

**Point Count Protocol**

Variable Radius/Point Transect

**Introduction:**

This protocol is the current consensus of methods that describes data collection for surveys of birds, specifically landbirds, using tidal marsh habitat (including muted tidal marsh and other bayland habitat). The objective of a point count is to develop estimates of species richness and diversity of landbirds, and abundance and distribution (i.e., presence/absence) of selected species. The emphasis is on songbirds, especially the Song Sparrow, Marsh Wren and Common Yellowthroat, but information on all other landbirds is also a goal. The protocol can be used to gather information on Black Rails and Clapper Rails, but information on these two species is best obtained through specific Rail Survey methods.

**Seasonality:**

Breeding season surveys are conducted between March 21 and May 31. Each site should be visited twice. A month is recommended between visits, but the interval could be as much as six weeks, and as little as 15 days apart. In general, plan to conduct the “early spring” surveys (round 1) and “late spring” surveys (round 2) according to the guidelines below.

ROUND 1- March 21 to April 25

ROUND 2- April 26 to May 31

It is preferable not to survey in June for several reasons: vegetation is high, thus obscuring birds; singing and territorial behavior is reduced compared to March, April and May; and more fledged (i.e., flying independent) young are present in the marsh, which can confound survey results.

Fall surveys are conducted September 1-October 31; winter surveys are conducted December 1-February 15.

**Point placement:**

Prior to the point count season, where possible, a grid of points (all  $\geq 200$  m apart and  $\geq 50$  m from the edge) should be placed throughout the entire designated survey area of the marsh. A set of 5 points from the previous year’s survey made at the marsh and 5 randomly chosen new points should be selected for surveying in the current year. Always survey the same points when surveys are made within a season. In South San Francisco Bay, points are almost all set up along levees or boardwalks due to regulations imposed to minimize disturbance of endangered nesting Clapper Rails and Salt Marsh Harvest Mice. Sites set up in early years of the study may have points  $< 200$  meters apart. Points should be flagged conspicuously, where possible, in order to facilitate finding the exact spot for subsequent surveys and vegetation measurements.

**Timing:**

Counts begin within the 15 minutes following local sunrise. If necessary, counts may begin as early as 15 minutes prior to sunrise; however it is preferable for the count to begin between sunrise and 15 minutes after sunrise. The survey should be continuous and be completed within 3-4 hours (i.e., during the time of maximum bird activity during the day). Completion within 3 hours is preferred; in any case, a survey should not continue beyond 4 hours after sunrise. When possible, the order in which points are surveyed should vary between visits.

**Tides:**

When possible, avoid surveying at extreme points in the monthly tidal cycle.

**Weather conditions:**

Surveys should not be conducted when conditions prevent normal bird activity or detectability, such as rain or strong winds. As a guideline, do not survey in winds  $> 10$  miles per hour. If conditions change for the worse while doing a count, the remaining points can be completed  $< 6$  days from the first day, but this should

be avoided as much as possible. If industrial or traffic noise adjacent to the marsh significantly reduce an observer's ability to detect birds, the survey should be conducted on the weekend.

### Data collection:

Be sure you have the following:

- binoculars
- watch which indicates seconds
- at least 2 pens
- field notebook
- sufficient blank data forms
- clipboard
- rubber bands (for securing forms)

Depending on the route, survey type, and your experience level, you may also need:

- directions and maps
- GPS unit & extra batteries
- cell phone or radio
- range finder
- field guide
- water and snacks

PRBO point counts are 5 minutes in duration at each point. Record the time the survey begins at each point using the 24-hour clock. If something interferes with your ability to detect birds during the 5-minute count, stop the count until the disturbance has passed and start over. Cross out the interrupted data and note what happened on your form.

Record weather conditions on the bottom of the form at the beginning and end of the survey (wind, temperature, cloud cover and precipitation). Record the focal habitat type (see below for codes). Record a rating of channel fullness at the start of each point (see below for codes).

Approach each point with as little disturbance as possible, and begin your count as soon as you are oriented and confident you can estimate distances accurately (less than one minute). Counts are passive; no attracting devices, recordings, or "pishing" should be used.

Every species detected at a point is recorded, regardless of how far from the observer. [Priority is given to target tidal marsh species (SOSP, COYE, MAWR, CLRA and BLRA) and other tidal marsh or wetland species.] Use the standardized banding lab 4-letter abbreviation for species codes (<http://www.pwrc.usgs.gov/bbl/manual/specelist.htm>), and follow the naming conventions maintained by the American Ornithologists Union (<http://www.aou.org/checklist/>). For unknown species, record "XXXX." For unknown members of various families, use "XX" plus two letters to signify the family – "XXHU" for unidentified hummingbird, for example. You can follow birds after the completion of a point in order to verify identification as long as it does not significantly affect the rest of the survey. If no birds are detected at a point, write "No birds detected" on your form. Species detected outside the 5-minute point count period should be recorded on a separate line with "XX" for the point number, in the margins, or on the back of the form. Record species that have not been detected during the point count periods, as well as rare species such as BLRA and CLRA. Record only the detection type, leaving the distance blank (e.g., C). Enter these detections into the database with a 0 for point number. Enter all individual detections of birds of concern (see attached species list); more common birds (e.g., MODO, RTHA) can be entered just once per survey. These incidental detections will be used to create site species lists and for end-of-the-year reporting to California Department of Fish and Game.

Detections of every individual are recorded by distance from the point at 10 meter increments up to 100 meters, and above 100m. The distance recorded is the distance from the point to the first location an individual was observed, regardless of its behavior. If the bird subsequently moves, *do not change the original distance recorded*. Birds that are flying over but not using the habitat on the study area are recorded in the fly-over column, using the appropriate detection code. Birds that are hovering over the plot, or looking around actively foraging, are not considered flyovers; they should be counted within the distance band they were first detected. This could include swallows, raptors, gulls, shorebirds, corvids, and herons/egrets.

Record the behavioral cue that alerted you to the presence of the individual - "S" for song, "V" for visual, or "C" for call ("D" for drumming woodpecker, "H" for humming hummingbird). If detection is by two cues simultaneously, give priority to Song > Visual > Call. If a bird sings after it has been detected via a different cue, this is indicated in the data, but the initial detection cue is preserved. Circle the original detection cue ("V" or "C") to note that a bird was singing subsequent to its initial detection, but otherwise, no changes in behavior are noted. Juvenile birds are recorded as "J"s regardless of their behavior, and are not included in most analyses.

If you flush a bird while in transit to a point, and the bird would otherwise have been detected on your count, and you are certain of your influence on the bird's movement, record the bird at the distance of its flush from the survey point, with the detection code "F."

Make every effort to avoid double counting individuals detected at a single point. However, if an individual that was counted at a previous point is detected at a closer distance from a subsequent point, cross out the earlier, more distant detection and record the closer detection at the second point. Only enter into the database the closest detection of that individual bird.

Record any potential indications of breeding if noted for an individual at each point as follows:

- PA - pair
- CO - copulation
- DI - territorial display
- DD - distraction display
- FC - food carry
- FL - fledglings
- FS - fecal sac carry
- MC - material carry
- NF - nest found

For each point, record all individuals of any one species on the same line, except when they are in different habitats. Birds detected outside the focal habitat (e.g. in adjacent upland habitat, in the adjacent neighborhood) are marked with the type of habitat in which they are found:

T = fully tidal marsh

U = upland non-marsh habitat

R = restoration

H = human-managed

B = Bay (open water)

L = Levee (if the levee forms an edge with the focal habitat)

P = other non-marsh pond

M = muted marsh

S = salt pond

W = seasonal wetland

Designate 2 different marsh areas of a single type as 1 and 2 (e.g. a tidal marsh is being surveyed—T1, and an adjacent area is also tidal marsh—T2). Use a separate line for different individuals of a species detected within and outside the focal habitat at a single point. If a bird uses both focal and non-focal habitat at that point, record it as within the marsh only (e.g. a SOSP sings at the edge of the marsh, flying between upland and marsh vegetation, and it is included in the focal marsh detections).

At each point, record the relative fullness of channels in the marsh as a measure of tide height. The following scale provides an index of the relative proportion of water to bare mud within the tidal channels:

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>Tide</b>	most channels have no water in them at all; large channels are primarily bare mud	most channels are less than 1/4 full	channels are mostly 1/4 to 1/2 full	channels are 1/2 to 3/4 full	most channels are greater than 3/4 full	water is spilling over the edge of all tidal channels: extremely high tide

## Data Entry

**Spec:** 4-letter AOU species code

**Data:** combination of detection type and distance band, for example:

S01 = singing between 0-10m

C910 = calling between 90-100m

VG10 = visual >100m

VFLO = visual flyover

**State:** CA

**Region:** county. Leave blank if unknown, since it can be filled in later

**Site:** 3-4 letter site code

**Date:** Enter survey date

**Initials:** surveyor's initials (2-3 letters)

**Visit:** visit# by calendar year

**Point:** point number

**Time:** start time for the point

**Habitat:** Enter the letter designation for habitat type. If the "target" area and non-target area are both within range of the surveyor, and a bird is heard in a non-target area, make sure you designate it in the right habitat.

If both target and non-target are of the same habitat type, in this example "T", designate the target one as "T1" and the non-target as "T2"

**Breedob:** Enter, if any.

**Sing:** "T" for true or "F" for false

**Tide:** Enter your estimate of channel fullness for the point (1-6).

### CNDDB Bird Species

<b>AWPE</b>	American White Pelican	record presence of nesting colony	<b>CAGU</b>	California Gull	record presence of nesting colony
<b>BRPE</b>	Brown Pelican	record presence of roosting colony	<b>BLSK</b>	Black Skimmer	record presence of nesting colony
<b>DCCO</b>	Double-crested Cormorant	record presence of rookery	<b>SEOW</b>	Short-eared Owl	record presence of nesting bird
<b>GBHE</b>	Great-blue Heron	record presence of rookery	<b>BUOW</b>	Burrowing Owl	record presence of burrow
<b>GREG</b>	Great Egret	record presence of rookery	<b>VASW</b>	Vaux's Swift	record presence of nesting bird
<b>SNEG</b>	Snowy Egret	record presence of rookery	<b>ALHU</b>	Allen's Hummingbird	record presence of nesting bird
<b>AMBI</b>	American Bittern	record presence of species	<b>NUWO</b>	Nuttall's Woodpecker	record presence of nesting bird
<b>BCNH</b>	Black-crowned Night Heron	record presence of rookery	<b>LOSH</b>	Loggerhead Shrike	record presence of nesting bird
<b>WFIB</b>	White-faced Ibis	record presence of rookery	<b>HOLA</b>	Horned Lark	record presence of species
<b>BAGO</b>	Barrow's Goldeneye	record presence of nesting bird	<b>BANS</b>	Bank Swallow	record presence of nesting bird
<b>CANV</b>	Canvasback	record presence of nesting bird	<b>OATI</b>	Oak Titmouse	record presence of nesting bird
<b>COHA</b>	Cooper's Hawk	record presence of nesting bird	<b>COYE</b>	Common Yellowthroat	record presence of species
<b>SSHA</b>	Sharp-shinned Hawk	record presence of nesting bird	<b>YWAR</b>	Yellow Warbler	record presence of nesting bird
<b>PEFA</b>	Peregrine Falcon	record presence of nesting bird	<b>SOSP</b>	Song Sparrow	record presence of species
<b>PRFA</b>	Prairie Falcon	record presence of nesting bird	<b>TRBL</b>	Tricolored Blackbird	record presence of nesting bird
<b>NOHA</b>	Northern Harrier	record presence of nesting bird	<b>YHBL</b>	Yellow-headed Blackbird	record presence of nesting bird
<b>MERL</b>	Merlin	record presence of wintering bird			
<b>WTKI</b>	White-tailed Kite	record presence of nesting bird			
<b>CLRA</b>	Clapper Rail	record presence of species			
<b>BLRA</b>	Black Rail	record presence of species			
<b>LBCU</b>	Long-billed Curlew	record presence of nesting bird			