

Appendix 1.
Clapper Rail Survey Protocols





**San Francisco Estuary Invasive *Spartina* Project
Summary of California Clapper Rail Survey Protocols**

Type	Common Protocol Name	Description
A	Standard USFWS Transect Survey	<i>As described in Albertson & Downard, 2004 and Spautz 2005.</i> One or more observers move from station to station, remaining at each station for 10-minutes. 3 survey rounds, with recording played at end of 3 rd round if no prior detections within 200 meters.
B	Standing or Stationary Survey	<i>As described in Albertson & Downard, 2004 and Spautz 2005.</i> Requires one person at each station for 1½ hour. 3 survey rounds, with recording played at end of 3 rd round if no prior detections within 200 meters.
C	ISP-Modified Transect Survey	<i>Originally described in Zaremba & Albertson, 2004; modified in Spautz & Albertson 2006.</i> Used to determine presence or absence of CLRA at sites with low potential for CLRA presence, where <i>Spartina</i> control activities are planned. Same as Type A, except recording is played from first survey round, and surveys are discontinued upon detection.
D	DENWR-Modified Transect Survey (Rough Density)	Used by DENWR biologist in narrow strip marshes with medium to high rail density - Similar to Type C, except densities are extrapolated by Refuge biologist.
E	Winter High Tide Survey	<i>Described by EBRPD pers. comm.</i> CLRA are flushed out of marsh habitat by airboat and counted during winter high tide.
F	Preliminary Habitat Suitability Assessment	Quick assessment by CLRA biologist to determine if suitable CLRA habitat is present; if habitat is suitable, a call count survey protocol C is typically conducted.

San Francisco Estuary Invasive *Spartina* Project California Clapper Rail Survey Protocol A:

“Standard Transect Survey”

The ISP’s Protocol A is the “walking transect survey” method described in “Draft clapper rail protocol for the San Francisco Estuary large-scale population surveys” (Albertson & Downard 2004) and “Revised draft clapper rail protocol for the San Francisco Estuary large-scale population surveys” (Spautz 2005). Note: The ISP refers to the “standing survey” method described in Albertson & Downard 2004 and Spautz 2005 as “Protocol B”.

General Survey Requirements:

- 1) *Permits.* Obtain required survey permits: USFWS Endangered Species Permit, ESA Section 10(a)(1)(A); California DFG permit (i.e. Memorandum of Understanding); site-specific permissions (e.g. Special Use Permit from a NWR).
- 2) *Training.* Observers must be trained to identify clapper rail calls and distinguish CLRA calls from other marsh bird species (see Rail Training document, April 2004). Observers must also be trained to minimize disturbance while conducting surveys (see Walking in the Marsh document, April 2004).
- 3) *Tides and moon phase.* Conduct surveys when tidal sloughs are less than bank full, <4.5-ft NGVD at the nearest tide station. Tide height at bank full will vary by site. Avoid high (flood) tides. Full moon periods should be avoided during active surveys when tape playback is utilized, as birds may be attracted out of cover or a response may be elicited, and increase the likelihood of predation. There is also evidence of reduced calling rates during full moon periods.
- 4) *Survey Timing.* Morning surveys should be initiated 1 hour before sunrise and extended no more that 1.5 hours after sunrise; evening surveys should begin 1 hour prior to sunset and extend no more than 1 hour following sunset. Surveys at a particular location should be spaced at least 1 week apart and should be conducted at both sunrise and sunset.
- 5) *Weather.* Record wind velocities and weather; conduct surveys at winds <10 mph; do not conduct surveys during heavy rainfall.
- 6) *Seasonality.* Conduct surveys between January 15 and mid-April.
- 7) *Survey Stations.* Stations should be spaced approximately 200-m apart. Stations should be placed on boardwalks or levee tops when possible to minimize disturbance. When surveys are conducted within a marsh, stations should be placed away from slough/channel edges to minimize disturbance to rail species.
- 8) *Data collection.* All rail vocalizations should be recorded, noting the call type, location, and time. Locations where rails are detected should be plotted on a map during the survey with numbered reference codes that correspond to detections on the datasheet. The call types should be coded as follows:

Call Code	Call Description	Number of Birds Indicated*
C	Clapper/clatter by one individual	1-2 birds
D	“Duet”- two individuals clattering simultaneously	2 or more birds, depending on situation
K	“kek”	1-2 birds
AK	agitated “kek”	1-2 birds
B	“kek-burr”	1-2 birds
V	Visual sighting	1-2 birds per sighting
SK	“squawk”	1-2 birds
SC	“screech”	1-2 birds
CH	“chur”	1-2 birds
P	“purr”	1-2 birds

* See data interpretation section below for more details about determining number of birds per detection type.

If the bird was definitely or possibly previously detected, e.g. as part of a pair, make this clear on the datasheet. Make a note when birds were detected simultaneously or nearly so, to verify that they were separate individuals. Calls of other rail species should also be recorded as above, with species clearly marked.

9) *Disturbance*. Record all Information on disturbance (e.g., predator sightings or boats) detected during surveys.

10) Review the WRMP CLRA protocol (Evens 2002) for other general information (<http://www.wrmp.org/docs/protocols/Wetland%20Birds.pdf>, p.21 Rails). Defer to the requirements listed above if they are more restrictive than the WRMP protocol.

Survey Methods

The Protocol A transect survey is suitable for linear sites and for sites with low to medium rail density. Surveys at sites with high clapper rail density should use “Protocol B” – the standing or stationary survey protocol described by Albertson & Downard 2004 and Spautz 2005.

The transect survey may be performed by one or two observers. Listening stations are established at approximately 200 meter intervals along a transect, preferably along the edge of the marsh. The first two of three surveys are passive (listening) for 10-minutes at each station. On the third survey, if a clapper rail was not previously detected within 200 meters of a listening station during the two previous passive surveys or incidentally within the season, recorded calls are played, according to the “*Recorded Call Playback Procedure*” described below. If a clapper rail has been previously detected within 200 meters of a listening station, the third survey should also be passive. There should be a minimum of one week between surveys.

Recorded Call Playback Procedure

A standardized recording of clapper rail calls should be obtained from USFWS. The recording should include a combination of clapper/clatter and duet calls, and there should be at least four complete calls with at least 5-seconds of silence between calls. The recording should be of good quality, and should be played at a volume of 80-90 dB at 1-

meter distance from the speaker. A digital sound level meter should be used to calibrate the playback device.

The survey should begin with an initial 5-minute passive listening period, followed by 1-minute of clapper rail calls, and completed with a 4-minute passive listening period (10-minutes/survey). Tape playbacks should be broadcast in all directions over the marsh at a station. Assume rails can hear tapes at distances of ≤ 200 m.

Note: Only play recorded clapper rail calls at stations when you are certain rails have not yet been detected within a 200-m radius. As soon as a clapper rail is detected, stop the recording.

Data Interpretation

Use the following key to determine how many birds to record for each detection type. Use your “field” judgment to avoid redundancy (overlap) and interpret uncertainty as a range. Keep in mind the part of the breeding season in which your survey occurs.

Detection type	Code	Number of birds	Description	Notes and Exceptions
Clatter	C	1 - 2	Primary territorial call. Rapid series of kek notes, often trailing off at the end.	<ul style="list-style-type: none"> Usually clattering individuals are paired. Often it's difficult to determine whether one or two birds are calling, if completely synchronized; thus, the range of 1-2 birds. Example scenario: at the end of a survey session you have 4 distinct duets, 3 single clatters away from duets and away from one another. The estimate for breeding birds would be 11-14 (# duets x 2 = 8 + 3-6 birds represented by clatters).
Duet clatter	D	2	Two bird clattering simultaneously.	<ul style="list-style-type: none"> Usually given by a pair, or less often, neighboring territorial males (J. Evens peers. obis. 2005). When chorusing birds are masking one another and you are uncertain whether it was one duet or two, record as 1-2 duets (1-2 pairs) or 2-4 clatters. Again, interpret uncertainty as a range.
Kek	K	1-2	Single sharp “kek” call, given singly or in series, with significant space between calls (as compared to clatter, which is very rapid).	<ul style="list-style-type: none"> Given by males, most often when unmated or prior to setting up pair bond, thus is most typically heard early in the season. However, can be given by a mated male throughout the breeding season, thus the range of 1-2 birds. Sometimes paired/breeding birds make random keks or kek-burrs intermingled with clatters, especially at the beginning of the breeding season. If you hear a single kek followed by a duet in the same location, the kekking individual is likely part of the duet pair and would not be counted separately.
Agitated Kek	AK	1-2	As above but higher pitched, rougher, and with what can be interpreted as an element of alarm. Mid-way between kek and squawk or screech.	<ul style="list-style-type: none"> As above, the call may indicate either an unmated or mated male, thus the range of 1-2 birds.

Detection type	Code	Number of birds	Description	Notes and Exceptions
Kek-burr	B	1-2	One or several rapid “kek” calls followed by a more attenuated, “burrrr”. Often repeated constantly over many minutes, and can be heard about 1 km away, depending on conditions.	<ul style="list-style-type: none"> Given by female clapper rails, primarily during pair bond formation or when fertile and soliciting a copulation with her mate, thus, it is most typically heard early in the season. The call is not likely to be given when she is incubating. Later in the season, it may be given when a nest has failed and the female is beginning another nesting attempt. The call may indicate either an unmated or mated female, thus the range of 1-2 birds. A single kek-burr followed by a duet: the individual is likely part of the duet pair and would not be counted separately.
Visual	V	1- 2		<ul style="list-style-type: none"> Clapper rails are most often seen when foraging along tidal channel banks, often near the shelter of overhanging vegetation. They are often seen crossing channels, and regularly swim across open water within a channel. A sighting of one bird may indicate the presence of a pair; thus record as 1 – 2 birds.
The following descriptions were not included in Albertson & Downard 2004 or Spatz 2005, but are provided here for completeness.				
Squawk	SK	1-2	More highly agitated than an agitated kek,	<ul style="list-style-type: none"> Typically given only once as an alarm call. Bird may later make other vocalizations.
Screech	SC	1-2	More rare than a squawk. Like a squawk but even more high-pitched.	<ul style="list-style-type: none"> Typically given only once as an alarm call.
Churr	CH	1-2	Similar to the last syllable in a kek-bur call	<ul style="list-style-type: none"> Typically given by a female.
Purr	P	1-2	Very soft, like churr or burr.	<ul style="list-style-type: none"> Typically given by a female at the nest.

San Francisco Estuary Invasive *Spartina* Project California Clapper Rail Survey Protocol B

“Stationary Survey”

The ISP’s Protocol B is the “stationary survey” method described in “Draft clapper rail protocol for the San Francisco Estuary large-scale population surveys” (Albertson & Downard 2004) and “Revised draft clapper rail protocol for the San Francisco Estuary large-scale population surveys” (Spautz 2005). Note: The ISP refers to the “transect survey” method described in Albertson & Downard 2004 and Spautz 2005 as “Protocol A”.

General Survey Requirements:

- 11) *Permits.* Obtain required survey permits: USFWS Endangered Species Permit, ESA Section 10(a)(1)(A); California DFG permit (i.e. Memorandum of Understanding); site-specific permissions (e.g. Special Use Permit from a NWR).
- 12) *Training.* Observers must be trained to identify clapper rail calls and distinguish CLRA calls from other marsh bird species (see Rail Training document, April 2004). Observers must also be trained to minimize disturbance while conducting surveys (see Walking in the Marsh document, April 2004).
- 13) *Tides and moon phase.* Conduct surveys when tidal sloughs are less than bank full, <4.5-ft NGVD at the Golden Gate tide station. Tide height at bank full will vary by site. Avoid high (flood) tides. Full moon periods should be avoided during active surveys when tape playback is utilized, as birds may be attracted out of cover or a response may be elicited, increasing the likelihood of predation. There is also evidence of reduced calling rates during full moon periods.
- 14) *Survey Timing.* Morning surveys should be initiated no sooner than one hour before sunrise and extended no more than 1.5 hours after sunrise; evening surveys should begin one hour prior to sunset and extend no more than one hour following sunset. Surveys at a particular location should be spaced at least 1 week apart and should be conducted at both sunrise and sunset.
- 15) *Weather.* Record wind velocities and weather; conduct surveys at winds <10 mph; do not conduct surveys during heavy rainfall.
- 16) *Seasonality.* Conduct surveys between January 15 and mid-April.
- 17) *Survey Stations.* Stations should be spaced no less than 200-m apart, to reduce ambiguity caused by overlapping hearing radii. Stations should be placed on boardwalks or levee tops when possible to minimize disturbance. When surveys are conducted within a marsh, stations should be placed away from slough/channel edges to minimize disturbance to rail species.
- 18) *Data collection.* All rail vocalizations should be recorded, noting the call type, location, and time. Locations where rails are detected should be plotted on a map during the survey with numbered reference codes that correspond to detections on the datasheet. The call types should be coded as follows:

Call Code	Call Description	Number of Birds Indicated*
C	Clapper/clatter by one individual	1-2 birds
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* See data interpretation section below for more details about determining number of birds per detection type.

If the bird was definitely or possibly previously detected, e.g. as part of a pair, make this clear on the datasheet. Record when birds were detected simultaneously or nearly so, which will verify they were separate individuals. Calls of other rail species should also be recorded as above, with species clearly marked.

19) *Disturbance*. Record all Information on disturbance (e.g., predator sightings or boats) detected during surveys.

20) Review the WRMP CLRA protocol (Evens 2002) for other general information (<http://www.wrmp.org/docs/protocols/Wetland%20Birds.pdf>, p.21 Rails). Defer to the requirements listed above if they are more restrictive than the WRMP protocol.

Survey Methods

The Protocol B stationary survey is suitable for larger sites with high clapper rail density, such as Arrowhead Marsh. Surveys at linear sites and sites with low to medium rail density should use “Protocol A” – the walking or transect survey protocol described by Albertson & Downard 2004 and Spautz 2005.

The Protocol B stationary survey requires a sufficient number of observers to have one person at each listening station. Listening stations are established along a grid or transect, with stations set apart by 200 meters or more. Observers are present at each station for an entire 1.5-hour survey period. When calls are recorded, the observer must take care to record the exact time and direction, and best estimate of the distance of the call, so that the data can be reconciled with other observers’ data. Reconciliation of data from multiple observers must be planned and closely supervised by a scientist with expertise in field data interpretation.

Because this procedure is only implemented at sites with a high density of clapper rails, under most circumstances, the survey need only to be repeated twice in a season, with a minimum of one week between surveys. If survey conditions are unsatisfactory for part or all of a survey period, a third survey may be conducted.

The Protocol B stationary survey is a passive listening survey, and does not include playing of recorded calls.

San Francisco Estuary Invasive *Spartina* Project California Clapper Rail Survey Protocol C:

“ISP Modified Transect Survey”

2006 Note: This California clapper rail survey protocol was originally developed by Joy Albertson (U. S. Fish & Wildlife Service, Don Edwards San Francisco Bay National Wildlife Refuge) and Katy Zaremba (San Francisco Estuary Invasive *Spartina* Project) in 2004. The protocol was approved in 2004 by Dan Buford of the Sacramento Office of the Endangered Species Branch of the US Fish and Wildlife Service for use exclusively by the ISP. Hildie Spautz (San Francisco Estuary Invasive *Spartina* Project) and Joy Albertson updated the protocol in 2006 to add additional clarification and specifications.

Purpose of Protocol C

Protocol C (ISP modified transect survey) was developed to allow the ISP to more efficiently confirm presence or absence of California clapper rails (clapper rails) at certain non-native *Spartina*-invaded sites, so that *Spartina* control could be undertaken at sites with no rails during rail nesting season. Protocol C surveys are implemented only at sites where the probability of clapper rail presence is relatively low, i.e., at sites where clapper rails have not been previously detected, but where marginally suitable habitat or other conditions suggest that rails may be present. Protocol C differs from Protocol A (USFWS standard transect survey) in that it allows the broadcasting of pre-recorded clapper rail vocalizations beginning on the initial round of surveys in order to elicit responses from birds in the marsh. If a clapper rail responds, the broadcast is immediately discontinued and not repeated on subsequent survey rounds at that station, and *Spartina* control at that location is postponed until times authorized by the USFWS Section 7 Biological Opinion. In some cases, if clapper rail presence is determined using Protocol C, the ISP may choose to complete the survey using Protocol A to determine the number of birds present at the site.

Determining Protocol Suitability

The suitability of using Protocol C is determined based on whether clapper rails have been previously detected at the site, and whether conditions at the site suggest that clapper rails may be present. The ISP regularly reviews clapper rail records from all known sources, including PRBO Conservation Science, Avocet Research Associates, U.S. Fish and Wildlife Service, San Francisco Bay Bird Observatory, California Department of Fish and Game, East Bay Regional Parks District, and other reliable sources, to identify locations where clapper rails have been detected in the past. Also, the ISP evaluates all planned *Spartina* treatment sites for potential habitat, and conducts habitat assessment surveys (Protocol F) at any locations that are thought to be potentially, albeit marginally, suitable clapper rail habitat. If the ISP plans to do *Spartina* control at a location where (1) the collective records do not indicate clapper rails have been detected for the prior two years, and (2) the habitat at the site is determined to be at least marginally sufficient for clapper rails, then a Protocol C survey would be performed. If the ISP requires clapper rail data at locations where clapper rail presence was previously confirmed within the prior two years, it would use Protocol A (Standard USFWS transect), rather than Protocol C. Generally speaking, Protocol C surveys are conducted at sites that have a low probability of clapper rail presence.

Survey Methods

All aspects of Protocol C (ISP Modified Transect Survey) are the same as Protocol A (Standard Walking Transect Survey; described in Albertson & Downard, 2004), with the following additions:

Survey Stations: As in Protocol A, transect survey listening stations will be placed 200 meters apart along linear transects. For Protocol C, if the survey occurs on a creek or channel, stations will be placed from the creek or channel mouth, extending upstream for the full length of vegetated marsh sufficient for clapper rails, or to the point where non-native *Spartina* stops, depending on the site.

Broadcasting vocalizations: Recorded clapper rail vocalizations will be broadcast at each station beginning with the first round of surveys. If a clapper rail is detected within 200 m of the survey station, the recording will be immediately turned off, and will not be played again at that station during subsequent rounds. If no clapper rail is detected within 200 m of the survey station, the recording will be played at each of three rounds at that station. Recorded vocalizations will not be played if raptors or other predators are observed nearby, as a response from a clapper rail will increase the rail's likelihood of predation.

Constraints: Surveys will not be conducted when wind, rain, fog, or other conditions unacceptably impair the biologist's ability to detect clapper rails. At sites adjacent to major highways, surveys may need to be conducted on Sunday mornings when traffic noise is at its lowest possible level. Recorded vocalizations will not be played if raptors or other predators are observed nearby, as a response from a clapper rail will increase the rail's likelihood of predation.

Survey determinations: For each survey point, "absence" will be reported only after three rounds of Protocol C surveys are completed with no detection. If less than three rounds are completed without detection, the surveyor may make the determination "absence suspected;" however, this will not be sufficient for the ISP to proceed with control work unless a determination is specifically made by the UFSWS biologist.

San Francisco Estuary Invasive *Spartina* Project California Clapper Rail Survey Protocol F:

“California Clapper Rail Habitat Assessment”

Protocol Description

The San Francisco Estuary Invasive *Spartina* Project (ISP) is required (under the USFWS Biological Opinion dated September 2005) to conduct surveys for California clapper rails (*Rallus longirostris obsoletus*) to determine clapper rail presence or absence prior to treatment of non-native *Spartina*. Sites that are clearly insufficient to support clapper rails, e.g., stretches of concrete rip-rap with a scattering of small non-native *Spartina* clones, do not require clapper rail surveys. However, sites requiring *Spartina* control exhibit a continuum of habitat characteristics, many of which are documented clapper rail habitat requirements (e.g., extensive channels for foraging and vegetated upper marsh for refuge during high tides). This makes it difficult in some cases to determine whether the habitat at the site is of sufficiently high quality to require a call count survey. In 2005, the ISP developed a standardized method to document the decision whether or not a clapper rail survey was required (Protocol F).

ISP staff consulted with Joy Albertson and Jules Evens to develop a list of required habitat elements for clapper rails based on field knowledge and published sources. This information was used to develop a field checklist to assess the habitat using multiple criteria and to document the decision as to whether the marsh will require a formal clapper rail call count survey. The habitat assessment is typically completed at sites where clapper rails have previously not been documented. Protocol F may also be employed in sites of historic clapper rail presence, but where there have been no detections over the prior two years of formal survey. This scenario may become more prevalent as marshes once fully invaded by hybrid *Spartina* are treated and the resulting landscape is no longer suitable to support rail populations.

The process of determining whether the site is of sufficient quality to require a call count survey is based on a cumulative score of positive characteristics. Patches with no necessary habitat elements are considered very poor habitat and clapper rail use is “highly unlikely”, and require no further clapper rail survey; such sites are determined to be available for early non-native *Spartina* treatment. If the site is poor but is geographically near enough to good habitat or known rail habitat to potentially provide habitat for at least some clapper rail activities (such as foraging or shelter), it will require a call count survey. Potentially good habitat with at least two positive characteristics will also be likely to require a call count survey, but this will be site-dependent. Possibly good habitat or likely good habitat (with at least four or six characteristics, respectively) will require a call count survey.

If call count surveys are required, the biologist will generally recommend using clapper rail call count survey protocol “C”, which is conducted at apparently low quality sites where clapper rails are not likely and have not been previously documented. However, it is possible that the site is of sufficiently high quality that

clapper rails are at least moderately likely and a standard call count protocol “A” survey will be recommended.

Habitat characteristics documented to be associated with California clapper rails and included on the habitat assessment datasheet include the following:

1. Young or mature restoration site (at least 50% vegetated)
2. Upper marsh vegetation present
3. Vegetated levee slopes
4. Marsh patch size > 10 ha
5. Closer than 500 m to nearest marsh with documented clapper rail presence
6. Fully tidal
7. Saline
8. High proportion of *Salicornia virginica*, tall hybrid *Spartina* clones, and/or *Grindelia stricta* cover
9. At least a few second and third order channels, or highly channelized

Habitat characteristics associated with California clapper rail absence and included on the habitat assessment datasheet as negative characteristics include the following:

1. New restoration site < 50% vegetated
2. Upper marsh vegetation absent
3. Levee slopes unvegetated
4. Small marsh patch size (< 1 ha)
5. Distance to nearest known marsh with clapper rails > 1000 m
6. Sparse vegetation in rip-rap
7. Highly muted tidal regime or non-tidal
8. Freshwater

Appendix 2.
2010 Clapper Rail Survey Stations with Coordinates





2010 Clapper Rail Survey Stations with Coordinates

Site ID	Site Name	Station ID	X Coordinate	Y Coordinate
02a	Belmont Slough	BELM01	566369	4156426
02a	Belmont Slough	BELM02	566069	4156168
02a	Belmont Slough	BELM03	565966	4155996
02a	Belmont Slough	BELM04	565882	4155814
02a	Belmont Slough	BELM05	565895	4155614
02a	Belmont Slough	BELM06	565938	4155419
02a	Belmont Slough	BELM07	566028	4155239
02a	Belmont Slough	BELM08	565828	4155213
02a	Redwood Shores	RESH01	568179	4155891
02a	Redwood Shores	RESH02	567964	4155983
02a	Redwood Shores	RESH03	567751	4156006
02a	Redwood Shores	RESH04	567545	4156002
02a	Redwood Shores	RESH06	567118	4156026
02a	Redwood Shores	RESH07	566894	4156065
02b	Steinberger Slough	RESH13	567756	4154757
02b	Steinberger Slough	RESH14	567816	4154983
02d	B2 South Quadrant	OBE05	570128	4154401
02d	B2 South Quadrant	OBE25	569779	4155053
02d	B2 South Quadrant	OBE26	569843	4154667
02d	B2 South Quadrant	OBE27	569990	4154545
02d	B2 South Quadrant	OBES07	570261	4154520
02d	B2 South Quadrant	OBES24	569733	4154871
02e	West Point Slough - NW	WPSN03	571586	4151985
02f	Greco Island - North	GRIN11	570647	4153106
02f	Greco Island - North	GRIN12	570811	4152993
02f	Greco Island - North	GRIN13	570976	4152877
02f	Greco Island - North	GRIN14	571140	4152762
02f	Greco Island - North	GRIN15	571306	4152647
02f	Greco Island - North	GRIN16	571471	4152533
02f	Greco Island - North	GRIN17	571635	4152418
02f	Greco Island - North	GRIN18	571800	4152305
02g	West Point Slough - SW / E	WPSS10	572706	4149686
02g	West Point Slough - SW / E	WPSS11	572704	4149455
02g	West Point Slough - SW / E	WPSS12	572561	4149237
02h	Greco Island - South	GRIS01	573018	4150394
02h	Greco Island - South	GRIS02	573016	4150596
02h	Greco Island - South	GRIS03	573015	4150799
02h	Greco Island - South	GRIS04	573014	4150998
02h	Greco Island - South	GRIS05	572969	4151193
02h	Greco Island - South	GRIS06	572825	4151345
02i	Ravenswood Slough/Mouth	RAV02	575826	4149650
02i	Ravenswood Slough/Mouth	RAV03	575665	4149768
02i	Ravenswood Slough/Mouth	RAV04	575468	4149813
02i	Ravenswood Slough/Mouth	RAV05	575260	4149863
02i	Ravenswood Slough/Mouth	RAV06	574884	4150110
02i	Ravenswood Slough/Mouth	RAV09	574950	4149885
02i	Ravenswood Slough/Mouth	RAV10	574806	4150724
02j	Ravenswood Open Space Preserve	RAOS01	577043	4150353
02j	Ravenswood Open Space Preserve	RAOS02	577133	4150003

2010 Clapper Rail Survey Stations with Coordinates

Site ID	Site Name	Station ID	X Coordinate	Y Coordinate
02j	Ravenswood Open Space Preserve	RAOS03	577278	4149563
02l	Inner Bair Island Restoration	IBI11	567713	4150454
02l	Inner Bair Island Restoration	IBI12	567460	4150489
02l	Inner Bair Island Restoration	IBI13	567298	4150636
02l	Inner Bair Island Restoration	IBI14	567141	4150789
02l	Inner Bair Island Restoration	IBI15	567004	4150939
02l	Inner Bair Island Restoration	IBI16	566864	4151086
02l	Inner Bair Island Restoration	IBI17	566763	4151267
04b	College of Marin	CMER01	540053	4200235
04h	CMC - Upper	UCMC01	539765	4200265
04h	CMC - Upper	UCMC02	539978	4200186
04h	CMC - Upper	UCMC03	540142	4200079
04h	CMC - Upper	UCMC04	540358	4200046
04h	CMC - Upper	UCMC05	540500	4199902
04i	CMC - Lower	LCMC11	540632	4199553
04i	CMC - Lower	LCMC12	540831	4199466
05c	Newark Slough	NEW02	581705	4154094
05c	Newark Slough	NEW03	581878	4153982
05c	Newark Slough	NEW04	582059	4153878
05c	Newark Slough	NEW05	582040	4153642
05c	Newark Slough	NEW06	582159	4153474
05c	Newark Slough	NEW07	582333	4153544
05c	Newark Slough	NEW09	581634	4154253
06a	Emeryville Crescent - East	EMCR07	560954	4186746
06a	Emeryville Crescent - East	EMCR14	561702	4187997
06a	Emeryville Crescent - East	EMCR15	561891	4187888
06b	Emeryville Crescent - West	EMCR01	560428	4186926
06b	Emeryville Crescent - West	EMCR02	560250	4186896
06b	Emeryville Crescent - West	EMCR03	560177	4186720
06b	Emeryville Crescent - West	EMCR04	560358	4186670
06b	Emeryville Crescent - West	EMCR05	560565	4186723
06b	Emeryville Crescent - West	EMCR06	560742	4186744
07a	Oro Loma - East	ORLW17	574749	4168949
07a	Oro Loma - East	ORLW18	574912	4169047
07a	Oro Loma - East	ORLW19	575313	4169028
07a	Oro Loma - East	ORLW20	575474	4168815
07a	Oro Loma - East	ORLW21	575441	4168567
07b	Oro Loma - West	ORLW01	574936	4168382
07b	Oro Loma - West	ORLW02	575023	4168204
07b	Oro Loma - West	ORLW03	574972	4168062
07b	Oro Loma - West	ORLW04	574771	4168057
07b	Oro Loma - West	ORLW05	574584	4168057
07b	Oro Loma - West	ORLW06	574382	4168054
07b	Oro Loma - West	ORLW07	574308	4168235
07b	Oro Loma - West	ORLW08	574215	4168393
07b	Oro Loma - West	ORLW09	574150	4168521
07b	Oro Loma - West	ORLW10	574098	4168723
07b	Oro Loma - West	ORLW11	574095	4168866
07b	Oro Loma - West	ORLW12	574302	4168857

2010 Clapper Rail Survey Stations with Coordinates

Site ID	Site Name	Station ID	X Coordinate	Y Coordinate
07b	Oro Loma - West	ORLW13	574495	4168854
07b	Oro Loma - West	ORLW14	574661	4168784
07b	Oro Loma - West	ORLW15	574739	4168633
07b	Oro Loma - West	ORLW16	574840	4168558
09a	Pickleweed Park	PIPK01	544265	4202286
09a	Pickleweed Park	PIPK02	544239	4202484
09a	Pickleweed Park	PIPK03	544183	4202641
10a	Whittel Marsh	PTPN01	556260	4206711
10a	Whittel Marsh	PTPN02	556460	4206771
10a	Whittel Marsh	PTPN03	556645	4206685
10a	Whittel Marsh	PTPN04	556830	4206771
10b	Southern Marsh	SOUT01	555722	4205728
10b	Southern Marsh	SOUT02	556044	4205561
10c	Giant Marsh	PPF01	556238	4205274
10c	Giant Marsh	PPF05	556420	4205053
10c	Giant Marsh	PPF06	556443	4204834
10c	Giant Marsh	PPF07	556234	4204657
13j	Eden Landing - Mt Eden Creek	EDEN01	576480	4163098
13j	Eden Landing - Mt Eden Creek	EDEN02	576489	4162896
13j	Eden Landing - Mt Eden Creek	EDEN03	576430	4162704
13j	Eden Landing - Mt Eden Creek	EDEN04	576379	4162512
13j	Eden Landing - Mt Eden Creek	EDEN05	576179	4162480
13j	Eden Landing - Mt Eden Creek	EDEN06	575980	4162529
13j	Eden Landing - Mt Eden Creek	WTN11	575778	4162563
15a	Shoreline Regional Park: Stevens Creek	LONG09	582630	4144724
15a	Shoreline Regional Park: Stevens Creek	LONG10	582401	4144385
15a	Shoreline Regional Park: Stevens Creek	LONG11	582369	4144019
15a	Shoreline Regional Park: Stevens Creek	STEV01	582431	4143425
15a	Shoreline Regional Park: Stevens Creek	STEV02	582421	4143224
15a	South Bay Marshes: Alviso Slough	ALSL06	587497	4145061
15a	South Bay Marshes: Alviso Slough	ALSL07	586870	4145021
15a	South Bay Marshes: Alviso Slough	MAL01	586761	4146451
15a	South Bay Marshes: Alviso Slough	MAL02	586668	4146281
15a	South Bay Marshes: Alviso Slough	MAL03	586774	4146070
15a	South Bay Marshes: Alviso Slough	MAL04	586898	4145918
15a	South Bay Marshes: Alviso Slough	MAL05	586904	4145719
15a	South Bay Marshes: Alviso Slough	MAL06	586942	4145527
15a	South Bay Marshes: Charleston Sl	CHSL01	580426	4145106
15a	South Bay Marshes: Charleston Sl	CHSL02	580468	4144673
15a	South Bay Marshes: Charleston Sl	CHSL03	580657	4145153
15a	South Bay Marshes: Charleston Sl	MVSL04	581043	4145153
15a	South Bay Marshes: Charleston Sl	MVSL05	581422	4145011
16a	Cooley Landing	COLA05	576891	4148770
16a	Cooley Landing	COLA06	576956	4148944

2010 Clapper Rail Survey Stations with Coordinates

Site ID	Site Name	Station ID	X Coordinate	Y Coordinate
16a	Cooley Landing	COLA07	577129	4149051
16a	Cooley Landing	COLA08	577293	4149164
16a	Cooley Landing	COLA09	576775	4148568
16a	Cooley Landing	COLA10	576825	4148373
16a	Cooley Landing	COLA11	576961	4148238
16a	Cooley Landing	COLA12	577112	4148090
17a	Elsie Roemer	ELRO01	566123	4178720
17a	Elsie Roemer	ELRO02	566243	4178686
17a	Elsie Roemer	ELRO03	566367	4178650
17a	Elsie Roemer	ELRO04	566478	4178616
17a	Elsie Roemer	ELRO05	566617	4178557
17a	Elsie Roemer	ELRO06	566752	4178506
17a	Elsie Roemer	ELRO07	566904	4178458
17b	Bay Farm Island	BFIS01	565858	4178094
17b	Bay Farm Island	BFIS02	566169	4178128
17b	Bay Farm Island	BFIS03	566372	4178122
17b	Bay Farm Island	BFIS04	566565	4178118
17b	Bay Farm Island	BFIS05	566777	4178117
17b	Bay Farm Island	BFIS06	566985	4178121
17b	Bay Farm Island	BFIS07	567242	4178077
17d	MLK Regional Shoreline	COCH06	569684	4178668
17d	MLK Regional Shoreline	MLKS03	568671	4179429
17d	MLK Regional Shoreline	MLKS04	568863	4179503
17d	MLK Regional Shoreline	MLKS05	569069	4179578
17d	MLK Regional Shoreline	MLKS06	568952	4179302
17d	MLK Regional Shoreline	MLKS07	568995	4179104
17d	MLK Regional Shoreline	MLKS08	569123	4178953
17d	MLK Regional Shoreline	MLKS09	569336	4178901
17d	MLK Regional Shoreline	MLKS10	569456	4178741
17d	MLK Regional Shoreline	MLKS11	569515	4178546
17d	MLK Regional Shoreline	MLKS12	569437	4178333
17d	MLK Regional Shoreline	OAIH01	568422	4179660
17d	MLK Regional Shoreline	OAIH02	568451	4179423
17e	San Leandro Creek	SLEA01	569805	4177557
17e	San Leandro Creek	SLEA02	569923	4177386
17e	San Leandro Creek	SLEA03	570046	4177211
17e	San Leandro Creek	SLEA04	570174	4177030
17e	San Leandro Creek	SLEA05	570298	4176856
17e	San Leandro Creek	SLEA06	570418	4176690
17e	San Leandro Creek	SLEA07	570529	4176533
17h	MLK Marsh	MLKR01	569671	4177003
17h	MLK Marsh	MLKR02	569622	4177196
17h	MLK Marsh	MLKR03	569706	4177372
17h	MLK Marsh	MLKR04	569712	4177546
17h	MLK Marsh	MLKR05	569837	4177413
17h	MLK Marsh	MLKR06	569948	4177254
17h	MLK Marsh	MLKR07	570046	4177104
17j	Fan Marsh	FANM01	568582	4177668
17j	Fan Marsh	FANM02	568783	4177699

2010 Clapper Rail Survey Stations with Coordinates

Site ID	Site Name	Station ID	X Coordinate	Y Coordinate
17j	Fan Marsh	FANM03	568635	4177820
17k	Airport Channel	AICH08	568643	4177837
17k	Airport Channel	AICH09	568798	4177707
17k	Airport Channel	AICH10	568909	4177545
17k	Airport Channel	AICH11	569081	4177424
17k	Airport Channel	AICH12	569206	4177257
17k	Airport Channel	AICH13	569288	4177066
17k	Airport Channel	AICH14	569367	4176867
17l	Doolittle Pond	DOPO02	568144	4178108
17l	Doolittle Pond	DOPO03	568130	4177879
17l	Doolittle Pond	DOPO04	568396	4177885
17m	Alameda Island - East	ALAM01	567610	4178422
17m	Alameda Island - East	ALAM02	567754	4178553
17m	Alameda Island - East	ALAM04	567255	4178374
17m	Alameda Island - East	ALAM05	567453	4178421
17m	Alameda Island - East	ALAM06	568113	4178873
18a	Colma Creek	COCR01	553022	4166328
18a	Colma Creek	COCR02	553220	4166367
18a	Colma Creek	COCR03	552909	4166544
18a	Colma Creek	COCR04	552803	4166743
18a	Colma Creek	COCR05	552817	4166943
18a	Colma Creek	COCR06	553465	4166532
18b	Navigable Slough	NACH01	552819	4166402
18b	Navigable Slough	NACH02	552647	4166294
18c	Old Marina	OLMA11	553389	4165979
18d	Inner Harbor	INHA01	553616	4165999
18d	Inner Harbor	INHA02	553551	4166130
18e	Sam Trans Peninsula	INHA03	553570	4166294
18e	Sam Trans Peninsula	STPN04	553717	4166523
18e	Sam Trans Peninsula	STPN05	553757	4166338
18e	Sam Trans Peninsula	STPN06	553825	4166094
18g	San Bruno Marsh	SBMA01	553847	4166947
18g	San Bruno Marsh	SBMA02	554049	4166950
18g	San Bruno Marsh	SBMA03	554248	4166959
18g	San Bruno Marsh	SBMA04	554455	4166960
18g	San Bruno Marsh	SBMA05	554659	4166973
18g	San Bruno Marsh	SBMA06	553599	4166863
18h	San Bruno Creek	SABR05	552773	4165873
18h	San Bruno Creek	SABR06	553025	4165939
18h	San Bruno Creek	SABR07	553233	4165913
19a	Brisbane Lagoon	BBLA11	553082	4171392
19a	Brisbane Lagoon	BBLA13	553718	4170275
19a	Brisbane Lagoon	BBLA14	553839	4170046
19a	Brisbane Lagoon	BBLA16	553204	4172278
19b	Sierra Point	SIPT01	554044	4170219
19b	Sierra Point	SIPT02	553964	4170061
19c	Oyster Cove	OYPC01	553898	4168901
19c	Oyster Cove	OYPC02	554036	4168764
19d	Oyster Point Marina	OYPM01	554830	4168579

2010 Clapper Rail Survey Stations with Coordinates

Site ID	Site Name	Station ID	X Coordinate	Y Coordinate
19e	Oyster Point Park	OYPP02	554396	4168390
19e	Oyster Point Park	OYPP03	554675	4168260
19f	Point San Bruno	SBPT03	554676	4167086
19g	Seaplane Harbor	SFO01	554449	4165785
19g	Seaplane Harbor	SFO02	554517	4165593
19h	SFO	SFO04	555438	4163237
19h	SFO	SFO05	555203	4162889
19h	SFO	SFO06	555111	4162711
19h	SFO	SFO07	555019	4162530
19i	Mills Creek Mouth	MICR01	555999	4161333
19j	Easton Creek Mouth	EACR01	556327	4160917
19j	Easton Creek Mouth	EACR02	556445	4160741
19k	Sanchez Marsh	SANC02	556689	4160466
19k	Sanchez Marsh	SANC03	557028	4160398
19k	Sanchez Marsh	SANC05	556844	4160430
19p	Seal Slough Mouth	SEAL01	562560	4158484
19p	Seal Slough Mouth	SEAL03	562728	4158450
19p	Seal Slough Mouth	SEAL04	562857	4158548
19p	Seal Slough Mouth	SEAL05	562861	4158725
19p	Seal Slough Mouth	SEAL06	562419	4158215
19p	Seal Slough Mouth	SEAL07	562432	4158448
20a	Oyster Bay Regional Shoreline	OYBA01	571103	4173797
20a	Oyster Bay Regional Shoreline	OYBA02	571168	4173609
20a	Oyster Bay Regional Shoreline	OYBA03	571238	4173414
20a	Oyster Bay Regional Shoreline	OYBA04	570848	4174341
20a	Oyster Bay Regional Shoreline	OYBA05	570669	4174288
20a	Oyster Bay Regional Shoreline	OYBA06	570479	4174221
20b	Oakland Golf Links	MEGO01	570654	4174841
20b	Oakland Golf Links	MEGO02	570751	4174608
20c	Dog Bone Marsh	DOGB01	572695	4170847
20c	Dog Bone Marsh	DOGB02	572510	4170924
20c	Dog Bone Marsh	DOGB03	572377	4171090
20d	Citation Marsh	CITA01	573661	4170466
20d	Citation Marsh	CITA02	573555	4170639
20d	Citation Marsh	CITA03	573435	4170800
20d	Citation Marsh	CITA04	573314	4170961
20d	Citation Marsh	CITA05	573318	4171265
20d	Citation Marsh	CITA06	573316	4171466
20d	Citation Marsh	CITA07	573314	4171666
20f	North Marsh	NORT01	573097	4171251
20f	North Marsh	NORT02	572949	4171118
20f	North Marsh	NORT03	572920	4170920
20f	North Marsh	NORT04	572877	4170757
20f	North Marsh	NORT05	572997	4170591
20f	North Marsh	NORT06	573168	4170488
20f	North Marsh	NORT08	573588	4170397
20g	Bunker Marsh	BUNK01	573456	4170331
20g	Bunker Marsh	BUNK02	573507	4170104
20g	Bunker Marsh	BUNK03	573561	4169912

2010 Clapper Rail Survey Stations with Coordinates

Site ID	Site Name	Station ID	X Coordinate	Y Coordinate
20g	Bunker Marsh	BUNK04	573631	4169725
20h	San Lorenzo Creek & Mouth	SLRZ01	573737	4169556
20h	San Lorenzo Creek & Mouth	SLRZ02	573659	4169471
20h	San Lorenzo Creek & Mouth	SLRZ07	573896	4169503
20h	San Lorenzo Creek & Mouth	SLRZ08	573955	4169323
20h	San Lorenzo Creek & Mouth	SLRZ09	573951	4169136
20h	San Lorenzo Creek & Mouth	SLRZ13	573913	4169681
20h	San Lorenzo Creek & Mouth	SLRZ14	574103	4169827
20h	San Lorenzo Creek & Mouth	SLRZ15	574248	4169937
20i	Bockmann Channel	BOCH03	574020	4169065
20j	Sulphur Creek	SULF04	575178	4168030
20j	Sulphur Creek	SULF05	575382	4168032
20j	Sulphur Creek	SULF06	575580	4168049
20k	Hayward Landing	HALA01	574524	4166812
20k	Hayward Landing	HALA03	574717	4166878
20k	Hayward Landing	HALA04	574929	4166935
20l	Johnson's Landing	JOLA02	575064	4164736
20l	Johnson's Landing	JOLA03	574999	4164923
20l	Johnson's Landing	JOLA04	574909	4165104
20m	Cogswell - Sec A	COGS01	574738	4166041
20m	Cogswell - Sec A	COGS02	574713	4166250
20m	Cogswell - Sec A	COGS03	574862	4166363
20m	Cogswell - Sec A	COGS04	575059	4166368
20m	Cogswell - Sec A	COGS05	575218	4166336
20m	Cogswell - Sec A	COGS06	575158	4166170
20m	Cogswell - Sec A	COGS07	575043	4166004
20n	Cogswell - Sec B	COGS15	575367	4165223
20n	Cogswell - Sec B	COGS16	575572	4165228
20n	Cogswell - Sec B	COGS17	575710	4165373
20n	Cogswell - Sec B	COGS18	575620	4165538
20n	Cogswell - Sec B	COGS19	575531	4165722
20n	Cogswell - Sec B	COGS20	575436	4165912
20n	Cogswell - Sec B	COGS21	575340	4166092
20o	Cogswell - Sec C	COGS08	574984	4165788
20o	Cogswell - Sec C	COGS09	575124	4165612
20o	Cogswell - Sec C	COGS10	575138	4165412
20o	Cogswell - Sec C	COGS11	575105	4165165
20o	Cogswell - Sec C	COGS12	574791	4165248
20o	Cogswell - Sec C	COGS13	574779	4165542
20o	Cogswell - Sec C	COGS14	574781	4165740
20r	Oakland Airport	OAKA01	566746	4175486
20r	Oakland Airport	OAKA02	566898	4175357
20r	Oakland Airport	OAKA03	567055	4175234
20s	HARD Marsh	HARD01	575252	4164654
20s	HARD Marsh	HARD02	575438	4164560
20s	HARD Marsh	HARD03	575619	4164493
20s	HARD Marsh	HARD04	575816	4164414
20s	HARD Marsh	HARD05	575988	4164619
20w	Triangle Marsh - Hayward	TRMA01	574647	4166655

2010 Clapper Rail Survey Stations with Coordinates

Site ID	Site Name	Station ID	X Coordinate	Y Coordinate
22c	Rheem Creek Area	RCRA02	555696	4203748
22c	Rheem Creek Area	RCRA03	555821	4203918
22c	Rheem Creek Area	RCRA04	555895	4204106
22c	Rheem Creek Area	RCRA05	555917	4204343
22f	Richmond/Albany Shoreline	ALBB01	560626	4193696
22f	Richmond/Albany Shoreline	ALBB02	560725	4194211
22f	Richmond/Albany Shoreline	ALBB03	560503	4194612
22f	Richmond/Albany Shoreline	ALBB04	560384	4194772
23a	Brickyard Cove	BKYD01	546051	4203904
23b	Beach Drive	BEF02	545740	4203155
23d	San Rafael Canal Mouth North	SRCM01	544244	4202876
23d	San Rafael Canal Mouth North	SRCM02	544370	4202758
23g	Greenwood Beach	STRA02	543742	4194434
23h	Strawberry Point	STRA01a	543670	4194339
23i	Strawberry Cove	STRC01	542827	4193653
23l	Starkweather Park	STRK01	544935	4200408
23n	Triangle Marsh - Marin	TRF02	544339	4197235
23n	Triangle Marsh - Marin	TRF03	544579	4197186
24a	Petaluma River - Upper	PDF11	534944	4230455
24a	Petaluma River - Upper	PDF12	534648	4230802
24a	Petaluma River - Upper	PDF13	533995	4231302
24a	Petaluma River - Upper	PDF14	534340	4231301
24b	Grey's Field	GRFI01	536303	4230247
24b	Grey's Field	GRFI02	535350	4230500
24b	Grey's Field	GRFI03	535850	4230155
26b	San Pablo Bay NWR Shoreline	MAIS11	562041	4216826
26b	San Pablo Bay NWR Shoreline	MAIS12	561920	4217008
26b	San Pablo Bay NWR Shoreline	MAIS13	561807	4217214
26b	San Pablo Bay NWR Shoreline	MAIS14	561653	4217439
26b	San Pablo Bay NWR Shoreline	MAIS15	561476	4217615
99a	Grizzly Island	GRIZ11	585445	4224922
99a	Grizzly Island	GRIZ12	585216	4224916
99a	Grizzly Island	GRIZ13	584971	4224960
99a	Grizzly Island	GRIZ14	584775	4225043
99a	Grizzly Island	GRIZ15	584581	4225094
99a	Grizzly Island	GRIZ16	584390	4225024
99a	Grizzly Island	GRIZ17	584218	4224890
99a	Grizzly Island	GRIZ18	584103	4224706
99a	Grizzly Island	GRIZ19	584003	4224542
99a	Grizzly Island	GRIZ20	583901	4224370
99a	Grizzly Island	GRIZ21	583765	4224157
99a	Grizzly Island	GRIZ22	583670	4223964
99a	Grizzly Island	GRIZ23	583551	4223797
99a	Grizzly Island	GRIZ24	583453	4223616
99a	Grizzly Island	GRIZ25	583330	4223446
99a	Grizzly Island	GRIZ26	583360	4223305

Appendix 3.
2010 Clapper Rail Geodatabase Design





2010 Clapper Rail Geodatabase Design

Feature	Fields	Description
Site Description - a polygon defining site boundary; contains site descriptions, including observations on vegetation, predators, pollution, and land use.	OBJECTID	Unique ID of object automatically assigned by ESRI
	Shape	Shape type of object automatically defined by ESRI (POLYGON)
	SiteName	Name of site where survey is being conducted
	SiteCode	ISP Control Program alphanumeric subsite code (ISP site number + ISP subsite letter)
	Site	ISP Monitoring Program subsite code (4-letter subsite code)
	County	Site county
	Complex	ISP control program complex name
	Region	CLRA program region name
	SiteHA	Site area in hectares
	Landown	Landowner
	GenHab	General Habitat: default value is "Tidal salt marsh"
	Observer	Primary observer conducting survey
	SurvDate	Date when survey was conducted
	SiteQual	Site Quality: overall quality of habitat for CLRA breeding and foraging
	Spartina	Impact of invasive Spartina at site
	HabNoSp	Habitat that remains/or will remain at site once Spartina has been removed
	TrtEff	Spartina treatment efficacy at site for the past treatment year.
	AmtVeg	Percent of site covered by vegetation (% that is not bare mud, open water, rip rap, etc)
	DomVeg	Dominant vegetation: the most abundant plant type at the site
	SubVeg	Subdominant vegetation: the second most abundant plant type at the site
	HorzStructure	A measure of the variety and interspersion of distinct plant zones in the marsh; based on CRAM "Horizontal Interspersion & Zonation" (v. 5.0.2) (at entire site)
	VertStructure	A measure of the complexity of vegetation layers in the marsh; based on CRAM "Vertical Biotic Structure" (v. 5.0.2) (at entire site)
	Hydrology	The tidal exposure of the marsh; based on CRAM "Rating of Hydroperiod for Perennial Estuarine wetlands" (v. 5.0.2)
	Channel	Degree of chanalization of marsh
	ChCover	Percent of channels at site that have cover (such as vegetation, bank slumping & bank undercutting) along the channel banks
	MarshType	Description of marsh type, or landscape
	AmtLevee	Percent of site that is bordered by levees
	HardEdge	Description of levee composition (cement/rip rap vs. soil &/or vegetation).
	LeveeVegCov	Percent of levee that is vegetated (from the base of levee to the top of levee)
	History	Restoration history of marsh
	LandUse1	Primary use of land surrounding marsh boundary
	LandUse2	Secondary use of land surrounding marsh boundary
	LandUse3	Tertiary use of land surrounding marsh boundary
	Raptors	Raptors or raptor sign present in/around marsh
	Mammals	Predatory mammals or mammal sign present in/around marsh
	Disturbance	Disturbances to wetland, including construction, restoration, fire, etc.
SiteNotes	Notes regarding survey round at site	
NearCLRA	Distance to nearest site that supports breeding clapper rail populations	
SurvNecc	Does this site have suitable clapper rail habitat and are further call count surveys necessary? (F-survey determination)	
Shape_Length	Automatically calculates shape perimeter in meters	
Shape_Area	Automatically calculates shape area in meters	

2010 Clapper Rail Geodatabase Design

Feature	Fields	Description	
	QC	Date when data was checked for quality (QC'd)	
Offset - a line feature connecting survey station to bird observed; contains data on every detection.	OBJECTID	Unique ID of object automatically assigned by ESRI	
	Shape	Shape type of object automatically defined by ESRI (LINE)	
	PointID	6-character alphanumeric code for station identification	
	Round	Round number (1, 2, or 3)	
	DateSurv	Date when survey was conducted	
	TimeDet	Time when rail was detected	
	FieldRef	Code to ID bird in field on field map	
	FinalRef	Code to ID bird in office (may be different from FieldRef)	
	Direction	Compass direction to rail	
	Distance	Distance to rail (estimated in meters)	
	DistConf	Length value (in meters) representing confidence in distance estimate (eg: +/- # meters)	
	Species	4 letter AOU code for species of rail detected	
	CallCode	Type of call or detection (for all types of rails)	
	MinCount	Minimum in range of rail designated for detection type (from datasheet)	
	MaxCount	Maximum in range of rail designated for detection type (from datasheet)	
	MinUniq	Minimum in range of unique rail detected at this location (nullify field if bird was previously recorded and counted on same DATE & site)	
	MaxUniq	Maximum in range of unique rail detected at this location (nullify field if bird was previously recorded and counted on same DATE & site)	
	NonSite	Select "Yes" if rail was detected outside of survey site (in SiteDet column enter which site rail was detected)	
	NonSurv	Select "Yes" if rail was detected outside of survey time or between stations	
	SiteDet	ISP Monitoring Program subsite code (4-letter subsite code) where rail was detected	
	SiteCode	ISP Control Program alphanumeric subsite code (ISP site number + ISP subsite letter) where rail was detected	
	Observer	Initials of primary observer conducting survey	
	Notes	Enter any relevant information regarding this specific offset	
	QC	Date when data was checked for quality (QC'd)	
	UniqueID	Unique ID of individual rail detected	
	ConwayMin	Minute in which rail was detected during 10 minute survey period; new in 2010	
Location - a point feature at approximate location of observed rail; contains data on each unique detection.	OBJECTID	Unique ID of object automatically assigned by ESRI	
	Shape	Shape type of object automatically defined by ESRI (POINT)	
	SiteCode	ISP Control Program alphanumeric subsite code (ISP site number + ISP subsite letter)	
	Species	4 letter AOU code for species of rail detected	
	FieldRef	Code to ID bird in field on field map	
	FinalRef	Code to ID bird in office (may be different from FieldRef w/ Triangulation)	
	MultDet	Enter "Yes" if the bird was detected from more than one location	
	DateSurv	Date when survey was conducted	
	NonSurv	Select "Yes" if rail was detected outside of survey time/ between stations	
	Observer	Initials of primary observer conducting survey	
	Round	Round number (1, 2, or 3)	
		QC	Date when data was checked for quality (QC'd)
		Notes	Enter any relevant information regarding this location
		UniqueID	Unique ID of individual rail detected (assigned in the office)

2010 Clapper Rail Geodatabase Design

Feature	Fields	Description
Visit - a point feature defining survey station (location of observer); contains data regarding visit to each survey station.	OBJECTID	Unique ID of object automatically assigned by ESRI
	Shape	Shape type of object automatically defined by ESRI (POINT)
	SiteName	Name of site where survey is being conducted
	SiteCode	ISP control program alphanumeric site code (eg: 17a)
	Site	CLRA program 4-letter site ID (eg: ELRO)
	PointID	6-character alphanumeric code for station identification
	Observer	Initials of primary observer conducting survey
	StartTime	Starting time of station visit
	SurvType	Type of survey being conducted (A, B, or C)
	Tape	Enter "Yes" if tape will be played at this station on this round
	Notes	Enter any relevant information regarding this specific detection
	Station	Station number (without site code)
	SurvDate	Date when survey was conducted
	SurvYear	Year when survey was conducted
	X_Coord	X-Coordinate of point in UTM's (Nad 83 Zone 10)
	Y_Coord	Y-Coordinate of point in UTM's (Nad 83 Zone 10)
	Detections	Enter "Yes" if rails were detected during the station visit
	Round	Round number (1, 2, or 3)
	QC	Date when data was checked for quality (QC'd)
	Start	Starting time of station visit for use in ArcPad (automatically calculates based on GPS time stamp)
Weather - a table containing weather data for each visit to site.	SiteName	Name of site where survey is being conducted
	SiteCode	ISP Control Program alphanumeric subsite code (ISP site number + ISP subsite letter)
	Site	ISP Monitoring Program subsite code (4-letter subsite code)
	Observer	Initials of primary observer conducting survey
	SurvDate	Date when survey was conducted
	Round	Round number (1, 2, or 3)
	Temp_B	Temperature at beginning of survey
	Sky_B	Cloud cover at beginning of survey (expressed as percent of cloud covering sky)
	WindSpd_B	Wind speed (in mph) at beginning of survey
	WindDir_B	Wind direction at beginning of survey (eg: 'wind is blowing from NE ')
	Precip_B	Brief description of precipitation at beginning of survey
	Temp_F	Temperature at end of survey
	Sky_F	Cloud cover at end of survey (expressed as percent of cloud covering sky)
	WindSpd_F	Wind speed (in mph) at end of survey
	WindDir_F	Wind direction at beginning of survey (eg: 'wind is blowing from NE ')
	Precip_F	Brief description of precipitation at end of survey

Appendix 4.
2010 Clapper Rail Survey Forms





F Survey Form
ISP 2010

Type 2010: _____

Site: _____ Sub-site: _____ Width: _____

Date: _____ Time: _____ Tide: _____ Surv. Rec. _____

Name: _____ Photo? Yes ___ No ___ Nearest CLRA site: _____

Percentage Domain Values		Range Domain Values	
<u>Sum</u>	<u>Range</u>	<u>Sum</u>	<u>Range</u>
0 =	01 - 09 %	0	insignificant
1 =	10 - 49 %	1	low
2 =	50 - 89 %	2	moderate
3 =	90 - 100 %	3	high

Marsh Type: Strp ___ MF ___ CHL ___ Pt Bnd ___ Mt Bnd ___ Open ___ Lagn ___ CM ___

Amount Levee: _____ % Levee Vegetation Cover: _____ Hard Levee edge? Y N

Channels:

- 0. Invaded marsh or shoreline.
- 1. Only 1st Order
- 2. 2nd & 3rd Order
- 3. ≥ 4th Order

Channel Cover:

- 0. Negligible Veg OR Bank Slump (w/in 1 m)
- 1. Low Veg OR Bank Slump (w/in 1 m)
- 2. Mod Veg OR Bank Slump (w/in 1 m)
- 3. High Veg AND Bank Slump (w/in 1 m)

Spartina Impact:

- 0. Insignificant impact from *Spartina* invasion/removal
- 1. Low impact from *Spartina* invasion/removal
- 2. Moderate impact from *Spartina* invasion/removal
- 3. High impact from *Spartina* invasion/removal

Treatment Efficacy (annual):

- 0. No efficacy
- 1. Low efficacy
- 2. Moderate efficacy
- 3. High efficacy

Habitat w/No *Spartina*:

- 0. Little or no habitat after *Spartina* removal
- 1. Some low quality habitat remains
- 2. Lots of low or mod. quality habitat remains
- 3. Some high quality habitat remains.

Amount Veg:

- 0. _____ %
- 1. _____ %
- 2. _____ %
- 3. _____ %

Dominant veg: _____ %

Subdom. Veg: _____ %

Other veg: _____ %

_____ %

_____ %

Horizontal Structure: (bird's eye view) Vertical Structure:

- 0. Insig.veg.variety (V) & interspersion (I) 0. Most marsh lacks dense canopy
- 1. Low veg.V & I (full veg./ low sp.div.) 1. < ½ marsh has dense canopy AND ceiling < 10-20 cm
- 2. Mod. V & I (full veg./sp ≥ 4-5) 2. < ½ marsh has dense canopy OR ceiling < 10-20 cm
- 3. High V & I (full veg./high sp.div.) 3. > ½ marsh has dense canopy with ceiling ≥ 10-20 cm

APPENDIX 4

Cover (Hybrid) *Spartina* _____ %

Site Quality:

- 0. Poor habitat (little to none)
- 1. Can support migrant to 1-2 breeding pair
- 2. Can support 3-6 breeding pair
- 3. Can Support high density CLRA

Hydrology:

- ___ Fully tidal
- ___ Slightly muted tidal exposure
- ___ Extremely muted tidal exposure
- ___ Poorly drained hydrology

History (marsh age): ___ Invaded Shoreline ___ Young Restn. Site (recently tidal/partial veg)
 ___ Mature Restn. Site ___ Old Marsh (natural or restored ≥ 30 YA)

Land Uses (rate 1-3):

- 1. Airport: Major or minor airport
- 2. Industry: Industry / commercial property nearby
- 3. Marina: Marina or docks for boating
- 4. Rec Area: Recreational Area or park nearby
- 5. Refuge: Wildlife or conservation area
- 6. Residential: Residential neighborhood on marsh edge.
- 7. Commercial: Office, shops, hotels, restaurants.
- 8. Road/Fwy: Road/freeway/highway nearby
- 9. Train: Active train tracks near site
- 10. Saltpond: Marsh is near a commercial salt pond area
- 11. Waste Water Trt: Marsh is near a water/sewage treatment area
- 12. Solid Waste: Landfill, recycling, etc.
- 13. Other: _____

Raptors: T F _____ Mammals: T F _____

Disturbance: _____

Site Notes: _____

Use Likely (Habitat): ___ None ___ Poor ___ Marginal ___ Good ___ (CLRA) Likely Present

Birds:

Appendix 5.
Summary of Survey Data for All Sites in 2010





Data Summary for All Sites Surveyed in 2010

Region and Site Name (ID)	Survey Type	Round 1			Round 2			Round 3			Round 4			Round 5			
		Date	Observer ¹	Min CLRA detected	Max CLRA detected	Date	Observer ¹	Min CLRA detected	Max CLRA detected	Date	Observer ¹	Min CLRA detected	Max CLRA detected	Date	Observer ¹	Min CLRA detected	Max CLRA detected
Bay Bridge North																	
Emeryllville Crescent - East (06a)	A	1/23/2010, 1/31/2010	JH	0	0	2/6/2010, 2/14/2010	JH	0	0	3/13/2010, 4/14/2010	JH	0	0				
Emeryllville Crescent - West (06b)	A	1/23/2010	JH	3	4	2/6/2010	JH	3	4	3/13/2010	JH	8	10				
Whittell Marsh (10a)	C - A	2/1/2010	AN	1	2	2/16/2010	JM	0	0	4/8/2010	WT	1	2				
Southern Marsh (10b)	C - A	2/1/2010	JH	0	0	2/16/2010	JH	1	2	4/8/2010	JM	0	0				
Giant Marsh (10c)	A	2/1/2010	JL	0	0	2/16/2010	JH	0	0	4/8/2010	JM	0	0				
Rheem Creek Area (22c)	A	1/31/2010	JL	2	4	2/16/2010	JL	5	8	3/17/2010	JH	6	6				
Richmond/Albany Shoreline (22f)	F - C	1/31/2010	JH	0	0	2/14/2010	JH	0	0	4/14/2010	JL	0	0				
San Leandro Bay																	
Elsie Roemer (17a)	A	1/17/2010	AN	0	0	1/31/2010	JH	1	2	3/4/2010	JS	0	0				
Bay Farm Island (17b)	C	1/22/2010	JH	0	0	2/7/2010	TR	0	0	3/4/2010	WT	0	0				
MLK Regional Shoreline (17d)	A	1/22/2010	JL/SC	5	10	2/10/2010	WT/JH	1	2	3/15/2010	JL/SC	3	6				
San Leandro Creek (17e)	A	1/15/2010	JL	2	4	2/1/2010	JS	3	4	3/19/2010	JH	3	4				
Oakland Inner Harbor (17f)	F	8/19/2009	WT	0	0	-	-	-	-	-	-	-	-				
Coast Guard Island (17g)	F	7/20/2009	JH	0	0	-	-	-	-	-	-	-	-				
MLK Marsh (17h)	A	1/16/2010	JL	10	14	1/30/2010	JL	8	12	2/13/2010	JH	8	8	3/13/2010	JL	14	18
Coliseum Channels (17i)	F	12/29/2009	JS	0	0	-	-	-	-	-	-	-	-				
Fan Marsh (17j)	A	1/16/2010	JH/AN	9	12	1/31/2010	JS	11	14	2/14/2010	JH	12	14	3/14/2010	JH	12	14
Airport Channel (17k)	A	1/16/2010	AN/JH	1	2	1/31/2010	AN/JS	1	2	2/14/2010	JH/JL	1	2				
Doolittle Pond (17l)	A	1/16/2010	JH	1	2	1/31/2010	JS	0	0	2/14/2010	JH	1	2				
Alameda Island - East (17m)	A	1/22/2010	JM	0	0	2/7/2010	JL	0	0	3/12/2010	JH	1	2				
Hayward																	
Oro Loma - East (07a)	A	1/28/2010	WT	3	4	2/11/2010	WT	0	0	3/17/2010	TR	4	6				
Oro Loma - West (07b)	A	1/28/2010	JS, TR, WT	0	0	2/11/2010	JH, JL, WT	0	0	3/17/2010	JS, TR, WT	0	0				

Data Summary for All Sites Surveyed in 2010

Region and Site Name (ID)	Survey Type	Round 1			Round 2			Round 3			Round 4			Round 5			
		Date	Observer ¹	Min CLRA detected	Max CLRA detected	Date	Observer ¹	Min CLRA detected	Max CLRA detected	Date	Observer ¹	Min CLRA detected	Max CLRA detected	Date	Observer ¹	Min CLRA detected	Max CLRA detected
Oyster Bay Regional Shoreline (20a)	A	1/28/2010	AN	0	0	2/12/2010	JM	0	0	3/4/2010	JH	0	0				
Oakland Golf Links (20b)	A	2/3/2010	AN	0	0	2/17/2010	JH	0	0	3/16/2010	JH	0	0				
Dog Bone Marsh (20c)	A	1/27/2010	WT	0	0	3/19/2010	JS	0	0	4/9/2010	JS	0	0				
Citation Marsh (20d)	A	1/27/2010	TR	5	8	3/19/2010	TR	5	8	4/9/2010	JH	2	2				
East Marsh (20e)	A	1/27/2010	SC/JH	0	0	3/19/2010	SC/JM	0	0	4/9/2010	SC/JM	0	0				
North Marsh (20f)	A	1/27/2010	WT	12	16	3/19/2010	JS	7	12	4/9/2010	JS	6	12				
Bunker Marsh (20g)	A	1/27/2010	JH	4	8	3/19/2010	JM	4	7	4/9/2010	JM	1	2				
San Lorenzo Creek & Mouth (20h)	A	1/27/2010	SC/JH	3	4	3/19/2010	SC/JM	0	0	4/9/2010	SC/JM	0	0				
Bockmann Channel (20i)	C	1/27/2010	SC	0	0	3/19/2010	SC	0	0	4/9/2010	SC	0	0				
Sulphur Creek (20j)	A	1/28/2010	TR	0	0	2/11/2010	JL	0	0	3/27/2010	WT	0	0				
Hayward Landing (20k)	F - C	2/10/2010	JM	0	0	2/24/2010	WT	0	0	4/1/2010	JM	0	0				
Johnson's Landing (20l)	A	2/10/2010	JS	0	0	2/24/2010	TR	0	0	4/1/2010	JH	0	0				
Cogswell - Sec A (20m)	A	1/15/2010	JS	4	6	2/1/2010	JM	6	6	2/15/2010	JS	2	2	3/18/2010	WT	3	4
Cogswell - Sec B (20n)	A	1/15/2010	JH	20	24	2/1/2010	JH	16	18	2/15/2010	JH	12	16	3/18/2010	JH	20	28
Cogswell - Sec C (20o)	A	1/15/2010	SC	1	2	2/1/2010	JL	5	8	2/15/2010	JL	1	2	3/18/2010	JM	3	4
Hayward Shoreline Outliers (20p)	F	1/15/2010	JS	0	0	-	-	-	-	-	-	-	-				
San Leandro Shoreline Outliers (20q)	F	1/5/2010	JS	0	0	-	-	-	-	-	-	-	-				
Oakland Airport (20r)	C	2/4/2010	JM	0	0	2/17/2010	JH	0	0	3/16/2010	JH	0	0				
HARD Marsh (20s)	A	2/10/2010	JS	0	0	2/24/2010	TR	0	0	4/1/2010	JH	0	0				
San Leandro Marina (20t)	F	1/5/2010	JS	0	0	-	-	-	-	-	-	-	-				
Estudillo Creek Channel (20u)	F	1/5/2010	JS	0	0	-	-	-	-	-	-	-	-				
Hayward Landing Canal (20v)	F	1/15/2010	JS	0	0	-	-	-	-	-	-	-	-				
Triangle Marsh - Hayward (20w)	C	2/10/2010	JM	0	0	2/24/2010	WT	0	0	4/1/2010	JM	0	0				
Union City																	
Eden Landing - North Creek (13h)	F	1/8/2010	JS	0	0	-	-	-	-	-	-	-	-				
Eden Landing - Pond 10 (13i)	F	1/8/2010	JS	0	0	-	-	-	-	-	-	-	-				
Eden Landing - Mt Eden Creek (13j)	F - C	2/14/2010	WT	0	0	3/12/2010	WT	0	0	3/26/2010	JH	2	4				

Data Summary for All Sites Surveyed in 2010

Region and Site Name (ID)	Survey Type	Round 1			Round 2			Round 3			Round 4			Round 5			
		Date	Observer ¹	Min CLRA detected	Max CLRA detected	Date	Observer ¹	Min CLRA detected	Max CLRA detected	Date	Observer ¹	Min CLRA detected	Max CLRA detected	Date	Observer ¹	Min CLRA detected	Max CLRA detected
Eden Landing Reserve - South (13k)	F	1/8/2010	JS	0	0	-	-	-	-	-	-	-	-	-	-	-	-
Newark																	
Newark Slough (05c)	A	1/26/2010	JL	5	8	2/12/2010	JH	4	6	3/12/2010	SC	2	4				
Alviso and Mountain View																	
Ravenswood Open Space Pres. (02j)	F - C	2/9/2010	SC	0	0	3/11/2010	SC	0	0	4/1/2010	TR	0	0				
South Bay Marshes: Alviso Slough	A	2/4/2010	SC	0	0	2/18/2010	SC	9	10	4/14/2010	SC	0	0				
South Bay Marshes: Charleston Slough (15a/c)	A	2/1/2010	SC	2	4	2/16/2010	SC	0	0	3/27/2010	SC	1	2				
South Bay Marshes: Steven's Creek (15a/c)	A	1/30/2010	SC	0	0	2/22/2010	SC	0	0	3/18/2010	SC	0	0				
Cooley Landing (16a)	A	1/30/2010	JS/WT	2	4	2/13/2010	JH	0	0	3/2/2010	SC	3	4	3/26/2010	SC	0	0
San Mateo																	
Belmont Slough (02a)	A	1/26/2010	SC	2	4	2/16/2010	SC	2	2	3/11/2010	JS	3	4				
Redwood Shores (02a/b)	A	1/26/2010	TR	2	2	3/17/2010	JM	0	0	4/9/2010	TR	0	0				
B2 South Quadrant (02d)	A	2/5/2010	WT	7	8	3/5/2010	WT	2	4	3/23/2010	JS	1	2				
West Point Slough - NW (02e)	C - A	2/11/2010	SC	0	0	2/25/2010	SC	0	0	3/17/2010	SC	1	2				
Greco Island - North (02f)	A	2/5/2010	TR	3	4	3/5/2010	TR	5	6	3/23/2010	SC	11	14				
West Point Slough - SW / E (02g)	C	2/5/2010	JH	1	2	2/25/2010	SC	0	0	3/17/2010	SC	0	0				
Greco Island - South (02h)	A	2/9/2010	JH/TR	24	26	2/25/2010	JH/WT	14	24	4/13/2010	TR/JM	5	10				
Ravenswood Slough/Mouth (02i)	A	2/8/2010	SC	3	6	3/10/2010	SC	3	4	4/13/2010	SC	3	6				
Inner Bair Island Restoration (02j)	F - A	2/10/2010	SC	0	0	2/24/2010	SC	0	0	3/31/2010	SC	0	0				
Foster City (19q)	F	1/15/2010	JS	0	0	-	-	-	-	-	-	-	-				
San Francisco Peninsula																	
Pier 98/Heron's Head (12b)	F	12/31/2009	JS	0	0	-	-	-	-	-	-	-	-				
India Basin (12c)	F	12/31/2009	JS	0	0	-	-	-	-	-	-	-	-				

Data Summary for All Sites Surveyed in 2010

Region and Site Name (ID)	Survey Type	Round 1			Round 2			Round 3			Round 4			Round 5			
		Date	Observer ¹	Min CLRA detected	Max CLRA detected	Date	Observer ¹	Min CLRA detected	Max CLRA detected	Date	Observer ¹	Min CLRA detected	Max CLRA detected	Date	Observer ¹	Min CLRA detected	Max CLRA detected
Hunters Point Naval Reserve (12d)	F	12/31/2009	JS	0	0	-	-	-	-	-	-	-	-	-	-	-	-
Yosemite Channel (12e)	F	12/31/2009	JS	0	0	-	-	-	-	-	-	-	-	-	-	-	-
Candlestick Cove (12f)	F	12/31/2009	JS	0	0	-	-	-	-	-	-	-	-	-	-	-	-
Colma Creek (18a)	C	2/3/2010	TR	0	0	2/17/2010	TR	0	0	4/2/2010	TR	0	0				
Navigable Slough (18b)	C	2/2/2010	JS	0	0	2/17/2010	JS	0	0	4/2/2010	JS	0	0				
Old Marina (18c)	A	2/2/2010	JS	0	0	2/17/2010	JS	0	0	4/2/2010	JS	0	0				
Inner Harbor (18d)	A	2/2/2010	WT	0	0	2/17/2010	WT	0	0	4/2/2010	JM	0	0				
Sam Trans Peninsula (18e)	A	2/2/2010	WT	0	0	2/17/2010	WT	0	0	4/2/2010	JM	1	2				
Confluence Marsh (18f)	A	2/2/2010	WT	1	2	2/17/2010	WT	0	0	4/2/2010	JM	0	0				
San Bruno Marsh (18g)	A	2/2/2010	SC	0	0	2/17/2010	SC	0	0	4/2/2010	SC	0	0				
San Bruno Creek (18h)	C	2/2/2010	JS	0	0	2/17/2010	JS	0	0	4/2/2010	JS	0	0				
Brisbane Lagoon (19a)	C	1/31/2010	SC/TR	0	0	2/14/2010	WT/TR	0	0	3/13/2010	SC/WT	0	0				
Sierra Point (19b)	C	1/31/2010	TR	0	0	2/14/2010	TR	0	0	3/13/2010	WT	0	0				
Oyster Cove (19c)	F - C	1/22/2010	TR	0	0	2/7/2010	JS	0	0	3/13/2010	TR	0	0				
Oyster Point Marina (19d)	F - C	1/22/2010	TR	0	0	2/7/2010	JS	0	0	3/13/2010	TR	0	0				
Oyster Point Park (19e)	F - C	1/22/2010	TR	0	0	2/7/2010	JS	0	0	3/13/2010	TR	0	0				
Point San Bruno (19f)	F - A	2/2/2010	SC	0	0	2/17/2010	SC	0	0	4/2/2010	SC	2	2				
Seaplane Harbor (19g)	A	2/8/2010	JS	0	0	3/16/2010	JS	0	0	3/31/2010	TR	0	0				
SFO (19h)	A	2/8/2010	JS	1	2	3/15/2010	JS	0	0	3/31/2010	TR	0	0				
Mills Creek Mouth (19i)	F - C	1/23/2010	TR	0	0	2/11/2010	TR	0	0	3/19/2010	WT	0	0				
Easton Creek Mouth (19j)	F - C	1/23/2010	TR	0	0	2/11/2010	TR	0	0	3/19/2010	WT	0	0				
Sanchez Marsh (19k)	F - C	1/23/2010	TR	0	0	2/11/2010	TR	0	0	3/19/2010	WT	0	0				
Burlingame Lagoon (19l)	F	12/27/2009	JS	0	0	-	-	-	-	-	-	-	-				
Fisherman's Park (19m)	F	12/27/2009	JS	0	0	-	-	-	-	-	-	-	-				
Coyote Point Marina (19n)	F	12/27/2009	JS	0	0	-	-	-	-	-	-	-	-				
San Mateo Creek (19o)	F	12/27/2009	JS	0	0	-	-	-	-	-	-	-	-				
Seal Slough Mouth (19p)	A	1/26/2010	JS	0	0	2/9/2010	JS	0	0	3/16/2010	WT	1	2				
Anza Lagoon (19r)	F	12/27/2009	JS	0	0	-	-	-	-	-	-	-	-				

Data Summary for All Sites Surveyed in 2010

Region and Site Name (ID)	Survey Type	Round 1			Round 2			Round 3			Round 4			Round 5			
		Date	Observer ¹	Min CLRA detected	Max CLRA detected	Date	Observer ¹	Min CLRA detected	Max CLRA detected	Date	Observer ¹	Min CLRA detected	Max CLRA detected	Date	Observer ¹	Min CLRA detected	Max CLRA detected
Marin																	
Blackie's Creek (03a) & Mouth (03b)	F	12/30/2009	JS	0	0	-	-	-	-	-	-	-	-	-	-	-	-
College of Marin (04b)	F - C	2/17/2010	JL	0	0	3/5/2010	WT	0	0	3/23/2010	JL	0	0				
Larkspur Ferry Landing Area (04e)	F	1/16/2010	JS	0	0	-	-	-	-	-	-	-	-	-	-	-	-
Riviera Circle (04f)	F	1/16/2010	JS	0	0	-	-	-	-	-	-	-	-	-	-	-	-
Corte Madera Creek - Upper (04h)	A	2/17/2010	JL	4	6	3/5/2010	JH	1	2	3/23/2010	JL/TR	0	0	3/24/2010	JL	0	0
Corte Madera Creek - Lower (04i)	A	2/17/2010	JL	0	0	3/5/2010	WT	0	0	3/23/2010	JL	0	0				
Murphy Creek (04j)	F	1/16/2010	JS	0	0	-	-	-	-	-	-	-	-	-	-	-	-
Pickleweed Park (09a)	A	1/23/2010	JS	5	8	2/18/2010	WT	6	8	3/18/2010	JS	10	10				
Brickyard Cove (23a)	F - C	1/26/2010	JH	0	0	2/18/2010	JS	0	0	3/18/2010	TR	0	0				
Beach Drive (23b)	C	1/26/2010	JH	0	0	2/18/2010	JS	0	0	3/18/2010	TR	0	0				
Loch Lomond Marina (23c)	F	12/30/2009	JS	0	0	-	-	-	-	-	-	-	-	-	-	-	-
San Rafael Canal Mouth (23d)	A	1/26/2010	JH	1	2	2/18/2010	JS	2	2	3/18/2010	TR	2	2				
Paradise Cay (23f)	F	12/30/2009	JS	0	0	-	-	-	-	-	-	-	-	-	-	-	-
Greenwood Beach (23g)	C	1/15/2010	JS	0	0	2/6/2010	JS	0	0	3/18/2010	JS	0	0				
Strawberry Point (23h)	C	1/15/2010	JS	0	0	2/6/2010	JS	0	0	3/18/2010	JS	0	0				
Strawberry Cove (23i)	C	1/15/2010	JS	0	0	2/6/2010	JS	0	0	3/18/2010	JS	0	0				
Sausalito (23k)	F	1/16/2010	JS	0	0	-	-	-	-	-	-	-	-	-	-	-	-
Starkweather Park (23l)	C	1/23/2010	JS	0	0	2/18/2010	WT	0	0	3/18/2010	JS	0	0				
Triangle Marsh - Marin (23n)	C	1/15/2010	JS	0	0	2/6/2010	JS	0	0	3/18/2010	JS	0	0				
Petaluma																	
Petaluma River - Upper (24a)	A	2/1/2010	TR/WT	0	0	2/16/2010	TR	1	2	4/8/2010	TR	3	6				
Grey's Field (24b)	A	2/1/2010	TR/WT	0	0	2/16/2010	JS	1	2	4/8/2010	JS	0	0				
Vallejo																	
San Pablo Bay NWR Shoreline (26b)	C	2/10/2010	TR	0	0	2/25/2010	TR	0	0	4/7/2010	TR	0	0				

