marsh edges, levees bordering and within marshes, boardwalks, boat-accessible channels within the marsh, and in the case of 5 marshes in the North Bay, foot access within the marsh. Stations were placed 200-400 meters apart. Locations of surveyed marshes are presented in Figures 1 and 2.

All Clapper Rails, as well as other rail species (i.e., California Black Rail [*Laterallus jamaicensis coturniculus*], Virginia Rail [*Rallus limicola*], and Sora [*Porzana carolina*]), detected from a listening station were recorded along with the time, direction and distance from the listening station. The actual number of rails detected was recorded, or if the detection was not heard clearly because of confounding circumstances (e.g., distance from observer or environmental conditions) a range of number of rails (e.g., 1 to 2, 2 to 4) was recorded. If no Clapper Rails were detected within 200 meters of a listening station after 2 passive surveys, playback (up to 1 minute) of Clapper Rail vocalizations was used in an attempt to stimulate a response on a third survey. Playback surveys consisted of 5 minutes of passive listening (with no Clapper Rails detected), then 1 minute of playback followed by 4 minutes of passive listening. Clapper Rails detected during transit between listening stations as well as before or after the 10-minute listening period were also recorded.

We summarized our 2010 data by aggregating the most productive surveys at each area and taking the mean based on the minimum and maximum number of Clapper Rails detected for each survey site (henceforth, the highest mean survey). We compared our 2010 data with 2008 and 2009 data, including surveys conducted by partners, by considering only the minimum number of Clapper Rails detected during the most productive

survey at each survey site (henceforth, the highest minimum survey), as the methodology for collecting the maximum number of Clapper Rails detected during a survey is different for some partners. For the period 2008-2010 we compared 29 sites (18 in San Pablo Bay, 3 in Central SF Bay, and 8 in South SF Bay) where surveys were conducted all 3 years, and for the period 2009-2010 we compared 33 sites (19 in San Pablo Bay, 5 in Central SF Bay, and 9 in South SF Bay) which were surveyed both years (Table 2).

## **RESULTS**

PRBO detected 601 (range: 543 to 658) Clapper Rails at the 52 survey sites in 2010 (Table 1); this number can be considered a minimum population estimate for these sites, as we did not calculate densities based on the detections and apply the densities to non-surveyed suitable habitat at the sites. In San Pablo Bay, we detected 313 (range: 279 to 346) Clapper Rails. In Central San Francisco Bay, we detected 91 (range: 84 to 98) Clapper Rails. In South San Francisco Bay, we detected 197 (range: 180 to 214) Clapper Rails. A single Clapper Rail was documented by PRBO senior scientist Lynne Stenzel on November 19, 2010 during a shorebird survey in the Napa Floodplain, a restored area north of the previously documented range. No nests were incidentally discovered during surveys, nor were any Clapper Rails harmed or killed.

The 29 sites (Table 2) used in our review of highest minimum surveys represented in 2008 about 1/3 of the San Francisco Bay Estuary population we estimated for 2008, and about 1/5 of the 2005-08 population estimate. Between 2008 and 2010, the number of detections of the aggregate highest minimum surveys of Clapper Rails at the 29 sites increased 39% in all 3 bays (San Pablo Bay +15%, Central San Francisco Bay +51%, and South San Francisco Bay +94%). Central San Francisco Bay detections decreased slightly between 2009 and 2010, and San Pablo Bay detections decreased slightly between 2008 and 2009.

The detections at the 33 sites (Table 3) at which we compared highest minimum surveys showed a positive change for the period 2009-2010, increasing 27%, from 387 in 2009 to 493 in 2010 (Figure 4). The trend was primarily due to increases in detections in San Pablo Bay (+24%) and South San Francisco Bay (+50%).

### **San Pablo Bay**

#### *Petaluma Marsh*

PRBO surveyed 3 areas in Petaluma Marsh that had not been extensively surveyed. With our surveys on the west side of the marsh in 2009, we have found that there is a relatively large population, compared to previous suppositions that it would have a small population because of the brackish conditions.

#### *Richmond/Pinole complex*

The north Richmond shoreline has the 3<sup>rd</sup> largest population of Clapper Rails in San Pablo Bay. There has been a slight decline in detections for the period 2008-10. We have documented an ongoing threat to tidal marsh habitat in the area, where 2 wood recycling operations have systematically expanded their footprint into the marsh and have deposited trash at the edge of the marsh.

#### *San Pablo Bay National Wildlife Refuge*

There were 13 Clapper Rails detected during the highest mean survey at Sonoma Baylands, and 3 in Sonoma Baylands restoration site to the north. Four Black Rails were detected in Sonoma Baylands.

#### *China Camp State Park*

Detections of Clapper Rails on the highest mean survey at the China Camp marsh decreased slightly from 12 in 2009 to 11 in 2010. A maximum of 6 California Black Rails (BLRA) were detected during the rail surveys.

### **Central San Francisco Bay**

#### *Corte Madera Creek complex*

In Central San Francisco Bay (Bay Bridge to Pt. San Pedro/Pt. San Pablo), we surveyed 8 sites in 2010. The number of detections from the highest minimum survey decreased from 95 to 84, although detections at Muzzi Marsh, Marta's Marsh, and San Clemente Creek may be higher, as ARA surveyed these 3 sites as well in

2010, but detections for the 3 surveys ARA performed are not reported here. Of the 52 sites we surveyed in the Estuary in 2010, the 3<sup>rd</sup> highest number of detections was at Corte Madera Ecological Reserve (Heerdt Marsh). Damage to this marsh from windsurfers traversing it with bicycles and dogs continues, as the trail in the southern portion of the marsh widens.

## **South San Francisco Bay**

*Don Edwards SFBNWR*

PRBO surveyed for the first time the area north and east of Dumbarton Pt. and documented 4 to 6 Clapper Rails in this area. There was a very noticeable increase in interannual detections (+67% 2008-09, +44% 2009-10) in the Palo Alto complex, based on highest minimum surveys at 4 sites in the complex, including the Faber-Laumeister tracts and Palo Alto Baylands. At the Bair-Greco complex in the San Mateo region, there was an 81% increase in detections between 2009 and 2010 when comparing highest minimum surveys at 4 sites, Outer Bair Island, Middle Bair East, Middle Bair Southeast, and Corkscrew Slough.

## **DISCUSSION**

The results of surveys conducted by PRBO in 2010 show an increase in the number of detections of California Clapper Rails in San Pablo Bay and South San Francisco Bay. However, surveys conducted by our partner, ISP, in the other parts of the Estuary appear to show negative change at some marshes. In particular, the San Francisco peninsula region has had declining numbers of detections. The marshes in the Palo Alto area were less invaded by hybrid *Spartina* than other regions, such as San Leandro Bay and Hayward, with fewer young restoration marshes with marsh plains highly invaded of hybrid *Spartina*. Similarly, the marshes we surveyed in the Bair Island area had hybrid *Spartina*, but they are mature marshes with existing channels and pickleweed (*Sarcocornia pacifica*) and gumplant (*Grindelia* spp.) in the middle to higher marsh areas. It is possible that mature marshes that received a high degree of hybrid *Spartina* control are recovering, and young marshes, where hybrid *Spartina* was a more significant component of marsh vegetation cover are slower to recover. It is unknown if the increased number of rails we detected in the Bair Island and Palo Alto areas dispersed from other marshes that have lost habitat, or if there had been high breeding success in these 2 areas.

We plan to continue call-count in areas not previously surveyed, including areas of Petaluma Marsh and the upper Petaluma River, and Mare Island. We also plan to revisit an area not surveyed since 2006 in South San Francisco Bay, the marshes along Coyote Creek.

Demographic progression resulting from nesting success in previous years, influences of predators, and various environmental factors may be causing population fluctuations. Additional studies on the breeding biology of Clapper Rails, especially nest survival, and the efficacy of relocating individual Clapper Rails from marshes heavily impacted by invasive *Spartina* control are warranted.

## **ACKNOWLEDGEMENTS**

Data were collected under TE-807078-12 from USFWS and a Memorandum of Understanding between CDFG and PRBO (4/23/2010). Bayland Habitats in Figures 1 and 2 are from San Francisco Estuary Institute's Bay Area EcoAtlas Version 1.50b4. During 2010 surveys, PRBO benefited greatly from collaboration with a number of other organizations and agencies: California Coastal Conservancy's Invasive *Spartina* Project, U.S. Fish and Wildlife Service, Don Edwards San Francisco Bay National Wildlife Refuge, San Pablo Bay National Wildlife Refuge, California Department of Fish and Game, California Department of Parks and Recreation, East Bay Regional Parks District, and City of Palo Alto. We also thank Elizabeth Brusati, Craig Cummings, Joe Eaton, Sarah Estrella, Dea Freid, Terra Hendrich, Mark Herzog, Ingrid Hogle, Ron Sullivan, Karen Taylor, Erika Walther, Amber Wingert, and Jason Yakich for their valuable assistance.

Table I. Highest mean survey results of PRBO's 2010 rail surveys, with 2009 results where available.

Complex	Map #	Site Name	2009 site min	2009 site mean	2009 site max*	2009 surveyor	2010 site min	2010 site mean	2010 site max	notes
San Pablo Bay Gallinas Creek	6	China Camp	10	12	13	PRBO	11	11	11	6 BLRA
	19	Mitchell Fragment#	11	13	15	ARA	8	10	11	1 BLRA
	109	Gallinas Creek-middle reach#	9	12	15	PRBO	10	12	14	
	69	Santa Venetia#	3	4	5	PRBO	3	3	3	3 BLRA
	20	McInnis Marsh#	44	50	55	PRBO	43	50	57	3 BLRA
	21	Hamilton South#	18	20	22	PRBO	33	36	38	3-4 BLRA
Petaluma Marsh	88	Lakeville Marina	n/a	n/a	n/a		3	3	3	
	74	False Slough	n/a	n/a	n/a		4	5	5	
	70	Tule Slough	n/a	n/a	n/a		18	19	20	18-20 BLRA
	73	Woloki Slough**	3	4	5	PRBO	6	9	11	3 BLRA
lower Petaluma River	76	Bahia Channel	4	4	4	PRBO	4	5	5	1 BLRA
	71	Black John Slough north	6	7	8	PRBO	16	17	17	4 BLRA
	2	Black John A	n/a	n/a	n/a		7	9	11	
	129, 87, 37	Green Point area marshes	21	27	32	PRBO	19	20	21	3 BLRA
	50	Carl's Marsh	5	7	9	PRBO	8	9	10	
	89	Petaluma River east	2	2	2	PRBO	4	4	4	
Petaluma River mouth	4	Day Island Wildlife Area	2	2	2	PRBO	0	0	0	5 BLRA
Novato Creek	110	Novato Creek mouth	10	11	11	PRBO	16	19	21	6 BLRA
Sonoma Baylands	27	Sonoma Baylands	7	8	8	PRBO	13	13	13	4 BLRA
	66	Sonoma Baylands restoration	2	2	2	PRBO	3	3	3	
	36	Sonoma Marina	2	2	2	PRBO	0	0	0	
Napa-Sonoma marshes	325	China Slough	n/a	n/a	n/a		0	0	0	12-13 BLRA
upper Napa River	48	Coon Island	1	2	2	PRBO	7	8	9	7-8 BLRA
lower Napa River	38	Pond 2A	n/a	n/a	n/a		0	0	0	6 BLRA
	64	American Canyon Ck. mouth	n/a	n/a	n/a		0	0	0	
	39	Napa Centennial	n/a	n/a	n/a		2	2	2	8 BLRA
Richmond-Pinole	26	San Pablo Creek	7	8	9	PRBO	22	28	33	1 BLRA
	108	Rheem Creek area	6	6	6	PRBO	1	1	1	
	159	Wildcat Marsh/Castro Creek	26	21	36	ARA	13	15	16	

\* - ARA and ISP method of collecting detection maximums differs from PRBO method

# - 5 rounds of surveys

\*\* - different areas of site surveyed in 2009 and 2010

Table I continued. Highest mean survey results of PRBO's 2010 rail surveys, with 2009 results where available.

Complex	Map #	Site Name	2009 site min	2009 site mean	2009 site max*	2009 surveyor	2010 site min	2010 site mean	2010 site max*	notes
<b>Central San Francisco Bay</b> Richardson Bay	32	Bothin Marsh/Tam High Fragment	7	8	8	PRBO	5	6	6	
Corte Madera	158	Creekside Park	11	17	22	PRBO	8	9	9	
	184	Piper Park	8	9	9	PRBO	12	12	12	
	185	Corte Madera Creek Mouth^	3	4	4	PRBO	4	4	4	
	78	Corte Madera Ecological Reserve (Heerdt Marsh)^	32	42	52	PRBO	34	39	44	
	81	Muzzi Marsh#	29	31	33	ARA	19	20	21	ARA surveyed rounds 2-4
	62	Marta's Marsh#	3	3	3	ARA	0	0	0	ARA surveyed rounds 2-4
	44	San Clemente Creek#	2	2	2	ARA	2	2	2	ARA surveyed rounds 2-4
<b>South San Francisco Bay</b> Bair-Greco	239	Middle Bair Southeast	2	2	2	PRBO	8	8	8	
	294	Middle Bair East	10	11	11	PRBO	10	11	12	
	237	Corkscrew Slough	6	6	6	ARA	22	24	26	
	236	Outer Bair Is.	6	6	6	PRBO- ISP	15	16	17	PRBO-ISP joint survey
Dumbarton	274	Dumbarton Pt.	11	14	16	ISP	13	16	18	
	285	Dumbarton East	n/a	n/a	n/a		0	0	0	
	283	Audubon East	n/a	n/a	n/a		4	5	6	
Palo Alto	249	Faber Tract	38	46	53	PRBO	52	57	62	
	248	Laumeister Tract	10	12	13	PRBO	19	22	24	
	251	Palo Alto Baylands	8	8	8	PRBO	20	21	22	
	247	San Francisquito Ck.	0	0	0	PRBO	0	0	0	
	250	Palo Alto Harbor/Hooks Island	12	14	15	PRBO	17	18	19	
	257	Charleston Slough	1	1	1	PRBO	0	0	0	

\* - ARA and ISP method of collecting detection maximums differs from PRBO method

^ - 4 rounds of surveys

# - 5 rounds of surveys

Table 2. Highest minimum survey results for marshes surveyed by PRBO in 2010, with results from 2008 and 2009, including data collected by partners.

<b>Bay</b>	<b>Site</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Central San Francisco Bay	Creekside Park	8	11	8
	Corte Madera Ecological Reserve (Heerdt Marsh)	17	32	34
	Bothin Marsh/Tam High Fragment	6	7	5
Central San Francisco Bay Total		31	50	47
San Pablo Bay	Bahia Channel	13	4	4
	Day Island Wildlife Area	2	2	0
	China Camp	13	10	11
	Coon Island	7	1	7
	Gallinas Creek- middle reach	1	9	10
	Green Point area marshes (3 sites)	20	23	28
	Mitchell Fragment	6	11	8
	McInnis Marsh	28	44	43
	Hamilton South	39	18	33
	Novato Creek mouth	6	10	16
	Carl's Marsh	2	5	8
	Rheem Creek area	1	6	1
	San Pablo Creek	19	7	22
	Sonoma Baylands	5	7	13
	Santa Venetia	7	1	3
Wildcat Marsh	23	26	13	
San Pablo Bay Total		192	184	220
South San Francisco Bay	Charleston Slough	1	1	0
	Dumbarton Pt.	8	11	13
	Faber Tract	16	44	52
	Laumeister Tract	15	10	19
	Middle Bair East	10	10	10
	Outer Bair Is.	12	10	15
	Palo Alto Baylands	7	8	20
	Palo Alto Harbor/Hooks Island	6	12	17
South San Francisco Bay Total		75	106	146
Grand Total		298	340	413

Table 3. Highest minimum survey results for marshes surveyed by PRBO in 2010, with comparable results from 2009, including data collected by partners.

<b>Bay</b>	<b>site</b>	<b>2009</b>	<b>2010</b>
Central San Francisco Bay	Creekside Park	11	8
	Corte Madera Ecological Reserve (Heerdt Marsh)	32	34
	Muzzi Marsh	25	30
	Piper Park	10	12
	Bothin Marsh/Tam High Fragment	7	5
Central San Francisco Bay Total		85	89
San Pablo Bay	Bahia Channel	4	4
	Black John Slough north	6	16
	Day Island Wildlife Area	2	0
	China Camp	10	11
	Coon Island	1	7
	Gallinas Creek- middle reach	9	10
	Green Point area marshes (3 sites)	23	28
	Mitchell Fragment	11	8
	McInnis Marsh	44	43
	Hamilton South	18	33
	Novato Creek mouth	10	16
	Carl's Marsh	5	8
	Rheem Creek area	6	1
	San Pablo Creek	7	22
	Sonoma Baylands	7	13
	Santa Venetia	1	3
Wildcat Marsh	26	13	
San Pablo Bay Total		190	236
South San Francisco Bay	Charleston Slough	1	0
	Corkscrew Slough	6	22
	Dumbarton Pt.	11	13
	Faber Tract	44	52
	Laumeister Tract	10	19
	Middle Bair East	10	10
	Outer Bair Is.	10	15
	Palo Alto Baylands	8	20
	Palo Alto Harbor/Hooks Island	12	17
South San Francisco Bay Total		112	168
Grand Total		387	493

Figure 1. 2010 San Pablo and Central San Francisco Bay Clapper Rail survey locations.

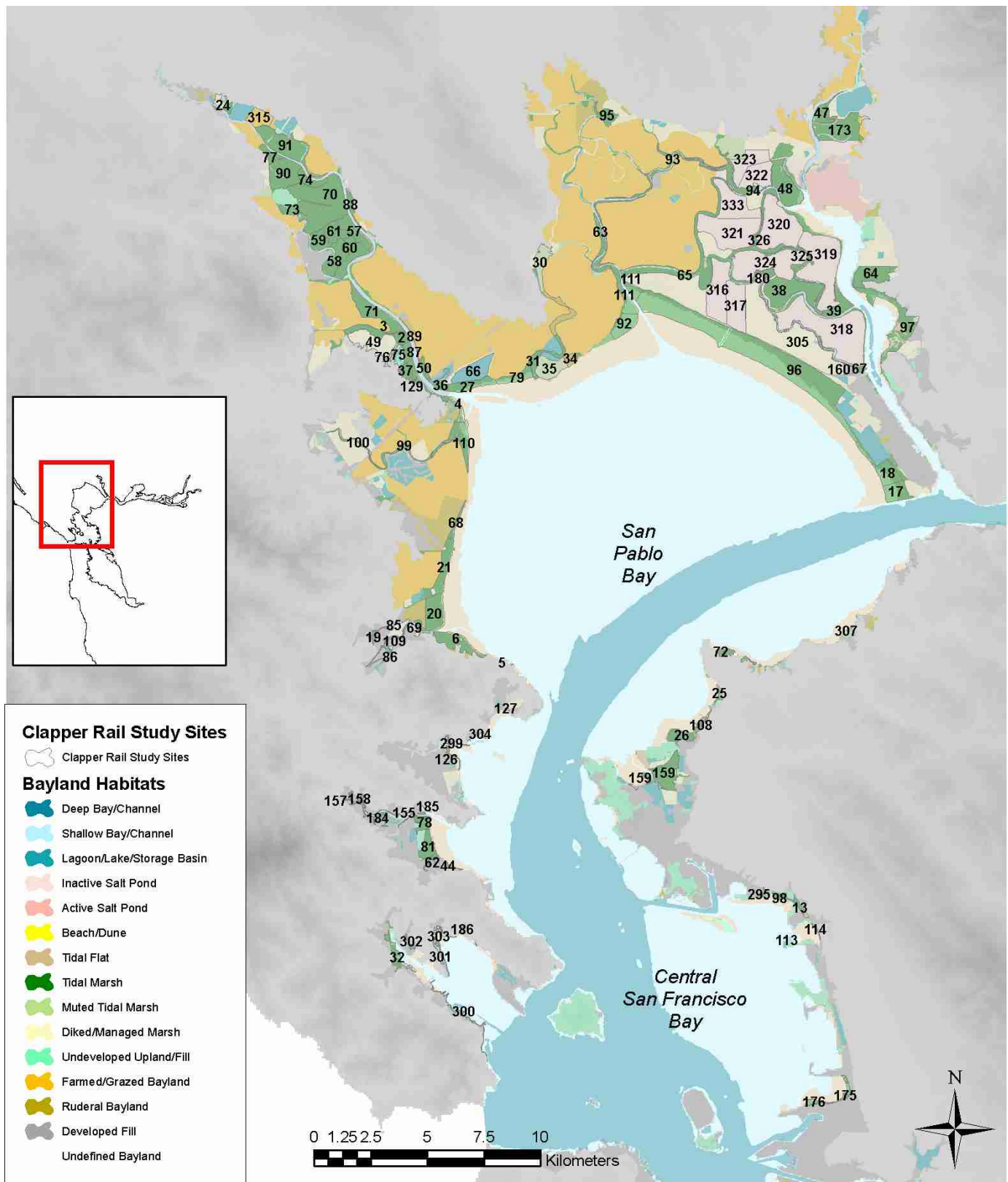


Figure 2. 2010 South San Francisco Bay Clapper Rail survey locations.

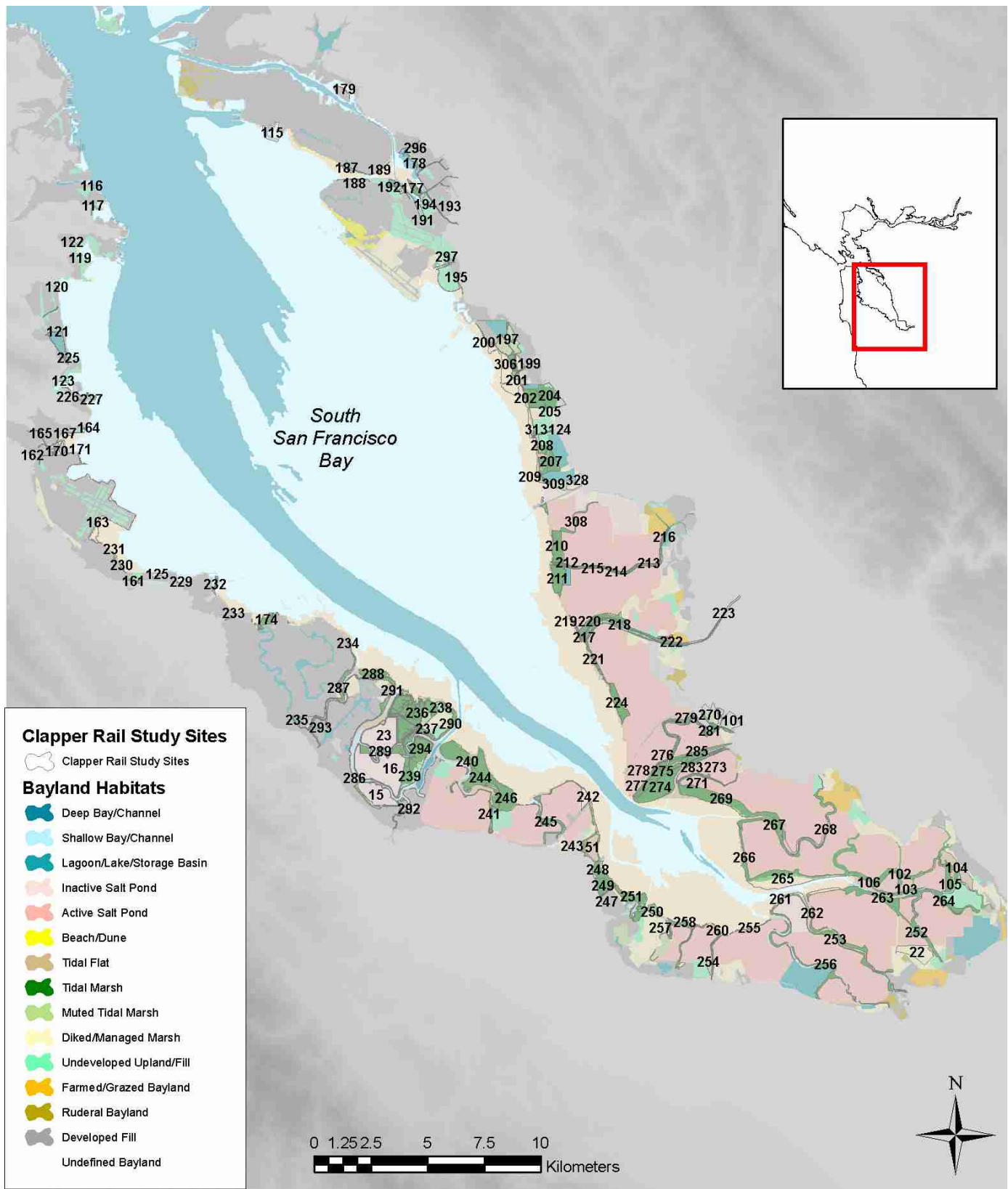


Figure 3. Trend of highest minimum surveys 2008 to 2010 at 29 sites surveyed by PRBO in 2010.

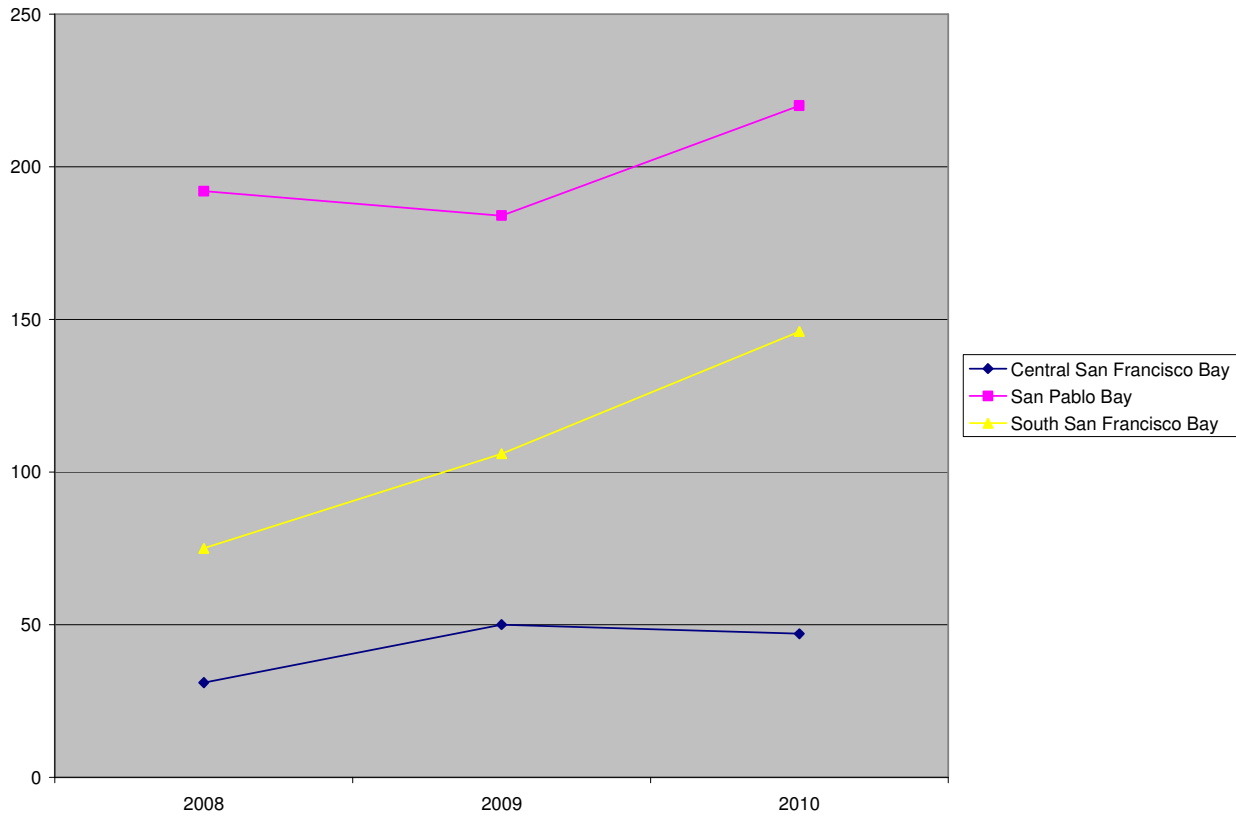


Figure 4. Trend of highest minimum surveys 2009 to 2010 at 33 sites surveyed by PRBO in 2010.

