



United States Department of the Interior

Fish and Wildlife Service Arizona Ecological Services Office

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In reply refer to:

AESO/SE

02EAAZ00-2017-F-00502

April 3, 2017

Memorandum

To: Cliff Schleusner, Chief, Wildlife and Sport Fish Restoration Program, Southwest Region

From: Field Supervisor

Subject: Final Biological Opinion for Arizona Game and Fish Department State-wide Cormorant Trapping Research Project

Thank you for your request for consultation with the U.S. Fish and Wildlife Service (Service) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (ESA). Your request was received by our office on February 2, 2017. At issue are impacts that may result from the Arizona Game and Fish Department's (Department) statewide cormorant trapping research project, to be funded by the Service's Wildlife Sportfish Restoration (WSFR) program. The WSFR Office has concluded the proposed action "may affect, and is likely to adversely affect" the Yuma Ridgway's (clapper) rail (*Rallus obsoletus [=longirostris] yumanensis*). We agree with your determinations and provide our rationale below. In addition, WSFR has concluded the proposed action will have "no effect" to species listed in Appendix A, and not result in adverse modification of critical habitat for any species listed; as such these species and associated critical habitats will not be addressed further in this Biological Opinion (BO).

This BO is based on information provided by WSFR and the Department's Environmental Assessment Checklist (EAC), telephone conversations and meetings between staff, and other sources of information found in the administrative record supporting this BO. Detailed information and justification for this action can be found on file with this office, WSFR office, and in the Department's EAC. All other aspects of the proposed action remain the same as described in the EAC. Literature cited in this BO is not a complete bibliography of all literature available on the species of concern. A complete administrative record of this consultation is on file at this office.

CONSULTATION HISTORY

January 11, 2017 Draft EAC received from the Department to WSFR, and forwarded to AZESO

January 20, 2017 Correspondence exchanged between WSFR and AZESO and phone meeting

February 2, 2017 Correspondence exchanged and additional draft EAC received by WSFR

February 21, 2017 Additional information received from the Department

March 13, 2017 WSFR and AZESO phone meeting

March 27, 2017 Final EAC received

March 27, 2017 Draft BO sent to WSFR

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

A full description of the proposed action is in the EAC, and is summarized below.

Action

The Department is proposing a research project to assess Arizona's cormorant population, their impacts on fish, and potential management strategies to reduce these possible impacts. The objectives of this project are;

1. Determine the spatial distribution of primary cormorant (double-crested and neotropic) colonies in Arizona, with a focus on locations of feeding and nesting sites used by primary colonies,
2. Determine the level of connectivity among primary cormorant colonies in Arizona,
3. Estimate minimum population size of each species at primary colonies in Arizona,
4. Estimate the composition of fish by species and size, and associated fish losses (e.g., pounds of fish), taken by primary cormorant colonies in Arizona,
5. Estimate fish losses (e.g., pounds of fish) from cormorant predation at community fishing program locations, and examine factors that influence the loss of fish to cormorants at these sites.
6. Based on the outcomes of objectives 1-5, recommend methods of reducing fish losses.

This study may include the entire state of Arizona, but some objectives will focus on areas where cormorants are found in the highest concentrations and may have the highest impact on fish. Objectives 1-4 and 6 will include all of Arizona, with an emphasis on areas of high concentration, and Objective 5 will focus on community fishing program waters in the Phoenix and Prescott areas. Completion of Objective 1 will help inform specific waterways that will be the focus of the subsequent objectives.

Objectives 1-3 will be addressed through a suite of approaches, including an established cormorant count, marked birds, use of citizen scientists, and a media campaign. The action will begin by collecting known locations of cormorant concentrations in Arizona by querying organized bird count databases, Department personnel, anglers, birdwatchers, and electronic observation data (e.g., eBird [<http://ebird.org/content/ebird/>] and the Christmas Bird Count database). The Department will then establish a community science cormorant count, which will be conducted once per quarter (Winter: Nov - Jan, Spring: Feb - Apr, Summer: May - Jul, Fall: Aug - Oct) in 2017 and 2018. Once per quarter, all counts will be counted on the same day, to generate a minimum population size.

Based on the information generated in the first Objectives, the Department will capture and mark a subset of cormorants in each primary colony (defined as those including at least 100 birds) with unique identification (e.g., patagial tags). As feasible, they will attempt to capture 5-20 birds in each primary colony. Only Department personnel will trap, handle, and tag cormorants.

As feasible, the Department will obtain fish species composition for each of these waters from the Aquatic Wildlife Branch to determine species of fish available to cormorants at each site. Using numbers of cormorants observed to be feeding at these sites, they will generate an estimate of total pounds of fish eaten at each site (using published estimates of dietary requirements for cormorants). The Department will also use trained observers to determine the composition of fish species being consumed by cormorants.

Trapping

Trapping activities will primarily occur in and around Community Fishing waters or other manmade water features, which are artificial, to avoid potential affects to Yuma Ridgway's Rail or associated habitat. However, the Department will also trap cormorants in riparian areas around the state that contain potential or known Yuma Ridgway's rails and habitat (e.g., Gila River near Phoenix, along Colorado River). Yuma Ridgway's Rails are found in riparian corridors with dense marsh vegetation. No project activities will occur within 1/4 mile of known occupied nests for this species during breeding season.

Bal-chatri or noose traps will be under constant observation by capture staff to ensure non-target birds are released as soon as possible. Cormorants will be captured during their mid-to-late incubation time to minimize disruption to nest establishment; primarily from early February to early March.

At least three capture methods will be explored in pilot capture trials to determine the most effective and safe approach. These trapping methods may include; bal-chatri traps, flushing of roosts at night, and soft catch leg-hold traps.

The first method that will be tested is the use of monofilament nooses attached to a platform, similar to nooses used in a bal-chatri trap. Although bal-chatri traps have most commonly been used to capture raptors, they have been successfully used to capture cormorants. Department personnel will secure small squares (approximately 1x1 meter) of mesh hardware cloth covered

with monofilament nooses in areas used by cormorants during sunning and resting. The corners of each square will either be secured to the mud with four 15 cm spikes approximately 15-30 cm under water near the edges of water bodies, or they will be attached to a wood frame that we will secure to the edge of an existing tree or other structure near the water edge. An alternative will be to attach hardware cloth with nooses directly to waterside perches such as logs, rocks, or concrete ledges, used by cormorants during loafing and sunning. Traps will remain under constant surveillance while set, so that snared birds can quickly be processed and released, and traps will be removed when not set.

If bal-chatri traps are not an effective means of capture, the Department will attempt to flush cormorants from their roost trees to the water after dark, and then pursue and net them from a boat equipped with flood lights. At least 30 minutes after dark Department personnel will use spotlights to flush cormorants to the water and use a net behind the lights to capture target animals. This approach may work for some sites in Arizona but may be limited because few roost sites are near water.

If needed, a third method of capture will be used; soft catch leg-hold traps along loafing or ground-nesting sites or possibly in roost trees on or near active nests. Soft catch leg-hold traps can be modified to decrease risk of injury to birds with foam pipe insulation on one of the jaws and bungee cord and swivels to absorb additional shock when the traps are anchored to trees in the target area so that birds can flap unharmed to the ground. Other options for capture might include using drop nets or rocket nets, but the risk of injury and mortality is greater for each of those methods. If birds are roosting on the ground (e.g., on an island) it might also be possible to hand-capture birds blinded by spotlights.

Upon capture, each bird will be restrained in a burlap bag or a damp pillowcase to prevent injury and reduce stress. Birds will be tagged and returned to the water or roost area within 15 minutes of capture. Each cormorant will be fitted with a patagial wing tag with a unique identification number. The Department may divide Prescott lakes and the Phoenix community fishing waters into metropolitan quadrants or by geographic features, and cormorants caught in each section will be tagged with tags of different colors so that animals from each area may be easily identified by area upon initial observation. Or, if available, each body of water could get tag colors or shapes unique to that particular water body. Colored tags may help observers to identify birds and their capture areas so we can begin to monitor where birds are moving across the landscape.

Locations of trapping

Research activities may occur statewide, with particular focus on community fishing waters of the Phoenix metropolitan area and Prescott. Water bodies and riparian areas located along the Gila, Salt, Verde, and Colorado Rivers, as well as lakes and reservoirs outside the metropolitan center may also be included in this research. A detailed description of locations can be found in the EAC and are summarized here;

APACHE COUNTY

- Patterson Ponds

GILA COUNTY

- Green Valley Lakes

MARICOPA COUNTY

- Friendship Pond
- Desert Breeze Lake
- Veterans Oasis Lake
- Discovery Ponds
- Freestone Pond
- McQueen Pond
- Water Ranch Lake
- Bonsall Pond
- Red Mountain Lake
- Riverview Lake
- Pioneer Lake
- Rio Vista Pond
- Alvord Lake
- Cortez Lake
- Desert West Lake
- Encanto Lake
- Papago Ponds
- Roadrunner Pond
- Steele Indian School Pond
- Chaparral Lake
- Eldorado Pond
- Surprise Lake
- Evelyn Hallman Pond
- Kiwanis Lake
- Tempe Town Lake
- Allenville and East Allenville Treatment Ponds
- Tres Rios Wetlands
- Confluence of Gila and Salt Rivers
- Gilbert Road and Chandler Heights Evaporations Dam
- Lake Pleasant
- Roosevelt Lake

PINAL COUNTY

- Copper Sky Lake
- Pacana Pond
- Dave White Regional Park Pond

PIMA COUNTY

- Silverbell Lake
- Lakeside Lake
- Kennedy Lake
- Sahuarita Lake

YUMA COUNTY

- Yuma West Wetlands Pond
- Redondo Pond
- Fortuna Pond
- Council Ave. Pond

YAVAPAI COUNTY

- Lynx Lake
- Goldwater Lake (Upper and Lower)
- Fain Lake
- Watson Lake
- Willow Lake

Conservation Measures for Yuma Ridgway's Rail

- 1) No project activities will occur within 1/4 mile of known historical detections during the breeding season.
- 2) Trapping activities will primarily occur in and around Community Fishing waters or other manmade water features, which are artificial, to limit potential impacts.
- 3) Traps will be continuously monitored while in use to insure any captured rail will be released immediately.

ACTION AREA

STATUS OF THE SPECIES

Yuma Ridgway's Rail

The Yuma Ridgway's rail (then called Yuma clapper rail) was federally listed as a species in danger of extinction in the United States (U.S.) on March 11, 1967, pursuant to the Endangered Species Preservation Act (ESPA) of 1966 (32 FR 4001, March 6, 1967). The population in

Mexico was included under the 1969 Act; however a clerical error dropped Mexico from the officially recognized range during listing under the Endangered Species Act of 1973, as amended. Critical habitat has not been designated for the Yuma Ridgway's rail.

Species Description and Life History

The Yuma Ridgway's rail is a medium sized subspecies of the Ridgway's rail, with adults standing 20-23 cm tall. Males tend to average between 266.8 g in weight (Todd 1986, p. 4) while females are slightly smaller, averaging between 226.2 g and 193.0 g (Todd 1986, p. 4; Eddleman 1989, p. 65). Sexes can be differentiated based on use of several external measurements (Eddleman 1989, p. 66). Adult Yuma Ridgway's rails of both sexes are similar in plumage; they possess a long, slender slightly de-curved bill, a laterally compressed body, and relatively long legs and toes compared to body size.

Yuma Ridgway's rails are difficult to detect, and are more often heard than seen, especially in the morning and evening hours (Eddleman 1989, p. 42). They are good swimmers, and with laterally compressed bodies can maneuver through cattails relatively quickly. They are capable of long distance flights, but are not adept at short distance flying.

The diet of the Yuma Ridgway's rail is varied. It is currently believed to be dominated by crayfish, small fish, tadpoles, clams, and other aquatic invertebrates (Ohmart and Tomlinson 1977, entire; Anderson and Ohmart 1985, p. 123; Todd 1986, p. 69; Eddleman 1989, pp. 90-95; Conway 1990, pp. 34, 41). Crayfish (*Procamberus clarki* and *Orconectes virilis*) are not native to the lower Colorado River basin and were introduced to the basin about 1968 for aquatic weed control and to provide forage for sport fish (Inman et al. 1998, p. 3). The spread of crayfish in the lower Colorado River may have assisted the expansion of Yuma Ridgway's rail range, as crayfish provide a more abundant and secure food supply during the breeding season (Ohmart and Tomlinson 1977, p. 336).

Habitat Requirements and Limiting Factors

The rail is the only subspecies of Ridgway's rail largely found in freshwater marshes. Historically, cattail/bulrush marshes in the Colorado River Delta in Sonora, Mexico were thought to be the apparent stronghold for the species, since the species was not recorded in the early biological surveys of the lower Colorado River valley in the U.S. However, the virtual elimination of natural freshwater flows down the lower Colorado River to the Delta due to upstream diversions from the river for agriculture and municipal uses drastically reduced the habitat in Mexico. Rails responded by dispersing to the freshwater marshes along the lower Colorado River in the U.S. and fringes of the Salton Sea.

The Yuma Ridgway's rail has a relatively large potential range in which it uses habitat including marsh and cattail features; ranging from small patches that have formed from agricultural drains, to larger patches along river channels and backwaters. Despite this flexibility, the number of individuals present in a particular area is driven by the habitat quality; fewer birds are present when desired conditions begin to deteriorate. The primary components of good quality rail habitat include freshwater marshes dominated by cattail (*Typha* sp.) and bulrush (*Scirpus* spp.)

averaging greater than 2 m (6 ft) high, and shallow (1-15 cm [6 in]) water with limited fluctuations during the breeding season (Anderson and Ohmart 1985, p. 121; Eddleman 1989, pp.79-87). Suitable marsh conditions also include open water areas either as channels or pools with minimal daily water fluctuation (Tomlinson and Todd 1973, p. 179; Gould 1975, p. 8) that contain open dry ground or mud flats (slightly higher than the water level) between water, vegetation, or marsh edge for foraging and movement (Smith 1975, p. 20; Eddleman 1989, pp. 87-88; Conway et al. 1993, p. 288).

Limiting factors are primarily habitat availability, especially as it relates to cattail marshes having a natural succession process that makes them less suitable, which then requires active management. Without this management and protection of water sources to support the habitat, the areas the rail occupies could be lost. Other factors for this species include continuing land use changes in floodplains, human activities, environmental contaminants (particularly increases in selenium levels), climate change, and reductions in connectivity between habitat areas.

Population Status

Annual survey data compiled by partners and the Service for the period from 2006 to present had consistent survey methodology and may indicate declines in rail detection. To note, these numbers are the sum of the highest counts for each site and do not represent a population estimate though it is likely the trends seen in these surveys may be indicative of population trends.

Table 1. Marsh bird data for Yuma Ridgway's rail using sum of highest counts (Unpublished Service data, 2016).

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
US Total	753	823	645	671	570	565	435	431	401	636	555

The third major population center, the Cienega de Santa Clara in Sonora, Mexico, supports the largest marsh in the rail's U.S.-Mexico range and >70 percent of the global population (Hinojosa-Huerta et al. 2013). Suitable habitat fluctuates in size and quality depending on annual agricultural effluent, earthquake-related changes to hydrology, episodic fire, and maintenance dredging (Hinojosa-Huerta et al. 2013), but the rail population has remained high in this area during the most recent survey period from 2007 to 2011 and supports an estimated population (based on untested response rate assumptions) of about 8,600 rails (Hinojosa-Huerta et al. 2013). However this habitat remains under significant threat because 1) U.S. agricultural drain water supplies could decline or be eliminated with increasing agricultural water use in the U.S., 2) the Mexican population is not protected by section 7 consultation requirements under the ESA, 3) changing hydrology and lack of natural marsh-rejuvenating flood flows, and 4) replacement of brackish irrigation effluent from the U.S. with hypersaline brine from a proposed water-recycling/desalinization project in Arizona (Glenn et al. 1992, 1996; Hinojosa-Huerta et al. 2008).

Summary

Despite the Yuma Ridgway's rail high fecundity, ability to disperse, generalized diet, and flexibility to occupy a wide range of vegetation and marsh areas, the population appears to be experiencing a multi-year decline. There is no direct correlation between this decline and any one factor, but the decrease in water availability for conservation and agriculture, as well as the decrease in habitat suitability and lack of connectivity are likely having a large influence on the population.

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions which are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

Status of the species and potential habitat within the action area

The range and habitat of the Yuma Ridgway's rail includes suitable cattail/bulrush marshes along the Salt and Gila Rivers in Central Arizona, Saguaro Lake, agricultural drainages, and along the Colorado River. Given this extensive use of different types of waterways, potential habitat within the action area could include a wide variety of sites. Of the study sites, positive rail detections occurred along the Gila River above Gillespie Dam for multiple years, including last year (2016). Suitable habitat also occurs along the Gila River and Salt River confluences which include the Tres Rios and Rio Salado wetland areas. These areas are of interest because rails will likely be establishing nesting territories from March to May and juveniles from the previous year could expand into new areas that are potential study sites if suitable habitat is available.

Factors affecting species' environment within the action area

The action area for the proposed project is throughout the state of Arizona; with the majority or planned activity in areas listed in the Locations of Trapping section of this BO. The range of the Yuma Ridgway's rail is extensive; including several states and the Colorado River Delta in Mexico. Due to this the number of consultations done, both formal and informal, are significant. Biological opinions on actions potentially affecting Yuma Ridgway's rails in Arizona, where most of the consultations have occurred, may be found at: www.fws.gov/southwest/es/arizona in the Section 7 Biological Opinion page of the Document Library. In California, informal and formal consultations have been few in number, and primarily involved water delivery and supply projects in the Imperial and Coachella Valleys with the Bureau of Reclamation (Reclamation). All projects subject to formal consultation have not reduced the habitat base of the species, and have resulted in non-jeopardy conclusions, in part because those projects with the largest potential direct or indirect impacts have committed to avoid and offset adverse effects and conserve habitat for the species. Some of these larger projects and consultations include the Lower Colorado River Multi-Species Conservation Plan

(LCR MSCP), the Roosevelt Lake and Bartlett Lake Habitat Conservation Plan (HCP), and the revitalization of the Tres Rios and Rio Salado Areas along the Gila and Salt Rivers through Safe Harbor Agreements (SHAs). Habitat revitalization's have also occurred and are planned to occur on the wildlife refuges along the Colorado River. These projects have included conservation measures such as establishment of habitat areas, maintenance of that habitat, conducting disturbance activities outside the breeding and nesting season, and research and monitoring. Annual monitoring for birds also occurs across the species range, in addition to these projects' monitoring measures, from mid-March to early May.

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with that action that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

Effects to Yuma Ridgway's Rail

Yuma Ridgway's rails may be disturbed by researcher presence in occupied habitat; however, this disturbance is expected to be minimal. Individual Yuma Ridgway's rails may encounter and become entangled in traps meant to capture cormorants during this state-wide action. The likelihood of this incidental trapping is increased because the placement of the traps will be low along the banks of waterbodies where rails are likely to be using areas to forage and carryout other behaviors. The traps described in the EAC are not designed to capture marsh birds, however, incidental trapping of this marsh species is reasonably certain to occur at low rates.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this BO. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. There are ongoing activities and projects that affect the Yuma Ridgway's rail, which are outlined in the Factors Affecting the Species Environment in Action Area section of this BO. New actions affecting this species are not known at this time and no cumulative effects are currently identified.

CONCLUSION

After reviewing the current status of the Yuma Ridgway's rail, the environmental baseline for the action area, the effects of the action, and the cumulative effects, it is our opinion that the proposed cormorant trapping project is not likely to jeopardize the continued existence of rail. Although a number of individual rails may be adversely affected by incidental trapping, this is not likely to occur to a large number of individuals.

INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined (50 CFR 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined (50 CFR 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are non-discretionary, and must be undertaken by the Service and Department so they become binding conditions of any grant or permit issued, as appropriate, for the exemption in section 7(a)(2) to apply. The Service and Department has a continuing duty to regulate the activity covered by this incidental take statement. If the Service and Department (1) fails to assume and implement the terms and conditions or (2) fails to require any applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(a)(2) may lapse. In order to monitor the impact of incidental take, the Department and the Service WSFR office must report the progress of the action and its impact on the species to the Service (Arizona Ecological Services Office-AZESO) as specified in the incidental take statement. [50 CFR §402.14(i)(3)].

AMOUNT OR EXTENT OF TAKE

We anticipate the proposed action is reasonably certain to result in incidental take of Yuma Ridgway's rails that may become entangled in traps. We anticipate the total number of rails taken will be two. Take may be in the form of harassment from entanglement of individuals caught in traps. We will consider incidental take to have been exceeded if more than two individual Yuma Ridgway's rails are taken by harassment (entanglement in trap) or if any individuals are harmed or killed during the proposed action.

EFFECT OF THE TAKE

In this BO, the Service determines that this level of anticipated take is not likely to result in jeopardy to the species.

REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS

We determine the proposed action incorporates sufficient measures that reasonably and prudently minimize the effects of incidental take of Yuma Ridgway's rail. All reasonable measures to minimize take have been incorporated into the project description as conservation measures. Thus, no reasonable and prudent measures are included in this incidental take statement.

Disposition of Dead or Injured Listed Species

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS's Law Enforcement Office, 2450 W. Broadway Rd, Suite 113, Mesa, Arizona, 85202, telephone: 480/967-7900) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office (AZESO). Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve the biological material in the best possible state.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

We recommend having a permitted biologist use the North American Marsh Bird Protocol to perform a short survey for Yuma Ridgway's rail in areas where detections have not been recorded, but that have suitable habitat, during the breeding season. If there is a resulting detection, we would recommend the conservation measures listed in the EAC be followed, and the detection be reported to our office to aid in our efforts to include the detection in the range-wide Yuma Ridgway's rail database.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in the Project Description of this Opinion. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of Service's action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

We appreciate the Service's and Department's efforts to identify and minimize effects to listed species from this project. For further information please contact me or Jessica Gwinn. Please refer to the consultation number 02EAAZ00-2017-F-0502, in future correspondence concerning this project.

/s/ Steven L. Spangle

cc (electronic):

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Appendix A.

List of State-wide Effect Calls by Species

STATE RECOMMENDATIONNo effect (list species/habitat)

Acuna Cactus	<i>Echinomastus erectocentrus</i> var. <i>acunensis</i>
Apache Trout	<i>Oncorhynchus apache</i>
Arizona Bugbane	<i>Actaea arizonica</i>
Arizona Cliff Rose	<i>Purshia subintegra</i>
Arizona Hedgehog Cactus	<i>Echinocereus triglochidiatus</i> var. <i>arizonicus</i>
Arizona Willow	<i>Salix arizonica</i>
Beautiful Shiner	<i>Cyprinella formosa</i>
Black-footed Ferret	<i>Mustela nigripes</i>
Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>
Bluehead Sucker	<i>Catostomus discobolus discobolus</i>
Bonytail	<i>Gila elegans</i>
Brady's Pincushion Cactus	<i>Pediocactus bradyi</i>
California Condor	<i>Gymnogyps californianus</i>
Canelo Hills Ladies'-tresses	<i>Spiranthes delitescens</i>
California Least Tern	<i>Sternula antillarum browni</i>
Chiricahua Leopard Frog	<i>Rana chiricahuensis</i>
Cochise Pincushion Cactus	<i>Coryphantha robbinsorum</i>
Colorado Pikeminnow	<i>Ptychocheilus lucius</i>
Desert Pupfish	<i>Cyprinodon macularius</i>
Fickeisen Plains Cactus	<i>Pediocactus peeblesianus</i> var. <i>fickeiseniae</i>
Flannelmouth Sucker	<i>Catostomus latipinnis</i>
Flat-tailed Horned Lizard	<i>Phrynosoma mcallii</i>
Gierisch Mallow	<i>Sphaeralcea gierischii</i>
Gila Chub	<i>Gila intermedia</i>
Gila Topminnow	<i>Poeciliopsis occidentalis occidentalis</i>
Gila Trout	<i>Oncorhynchus gilae</i>
Gooding Onion	<i>Allium gooddingii</i>
Headwater Chub	<i>Gila nigra</i>
Holmgren (Paradox) Milk-vetch	<i>Astragalus holmgreniorum</i>
Huachuca Springsnail	<i>Pyrgulopsis thompsoni</i>
Huachuca Water Umbel	<i>Lilaeopsis schaffneriana</i> var. <i>recurva</i>
Humpback Chub	<i>Gila cypha</i>
Jaguar	<i>Panthera onca</i>
Jones Cycladenia	<i>Cycladenia humilis</i> var. <i>jonesii</i>
Kaibab Pincushion Cactus	<i>Pediocactus paradinei</i>
Kanab Ambersnail	<i>Oxyloma haydeni kanabensis</i>
Kearney's Blue-star	<i>Amsonia kearneyana</i>
Lesser Long-nosed Bat	<i>Leptonycteris curasoae yerbabuenae</i>
Little Colorado Spinedace	<i>Lepidomeda vittata</i>

Little Colorado Sucker	<i>Catostomus sp. 3</i>
Loach Minnow	<i>Tiaroga cobitis</i>
Masked Bobwhite	<i>Colinus virginianus ridgwayi</i>
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>
Mexican Wolf	<i>Canis lupus baileyi</i>
Mohave Desert Tortoise	<i>Gopherus agassizii</i>
Mt. Graham Red Squirrel	<i>Tamiasciurus hudsonicus grahamensis</i>
Narrow-headed Gartersnake	<i>Thamnophis rufipunctatus</i>
Navajo Sedge	<i>Carex specuicola</i>
New Mexico Meadow Jumping Mouse	<i>Zapus hudsonius luteus</i>
Nichol Turk's Head Cactus	<i>Echinocactus horizonthalonius var. nicholii</i>
Northern Aplomado Falcon	<i>Falco femoralis septentrionalis</i>
Northern Mexican Gartersnake	<i>Thamnophis eques megalops</i>
Ocelot	<i>Leopardus pardalis</i>
Page Springsnail	<i>Pyrgulopsis morrisoni</i>
Peebles Navajo Cactus	<i>Pediocactus peeblesianus var. peeblesianus</i>
Pima Pineapple Cactus	<i>Coryphantha scheeri var. robustispina</i>
Quitobaquito Pupfish	<i>Cyprinodon eremus</i>
Razorback Sucker	<i>Xyrauchen texanus</i>
Roundtail Chub	<i>Gila robusta</i>
San Bernardino Springsnail	<i>Pyrgulopsis bernardina</i>
San Francisco Peaks Ragwort	<i>Packera franciscana</i>
San Xavier Talussnail	<i>Sonorella eremita</i>
Sentry Milk-vetch	<i>Astragalus cremnophylax var. cremnophylax</i>
Siler Pincushion Cactus	<i>Pediocactus sileri</i>
Sonora Chub	<i>Gila ditaenia</i>
Sonoran Desert Tortoise	<i>Gopherus morafkai</i>
Sonoran Pronghorn	<i>Antilocapra americana sonoriensis</i>
Sonoyta Mud Turtle	<i>Kinosternon sonoriense longifemorale</i>
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>
Spikedace	<i>Meda fulgida</i>
Three Forks Springsnail	<i>Pyrgulopsis trivialis</i>
Virgin River Chub	<i>Gila seminuda</i>
Virgin Spinedace	<i>Lepidomeda mollispinis mollispinis</i>
Welsh's Milkweed	<i>Asclepias welshii</i>
Wet Canyon Talussnail	<i>Sonorella macrophallus</i>
Woundfin	<i>Plagopterus argentissimus</i>
Yaqui Catfish	<i>Ictalurus pricei</i>
Yaqui Chub	<i>Gila purpurea</i>
Yaqui Topminnow	<i>Poeciliopsis occidentalis sonoriensis</i>
Yellow-billed Cuckoo	<i>Coccyzus americanus</i> (Western DPS)
Zuni Bluehead Sucker	<i>Catostomus discobolus yarrow</i>
Zuni (Rhizome) Fleabane	<i>Erigeron rhizomatous</i>