

YUMA RIDGWAY'S RAIL

SURVEY PROTOCOL FOR PROJECT EVALUATION

Yuma Ridgway's (Clapper) Rail (*Rallus obsoletus [longistrostris] yumanensis*)

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This Yuma Ridgway's Rail survey protocol for project evaluation (Project Evaluation Protocol) was developed to provide greater confidence in survey results used for evaluating project impacts to Yuma Ridgway's rails and their habitat. Surveyors evaluating projects for potential impacts to Yuma Ridgway's rails (e.g., typically those that involve consultation with the U.S. Fish and Wildlife Service [Service]) will need to be prepared to make up to six visits to determine presence/absence. The purpose of these additional survey visits (compared to the National Marsh Bird Protocol [Conway 2011]) is to provide greater confidence in determining Yuma Ridgway's rail presence/absence. This Yuma Ridgway's rail survey protocol for project evaluation has been accepted for use in Southern California, along the Lower Colorado River, Central and Northwestern Arizona, and Southern Nevada.

We continue to recommend using the National Marsh Bird Protocol (Conway 2011) for general surveys and situations where the results will NOT be used to evaluate project effects.

Background

Yuma Ridgway's rails establish territories and nest in cattail marshes with vocalizations peaking during the onset of the breeding season in early spring (March and April) (Conway *et al.* 1993). In contrast to "clattering" by individual birds or a "duet" which is a pair of birds clattering together, single male "keking" is highly seasonal, almost exclusively occurring in March and April. For more information on the Yuma Ridgway's rail natural history, please visit the [Yuma Ridgway's rail Species Profile Page](#).

Based on Gibbs and Melvin (1993), three or more surveys are needed to establish marsh bird presence in a wetland with 90 percent certainty. Conway *et al.* (1993) identified a 40 percent detection rate to call prompting. Based on a detection probability of 0.4, six survey passes are required to achieve a confidence level of 0.95. Because of the secretive, endangered status, low detectability of the Yuma Ridgway's rail, six surveys, using this protocol, will be conducted in all appropriate emergent marsh habitats to determine likely absence for project evaluations. All call types, and number of calls, should be reported. Only after all six surveys with no responses would the Service consider Yuma Ridgway's rail currently absent. Results are valid for one year, with the proposed project needing to be completed before the beginning of the following nesting season.

Surveyor experience and training

Surveyors need to gain experience by participating in Yuma Ridgway's rail or similar marsh bird survey efforts with trained, experienced, and permitted surveyors for at least 20 hours, and attend a U.S. Fish and Wildlife Service-approved marshbird training workshop. Surveyors should familiarize themselves with the various call types and with estimating distances to calls before training in the field. Learning marsh bird vocalizations is essential; common Yuma Ridgway's rail vocalizations include, but are not limited to the "clatter," "duet," "kek," "kek-hurrah," "purr," "agitated kek," and "kek-burr." Training should include ways to minimize disturbance to rails and impacts to marsh vegetation as well as use of GPS to mark survey locations. New surveyors should strive to achieve at least 90 percent accuracy in identifying and mapping Yuma Ridgway's rail calls across a minimum of 30 separate encounters where at least one similar sounding species is known to be present, as observed and documented by their experienced, permitted trainer. Surveyors should familiarize themselves with the survey form and its terms, the summary form, and the example documents. Marsh birdcalls can be found on the [North American Marsh Bird Monitoring Program](#)'s website. For Yuma Ridgway's rail calls specific for this Project Evaluation Protocol survey please contact your nearest field office (see [Offices](#) section below).

Permits

The surveys must be conducted by a biologist who has a section 10(a)(1)(A) U.S. Fish and Wildlife Service recovery permit and the appropriate state or tribal permit(s). For permit authorization, individuals wishing to apply for a [recovery permit](#) must be proficient at distinguishing Yuma Ridgway's rail calls from those of other bird species that may occupy the same habitats, such as the Virginia rail (*Rallus limicola*) and least bittern (*Ixobrychus exilis*). Once a permit is issued, the surveyor is responsible for following instructions described in the permit, such as special conditions, coordination with the Service, contacting landowners, and deadlines for submitting all forms.

Tips for preparing to conduct surveys

Surveyors should obtain authorization from landowners/managers for access, conduct reconnaissance visits, develop survey strategies, and have the appropriate equipment/documents prior to conducting surveys. Ensure that MP3 players, GPS equipment, external speakers, recorders, cameras and other equipment are working prior to conducting surveys and that extra batteries are available. Speakers should be able to reach 80-90 decibels (dB) without distortion 1 meter away from the speaker. Measuring decibel level will require the use of a sound level meter. Speakers should be checked at the beginning of each day that a survey is planned. Ensure that notebooks, maps, field guides, permits, and survey forms are available. Surveyors should become familiar with the survey area, access, and other details necessary to physically conduct the surveys. Survey forms will be on hand, and will be the most up-to-date version, to ensure all appropriate data are collected (location, weather, bird, site conditions, *etc.*). A survey strategy should be developed that includes a detailed map depicting the survey site, the

access point to the marsh, the listening and call stations along the route, and any marsh landmarks. Landmarks can include notable trees that are viewable from the surrounding area, ditches, levee gates, telephone towers, *etc.* Aerial photographs and site photos can be helpful tools to describe surveys, landmarks, and any survey and detection related incidents.

Documenting Yuma Ridgway's rail vocalizations and locations

All Yuma Ridgway's rail individuals should be documented by noting the call type, location, and time on a detailed map of the marsh. The call types can be coded as C = clatter, D = duet, K = kek, B=kek-burr, H=kek-hurrah, with an S representing a visual sighting. Other unusual calls also should be noted. If a pair of Yuma Ridgway's rails duet they should be documented as separate individuals but noted as a pair in the notes section of the survey form. If a Yuma Ridgway's rail is moving during the survey, several locations may be noted for the same bird(s).

A Yuma Ridgway's rail territory is considered established if a surveyor hears any of the following:

- "Clatter" calling by an individual rail on one or more survey visits;
- A pair duet on one or more survey visits; or
- Vocalizations by an individual rail on two or more separate survey visits.

"Clatter" calls are made by paired rails, either singly or as a pair duet (male and female), and are the strongest indicator of an established breeding territory. In other cases, a rail might set up a territory without being paired and can give various calls throughout the season. Additional visits after presence is established may still be helpful for project evaluation because they can provide important site-specific information on distribution, abundance, and habitat use.

If a Yuma Ridgway's rail is heard between surveys (*i.e.*, between listening and calling stations), detected outside of the focus area, or, when multiple surveyors are present, heard by one surveyor and not the other, these detections should be marked on the map and described on the survey form.

Form completion, map development, and submission

A survey form must be completed for each visit. Following the completion of all surveys, a summary of all the survey visits must be completed using the survey summary form. This summary and all survey forms, along with accompanying maps and photographs documenting the survey site, detections, the survey route, listening and call stations, landmarks, and other details, must be submitted to the appropriate field office with the proposed project's Biological Assessment or Evaluation.

Project sites need to have established routes and survey points that follow the below Listening and Call Stations methodology. A final reference map will need to be

developed once all of the surveys have been completed, showing the dates of surveys, the name of the project, name of the wetland, the survey locations, the path(s) the surveyor(s) walked, name of the surveyor(s), and approximate location of any rail detections. The map will be signed by the surveyor(s). This final reference map will be attached to the survey summary form. Please refer to the example survey and summary forms, maps and accompanying documents.

Methodology

Survey conditions

Surveys should only be conducted on warm mornings and evenings (greater than 50° Fahrenheit /10° Celsius). Yuma Ridgway's rail calling appears to be triggered by the first warm spell in the spring. Cold and rainy conditions should be avoided. Surveys are not to be conducted during rain or when the average sustained¹ wind velocity exceeds 10 mph (a breeze that keeps leaves or small twigs in constant motion, or which extends a light flag). Likewise, if wind gusts² exceeding 12 mph (Conway 2011) occur, surveys should be postponed. Overall, regardless of actual wind velocity, surveys should be delayed if wind, or the effects of wind (movement of marsh vegetation) interferes with the observer's ability to hear vocalizations.

Survey timing

At least one survey visit should be conducted at dusk and one at dawn. The remaining four surveys can be conducted at either dusk or dawn. Dawn surveys should begin 30 minutes before sunrise and proceed for no more than three hours after sunrise. Dusk surveys should begin two hours before sunset and continue until dark. Surveys should be conducted with a minimum of 5 days between surveys.

Survey length

Surveys are to be conducted between March 1st - May 15th under the appropriate environmental conditions described above, and the survey windows below. Surveys conducted outside of these timeframes will need to receive permission from the respective U.S. Fish and Wildlife Service Field Office. For areas around the Salton Sea, see [Appendix A](#) which details some regional differences. The Salton Sea area is defined geographically in these contexts: the Eastern extent is Imperial County S-34, the western extent is Highway 86, the northern extent is Interstate 10, and the southern extent is the U.S. - Mexico border ([Figure 2](#)).

¹ Sustained wind refers to the average wind speed measured over a brief, continuous period (typically 1–2 minutes) during which the wind remains generally steady. It excludes short, momentary gusts.

² Wind gust refers to a brief, momentary increase in wind speed above the sustained wind velocity. Surveys should be postponed if gusts occur frequently enough to interfere with the observer's ability to hear vocalizations, even if sustained wind speeds remain within acceptable limits.

Survey windows

The five survey windows for project evaluation are: Mar 1 - Mar 15, Mar 16 - Mar 31, Apr 1 - Apr 15, Apr 16 - Apr 30 and May 1 - May 15. A single survey should occur within each of these 5 time periods. Preferably, 2 surveys will occur in the fifth window to total 6 surveys, however if that is not possible because of scheduling constraints the survey window of the surveyors choosing should have 2 surveys. Surveys before March 1 and after May 15 will only be considered if positive for rail presence, such surveys cannot be used into infer absence. At least 5-7 days needs to be between surveys, 7 days is preferable.

Survey area per day

A survey route should not have more stations than can be successfully completed within 3 hours of the start of the first survey. If an entire area cannot be surveyed during a single dusk visit, then it may continue the following morning (and vice versa). One survey is considered complete when an entire route covering all listening and call stations is done once.

Using the broadcast speaker

The broadcast player will be placed on the ground (or on the bow of the boat), or slightly elevated if the ground is wet but no higher than a foot off the ground. Surveyors will stand (or sit) 2 m (6.5 feet) to one side of the speaker while listening for vocal responses (remaining too close to the speaker can reduce the surveyor's ability to hear calling birds). Surveyors should point the speaker toward the center of the marsh and **not** rotate the speaker during the call-broadcast survey. Speakers should be pointed in the same direction for all replicate surveys.

Listening and call stations

This Yuma Ridgway's rail survey protocol establishes a site with listening and call stations (with rail recordings) covering the entire area. Listening and call stations should be configured within 300 meters (984 feet)-diameter circles, resulting in survey points being at least 300 meters (984 feet) apart ([Figure 1](#)). If a surveyor is worried about environmental conditions like background noise or tall, dense vegetation (*e.g.*, tamarisk trees) inhibiting detection, an exception can be made for closer points, but such adjustments would need to be reviewed by the respective U.S. Fish and Wildlife Service Field Office. Overall, stations should be established so that the majority of area being surveyed is within the diameter circular plots and that, unless an exception is issued, these plots do not overlap. Listening and call stations should be placed near marsh features that are likely to support Yuma Ridgway's rail (such as cattail stands).

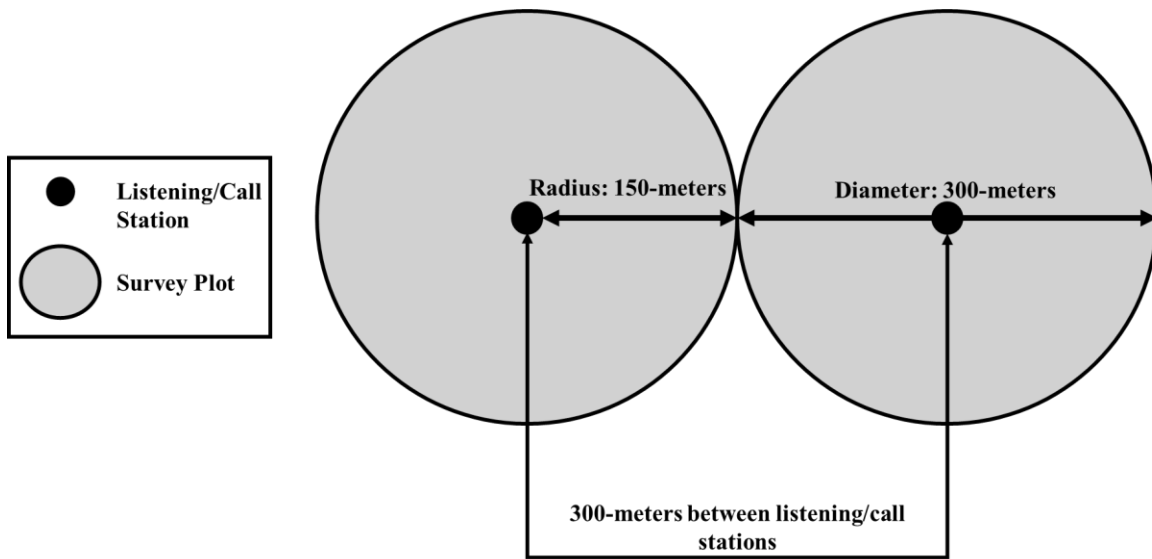


Figure 1. Diagram showing that survey points should be within survey areas with a 300-meter diameter and therefore be a minimum distance of 300-meters apart.

Each listening and call station along the Yuma Ridgway’s rail survey route includes a 9 minute and 30 second listening and call session. Surveyors will play the Yuma Ridgway’s rail audio recording, including the “kek”, “clatter”, and “dueting” calls with a digital player and amplified speakers (at normal non-distorted volumes). At each listening and call station, begin with five minutes of silence to allow for passive listening and observation followed by Yuma Ridgway’s rail calls and a minute of silence. The calls and minute of silence is repeated three more times (for a total of four calling periods totaling about 30 seconds and a total of 9 silent minutes for listening). Surveyors should listen for Yuma Ridgway’s rail responses during silence periods. Move on to the next listening and call station after playing and listening for the entire 9 minute and 30 second session if a call is not detected. If a Yuma Ridgway’s rail call is detected, stop the call prompting audio and move at least 300 meters (984 feet) to the next station.

For inclusion of state-listed birds, the calls for these species should be done directly following the Yuma Ridgway’s rail calls. Coordination with the associated state agency on what audio to use is the responsibility of the surveyor.

Surveyors should avoid crushing emergent vegetation while conducting surveys. Locate the stations on levee crowns, roads, or boardwalks to the extent such features are available. In some locations, using a small boat may provide the best access. Surveyors should not attempt to physically find a calling bird or nest and should keep to the perimeter of the marsh or cattail habitat.

Survey effort consistency

Surveyors must follow the same survey route for the entire season to take advantage of site familiarity. Observers should locate key marsh landmarks or features on a map in

relation to each listening and call station and navigate via GPS to consistently locate the individual stations. If a survey of an area is conducted over more than one morning or night, observers should begin the subsequent survey at the station adjacent to their previous morning/night's final station, if possible. An example of this is if a route has eight (8) survey points, and only four (4) survey points are surveyed due to unforeseen circumstances, the remaining four (4) survey points would be surveyed the following day.

For sites already using the National Marsh Bird Protocol

To help survey efficiency, if a site has historically used the National Marsh Bird Protocol but is planned for a potential project, the format of the National Marsh Bird Protocol can still be done (5 minutes of silence proceeded by marsh bird calls) but when the Yuma Ridgway's rail call is to begin, the four Yuma Ridgway's rail calls from this Project Evaluation Protocol should be played. In addition to the three surveys required under the National Marsh Bird Protocol, three additional surveys will need to be completed to fulfill this Project Evaluation Protocol. To prevent survey effort duplication, if a site has a survey route that uses the National Marsh Bird Protocol, coordination with the surveyor on where those survey points are and encouragement of data sharing should occur. Contact the nearest U.S. Fish and Wildlife Service Field Office, or appropriate state agency to determine if the project site falls into this category.

All expectations of surveyor training and experience, permits, documentation of vocalizations, and submittal forms associated with this Project Evaluation Protocol are the same as the National Marsh Bird Protocol. Nevertheless, submitting the National Marsh Bird Protocol forms are to be done separately, and data entry into the Avian Knowledge Network should still be completed. Survey conditions, timing, length, survey windows, use of the broadcast speaker and standards of presence or absence should also follow this Project Evaluation Protocol.

Offices

Arizona

U.S. FISH AND WILDLIFE SERVICE

Arizona Ecological Services Field Office
Phone: 602-364-7889

ARIZONA GAME AND FISH DEPARTMENT

Headquarters
Phone: 602-942-3000

Yuma
Phone: 928-342-0091

California

U.S. FISH AND WILDLIFE SERVICE

Carlsbad Fish and Wildlife Office

Phone: 760-359-4429

Palm Springs Fish and Wildlife Office

Phone: 760-322-2070

CALIFORNIA DEPARTMENT OF WILDLIFE

Region 6 – Inland Deserts Region

Phone: (909) 484-0167

Nevada

U.S. FISH AND WILDLIFE SERVICE

Southern Nevada Fish and Wildlife Service Office

Phone: 702-515-5230

NEVADA DEPARTMENT OF WILDLIFE

Headquarters

Phone: 775-688-1500

Southern Region

Phone: 702-486-5127

References

Conway, C. J., W. R. Eddleman, S. H. Anderson, L. R. Hanebury. 1993. Seasonal Changes in Yuma Clapper Rail Vocalization Rate and Habitat Use. *Journal of Wildlife Management* 57:282-290.

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Eddlemann, W.R. and C.J. Conway. 1998. Clapper Rail (*Rallus longirostris*), In: The Birds of North America. No. 340. (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

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Appendix A: Salton Sea

The Salton Sea area ([Figure 2](#)) is considered an especially unique part of the Yuma Ridgway's rails range because of habitat use and behavior of birds there. To account for these differences in habitat use and behavior, some aspects of the Project Evaluation Protocol are different (*e.g.*, Survey length, Survey windows, and Habitat features). However, all other aspects of the Project Evaluation Protocol (*e.g.*, Survey conditions, Survey area per day) as detailed above remain the same.

Survey length

Surveys are to be conducted between March 1st -May 31st under the appropriate environmental conditions described above, and the survey windows below. Surveys conducted outside of these time frames will need to receive permission from the respective U.S. Fish and Wildlife Service Field Office.

Survey windows

The six survey windows for project evaluation are: Mar 1 - Mar 15, Mar 16 - Mar 31, Apr 1 - Apr 15, Apr 16 - Apr 30, May 1 - May 15, May 16 - May 31. A single survey will occur within each survey window. At least 5-7 days needs to be between surveys, though 7 days is preferable.

Habitat Features

Habitat features that are unique to the Salton Sea area include but are not limited to:

- Managed wetlands and marshes.
- Emergent marshes fed by drain, spill, or hot spring water along the Salton Sea shoreline. Emergent marshes have changing footprints that are affected by water quantity, drain channeling, and sediment buildup.
- Drains and spillways: unmanaged drains and spillways with continuous cattail cover will become habitat if not routinely maintained.
- Hot springs and seepage marshes are marshes located more commonly in slightly elevated altitudes with enough cattail marsh coverage to be used by both migratory and nesting rails. Size is variable.

Salton Sea Area

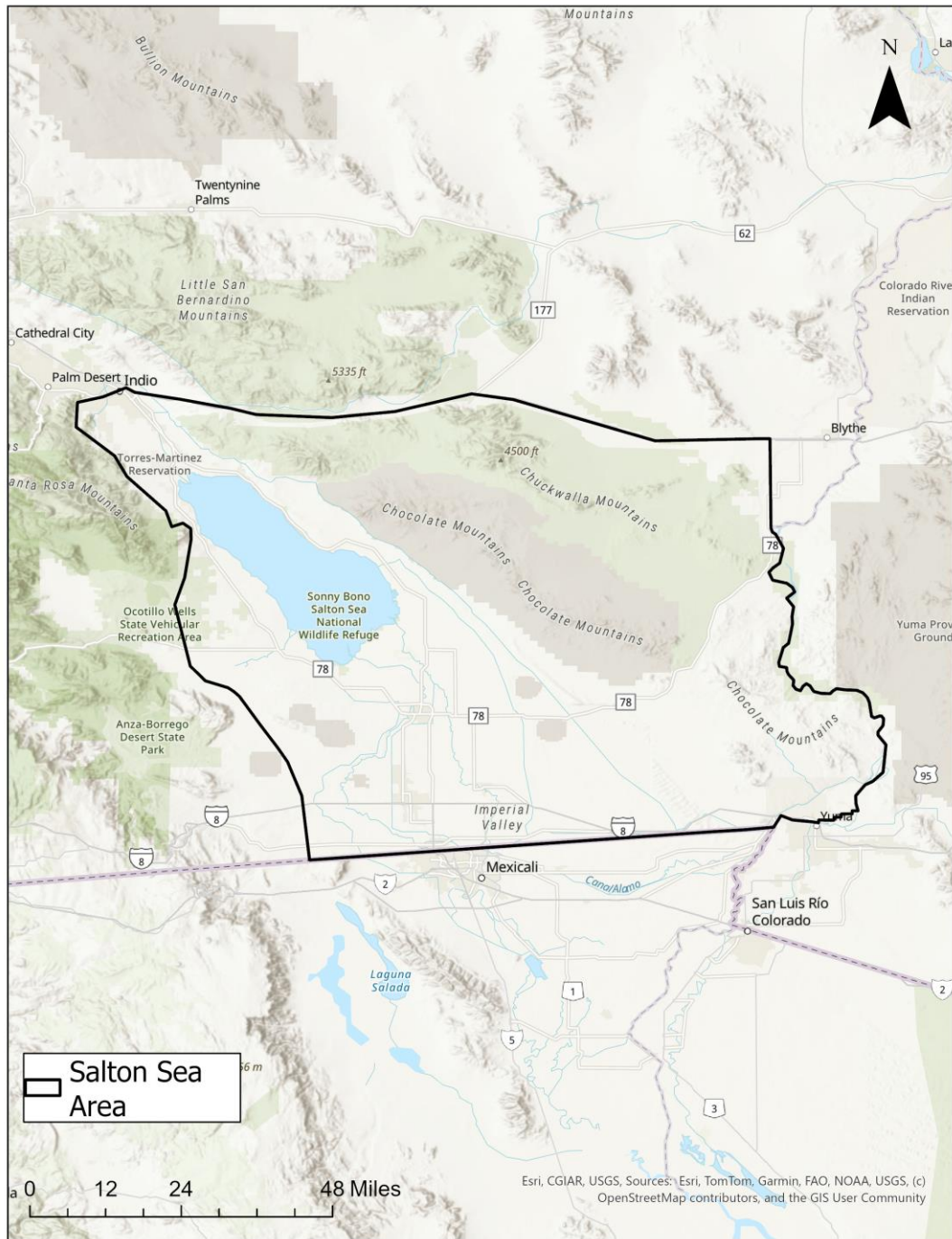


Figure 2. The Salton Sea area includes the following extents: the eastern extent is the California border, the western extent is Highway 86, the northern extent is Interstate 10, and the southern extent is the U.S. - Mexico border.