

Light-footed Ridgway's rail (*Rallus obsoletus levipes*; formerly light-footed clapper rail, *Rallus longirostris levipes*)

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Original Approved: July 1979

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Revision Approved: June 1985

DRAFT AMENDMENT 1

We have identified best available information that indicates the need to amend recovery criteria for light-footed Ridgway's rail (*Rallus obsoletus levipes*) since the recovery plan was completed. In this proposed modification, we synthesize the adequacy of the existing recovery criteria, show amended recovery criteria and the rationale supporting the proposed recovery plan modification, and discuss current threats to the subspecies such as avian predation and altered hydrology. The proposed modification is shown as an addendum that supplements the recovery plan, superseding only Part II, Recovery (p. 22) of the recovery plan.

**For
U.S. Fish and Wildlife Service
Region 8
Carlsbad, California**

December, 2018

Approved: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Regional Director, Pacific Southwest Region, Region 8,
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Date: XXXXXXXXXXXX

METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT

Recovery criteria were updated for this addendum through internal coordination with staff and through external coordination with our partners. Work was done to update criteria for delisting and downlisting and to provide quantitative criteria. We coordinated with the partners to discuss the species' needs and information regarding recovery goals. This document will be made available for public comment to ensure the best possible scientific and practical data support the criteria described herein. This document will also undergo peer review. These coordinated efforts help to develop new quantitative criteria for the recovery plan that will better serve us as we work to recover the light-footed Ridgway's rail.

ADEQUACY OF RECOVERY CRITERIA

Section 4(f)(1)(B)(ii) of the Endangered Species Act (Act) requires that each recovery plan shall incorporate, to the maximum extent practicable, "objective, measurable criteria which, when met, would result in a determination...that the species be removed from the list." Legal challenges to recovery plans (see *Fund for Animals v. Babbitt*, 903 F. Supp. 96 (D.D.C. 1995)) and a Government Accountability Audit (GAO 2006) also have affirmed the need to frame recovery criteria in terms of threats assessed under the five factors.

Recovery criteria should also address the biodiversity principles of representation, resiliency, and redundancy (Shaffer and Stein 2000, p. 307) as these concepts relate to abundance, distribution, and diversity. Representation involves conserving the breadth of the genetic makeup of the subspecies to conserve its adaptive capabilities. Resiliency involves ensuring that each population is sufficiently large to withstand stochastic events. Redundancy involves ensuring a sufficient number of populations to provide a margin of safety for the subspecies to withstand catastrophic events.

Recovery Criteria

See previous version of criteria in recovery plan (USFWS 1985, p. 22; https://ecos.fws.gov/docs/recovery_plan/850624.pdf).

Synthesis

The light-footed Ridgway's rail (*Rallus obsoletus levipes*; formerly the light-footed clapper rail, *R. longirostris levipes*) was first listed as federally endangered in 1970 (USFWS 1970, p. 16047) and state endangered in California in 1971, prior to the Endangered Species Act. No background information was provided in the original listing rule. Therefore, the following information on the biology and life history, distribution, abundance and population trends, genetics, and habitat conditions summarize information available at the time of listing, recovery plan, and 5-year review, as well as incorporating some other information from reports, publications, and consultation with experts.

Since the species was listed, phylogenetic analysis has revealed the California clapper rails, which include light-footed clapper rails as a subspecies, to be taxonomically separate from other rails (Maley and Brumfield 2013, p. 326; Chesser *et al.* 2014, p. 5). As such, current scientific

literature refers to the species as light-footed Ridgway's rails (*Rallus obsoletus levipes*). Though the listed name has not yet been updated to reflect this change, we use "light-footed Ridgway's rail," or simply "rail" throughout this document for consistency with the currently accepted taxonomy.

The light-footed Ridgway's rail (*Rallus obsoletus levipes*; rail) is a reclusive marsh bird that generally resides in coastal marshes (and historically also known from inland freshwater sources; Willett 1906, p. 151; Cooke 1914, p. 18; Grinnell 1915, p. 46; Bent 1926, p. 273; AOU 1957, p. 153) of southern California and northern Baja California, Mexico (Thelander and Crabtree 1994, p. 161; USFWS 2009, pp. 3–4). Coastal marshes are dynamic habitats that change with the tides, and rails adjust their behavior within these dynamics. During low tide, rails take advantage of the foraging opportunity provided in the lower marsh and mudflat edges (Meanley 1985, p. 8). During high tide, rails seek refuge in the upper marsh vegetation which provides further foraging opportunity and protection from predation (Zemba *et al.* 1989, p. 42). Rail habitat is generally described as saltwater marsh systems composed of dense *Spartina foliosa* (cordgrass) in the low littoral zone. Suitable *S. foliosa* for rails is defined as a density of at least 100 stems /m² with at least 90 percent of stems \geq 60 cm in height and 30 percent \geq 90 cm in height (Zedler 1993, p. 123). Upper marsh habitat includes sufficient cover of prevalent *Salicornia pacifica* (pickleweed), *Limonium claiifornicum* (California sealavender), *Juncus actus leopoldii* (southwestern spiny rush), and *Triglochin maritima* (arrowgrass). Though *S. pacifica* had historically been widely used for nesting by the rail (Bent 1926, pp. 273–274) and still dominates upland habitats, *J. a. leopoldii* is now also recognized to be critically required for high-marsh nest placement (Zemba *et al.* 2017, p. 11).

Estuarine vegetative habitats like those marshes used by the rail, have precipitously declined (approx. 75–91 percent) in California since 1850 (Powell 2006, p. 198; Stein *et al.* 2014, p. 25). Concordantly, range contraction has occurred and the rails have not been detected in Santa Barbara County since 2004 (USFWS 2009, p 5) and only rarely documented in Los Angeles County (Zemba *et al.* 1985, p. 169; Figure 1). Rails appear to be adaptable, however. Use of inland freshwater sources (i.e., lagoons, creeks, and lakes up to 32 km [20 miles] from the coast) have been recently increasingly reported, including in LA county (Baxter and Garrett 1983, p. 11; Zemba *et al.* 1985, p. 169; Zemba *et al.* 2007, pp. 910; Konecny 2008, p. 3; Nordenberg 2009, p. 1; Zemba, Hoffman, and Konecny 2016, pp. 24–29; Zemba *et al.* 2017, p. 30; Figure 1). Willett (1906, p. 151) described freshwater nesting to include tule stalks and reeds and more recently, rail nests have been found in *Typha* spp. (cattails), *Scirpus* spp. (bulrush) and *J. acutus* (spiny rush; Konecny 2008, p. 1; Zemba *et al.* 2007, p. 5; Zemba, Hoffman, Gailband *et al.* 2016, pp. 24, 32). The birds generally forage in dense plant cover, but they are known to be generalist scavengers. In upland habitats surrounding fresh (or salt) -water, rails are known to forage on snails, spiders, beetles, crane flies, mice, seeds, pickleweed, elderberry fruits, etc. (Zemba and Massey 1986, p. 20). Rails are also known to forage in the freshwater inlets to coastal marshes, comprising approximately 22 percent of their diet (dry weight; Zemba and Massey 1986, p. 19). These habitats hold promise for the future of the rail, as sea level rise threatens coastal marsh systems. Little work has been done, however, to identify freshwater habitat characteristics required by the rail to sustain a population.

It is presumed that rails maintain small home ranges once a territory is established (Zemba *et al.* 1989, p. 41). One study recorded distances travelled within-marshes to be generally less than 400

m (1.3 km)(Zembal *et al.* 1989, p. 40). However, records of several young birds have shown that they may disperse long distances across the historical range, including a maximum recorded distance of 257 km (160 miles; Zembal *et al.* 1985, p. 169; Zembal *et al.* 2010, p. 18; Zembal *et al.* 2017, p. 3637). These long-distance movements may be vital in maintaining genetic diversity and therefor adaptive capacity in the subspecies (Grant *et al.* 2007, p. 434).



U.S. Fish & Wildlife Service

Light-footed Ridgway's Rail



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Date: USFWS
 Date: Sep 27, 2018
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Extant

- ▲ ≥ 30 Pairs/15 yrs & ≥ 20 Pairs/5 yrs (4 marshes)
- ≥ 20 Pairs/5 yrs (3 marshes)
- < 20 Pairs/5 yrs (8 marshes)

Presumed Extant

- Found recently but not reliably (5 marshes)

Presumed Extirpated

- Not found consistently over past 15 years (16 areas)

Unsurveyed

- Anecdotal ID (6 areas)

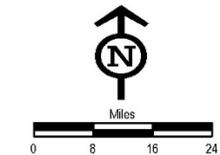


Figure 1. Locations and number of breeding pairs reported in light-footed Ridgway's rail surveys between 1980–2018 (extant), historically known or potentially restorable locations (presumed), and anecdotal identification report locations (unsurveyed). Though displayed numbers include recent augmentations, extant groups comprising an average of 20 or more pairs over 5 years would otherwise contribute to meeting downlisting criteria E1, and those comprising an average of 30 or more pairs over 15 years would otherwise contribute to meeting delisting criteria E5. See Appendix 1 for a site list and annual survey numbers.

Upon listing of the light-footed Ridgway’s rail in 1970 there was no statewide abundance estimate available. In 1980, annual surveys of up to 39 sites (Figure 1) began, starting at an estimate of 203 pairs across 11 marsh sites and since fluctuating between 142 pairs in 1985 to 656 pairs in 2016 (Figure 2; Zembal *et al.* 2017, p. 13; Appendix 1). In 2018, five of the marsh areas surveyed contained more than 30 pairs each, which accounted for 74.7 percent of the known rail population (Zembal 2018, p. 16; Appendix 1). Though the carrying capacity for rails in marsh habitats is unknown, the highest density recorded during annual surveys was in 2015 where 234 pairs of rails were detected in just 105 ha (260 acres; Zembal *et al.* 2015, p. 12). However, surveys of this type have been known to underestimate numbers of rails by as much as 60 percent (Bui *et al.* 2015, p. 232).

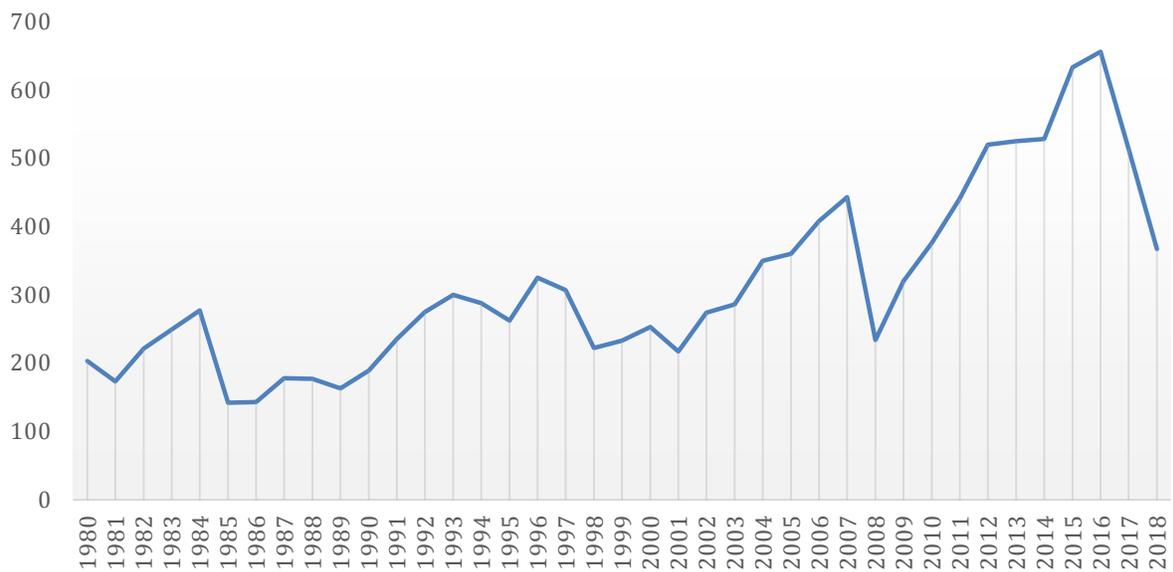


Figure 2. Estimated number of breeding pairs detected during light-footed Ridgway’s rail breeding surveys each year across all surveyed sites in US. Data amassed from 1980–2018 annual survey reports by Richard Zembal *et al.* See Appendix 1 for a site list and annual survey numbers.

The Recovery Plan (USFWS 1985) outlined downlisting conditions for the rail as when the breeding population is increased to at least 800 pairs through the preservation, restoration and/or creation of approximately 4,000 ha (10,000 acres) of adequately protected, suitably managed wetland habitat consisting of at least 50 percent marsh vegetation appropriate in at least 20 marsh complexes (USFWS 1985, p. 22). In the 5-year review, the predominant factors identified as limiting rail abundance were small population sizes, isolation, and habitat quality (USFWS 2009, p. 18). Though these threats remain, predation and habitat degradation are now the most imminent threats to the rail (Casazza *et al.* 2016, p. 230; Zembal *et al.* 2017, pp. 17–18). Conservation efforts for the rail have been in effect since 1979 (annual population surveys, habitat restoration, predator control, development of captive breeding program, construction of nesting rafts, etc. [Zembal *et al.* 2017, p. 5]), but the most recent recovery document, the 5-year review, recommend no status change (USFWS 2009, p. 19). Below is a synthesis of past and current threats to rail that are the basis for its listing and protection under the Act.

THREATS:

Threats to light-footed Ridgway's rail are summarized below as identified in the Recovery Plan (USFWS 1985) and the 5-year review (USFWS 2009).

Factor A: Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range

In the recovery plan (USFWS 1985), the major threat to the light-footed Ridgway's rail was identified as anthropogenic destruction of suitable habitat. The 2009 5-year review (USFWS 2009, p. 11) stated that the destruction of suitable habitat was no longer the primary threat as many of the occupied areas have been protected. Acts such as the California Coastal Act of 1976 and the Clean Water Act of 1972 have effectively protected supportive habitat for the rail. However, the 5-year review identified that habitat degradation (e.g., siltation, altered freshwater and tidal hydrology, contaminants, etc.) and loss of high marsh habitat (which may be extremely important in reducing mortality during high tides) is now the main concern.

Rail habitat is threatened by a combination of development, erosion, contaminant leaching, alteration of hydrology and sediment transport, and sea level rise (Stedman and Dahl 2008, p. 7; Gedan *et al.* 2009, p. 119). These pressures have led to fragmentation and reduction of rail habitat that has exacerbated the subspecies' vulnerability both during high tide and to predation (USFWS 2013, p. 113).

Important vegetative species for the rail, such as *S. foliosa* (cordgrass), needs freshwater influence to grow tall and thick enough to support rail nests at high tide while still providing cover (Phleger 1971; Parrondo *et al.* 1978). Concordantly, marshes with lower salinity have taller, lusher *S. foliosa* stands (Massey *et al.* 1984). However, continued channelization and diversion of freshwater systems stunts its growth and the siltation of lagoons and estuaries leads to the conversion of low marsh cordgrass habitat into high marsh. Inlet closure limits tidal flushing and is a regular issue at some of the occupied marshlands, causing recent declines in rail populations (Zemba *et al.* 2017, p. 18). Additionally, there is some evidence that scale insects (*Haliopsis spartina*) may negatively affect *S. foliosa* growth (Boyer and Zedler 1996, p. 1; Boyer and Zedler 1998, p. 693).

Impacts to rails from contaminants are a potential range-wide risk, similar to a stochastic event. Rails may be exposed to contaminants from urban runoff, off-shore spills, and oil or chemical spills from vehicles on highways that cross marshes. These contaminants have the potential to attach to sediment and impact rail food sources leading to biomagnification that affects the bird's reproductive success (Goodbred *et al.* 1996, pp. 2, 22–23).

The 5-year review identifies climate change as a potential threat to the rail due to habitat loss through sea level rise and altered tidal flow patterns (USFWS 2009, p. 17). Model projections across the historical range of the rail suggest that within 30 years, the sea surface level will have risen 1–3 feet, and up to 5 feet within 70 years (OPC-SAT 2018, pp. 65–79). In addition, at least one occupied site is experiencing ground subsidence causing the site to experience three times higher sea level rise compared to similar sites (Takekawa *et al.* 2013, p. 6). In several rail sites, complete tidal inundation occurs, causing rails to enter surrounding, often urban, areas with little cover and adjacent to busy roads (Zemba *et al.* 2017, p. 19). These sites may be a prelude to the

future of sea level rise; with most of the currently occupied marshlands circumscribed by development, there are few opportunities for marsh habitat to migrate inland. Artificial nesting rafts have been deployed at several sites to increase nesting habitat at high tide, but this is a temporary fix and not always used by the rails (Zembal *et al.* 2017, p. 8). Inland freshwater systems may become increasingly important for the rails.

Factor B: Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

At the time of listing and subsequently in the recovery plan, collection of the rail had been noted. However, in the 5-year review and through to current, no known threats exist under this factor.

Factor C: Disease or Predation

From the time since listing through the last 5-year review in 2009, no diseases are known to be threats to the rail. Predation, on the other hand, has been a threat, vacillating in intensity, locations, and predatory species over the years. Light-footed Ridgway's rail nests are depredated primarily by raccoons, and chicks to adults are vulnerable to predation by red foxes, feral cats, dogs, and raptors (Zembal *et al.* 2008, pp. 2 & 5; Soulé *et al.* 1988, p. 84). Implementation of predator control programs (e.g., for red fox and raccoons) and the deployment of artificial nesting rafts have resulted in an increase of rail numbers (USFWS 2009, Zembal *et al.* 2017, p. 32). However, since high tides force rails out of wetland vegetative cover, raptor predation may be the next largest threat for the rail (Zembal *et al.* 2008, pp. 14–17). Counted in the hundreds at a single site in 2017 (Zembal *et al.* 2017, p. 20), avian predators have miles of power lines and poles that serve as nesting and hunting perches. This represents an anthropogenic change in the habitat structure that historically would not have threatened species such as the rail (Knight and Kawashima 1993, p. 268; Lammers and Collopy 2007, p. 2752).

Factor D: Inadequacy of Existing Regulatory Mechanisms

No Factor D threats were listed in the original recovery plan, however, a discussion was added to this section in the 5-year review. There are several State and Federal laws and regulations that are pertinent to federally listed subspecies, each contributing to the conservation the light-footed Ridgway's rail. These laws, most of which have been enacted in the past 30 to 40 years, have greatly reduced or eliminated the threat of destruction and alteration of coastal wetland habitat. The Act is the primary law that provides protection for this subspecies. Other Federal and State regulatory mechanisms provide discretionary protections for the subspecies based on current management direction, but do not guarantee protection for the subspecies absent its status under the Act.

Factor E: Other factors affecting continued existence

No Factor E threats were identified in the 1970 listing rule (USFWS 1970, p. 16047). At the time of the 5-year review, the light-footed Ridgway's rail was threatened with small population size, isolation, automobile strikes, and possible habitat alteration from climate change.

The lack of genetic variability suggests the rails are at risk of bottlenecks, inbreeding depression, and inability to adapt to potentially changing habitat. Small populations have higher probabilities of extinction because low numbers make them susceptible to inbreeding, loss of genetic variation, high variability in age and sex ratios, and stochastic events (e.g., wildfires, floods, droughts, disease epidemics, etc.; Shaffer 1981, pp. 131–134; Soulé 1987, pp. 1–189; Meffe and

Carroll 1997, pp. 159–233). Small, isolated populations are vulnerable to extirpation when opportunities for reproduction diminish because of reduced opportunity of individuals to find each other (Allee 1931, pp. 1750; Courchamp *et al.* 2008, pp. vi–216). Isolated populations are more susceptible to long-term/permanent extirpation by accidental or natural catastrophes because the likelihood of recolonization following such events is negatively correlated with the extent of isolation (i.e., colonization is less likely as isolation increases; Wilcox and Murphy 1985, pp. 879887; Meffe and Carroll 1997, pp. 285–302). Urbanization and alteration of wetlands have fragmented the range of the rail. Remaining occupied marsh habitats function more independently, making birds more isolated where formerly they had access to other proximal marsh habitat. This reduced population redundancy and resilience increases the rail’s susceptibility to localized extirpation events.

In the 2009 5-year review, threats due to small and isolated populations were first discussed for the light-footed Ridgway’s rail. The rail exhibits extremely low levels of genetic variability as determined by randomly amplified polymorphic DNA (RAPD) analysis and microsatellite DNA comparison (Nusser *et al.* 1996, p. 469; Fleischer *et al.* 1995, p. 1240). According to Fleischer (1995, p. 1240), the lack of variation exhibited in the rail population matches or nearly matches those of highly inbred species. There is evidence that the southernmost US population has more heterozygosity due to breeding with birds from the Mexican population (Nusser *et al.* 1996, p. 470). A breeding program for the rail was initiated in 1998, which has bred, hatched, and released 464 individuals as of 2017; eggs have also been moved around wild nests to increase heterozygosity (USFWS 2017; Zembal *et al.* 2017).

AMENDED RECOVERY CRITERIA

Recovery criteria serve as objective, measurable guidelines to assist in determining when an endangered species has recovered to the point that it may be downlisted to threatened, or that the protections afforded by the Act are no longer necessary and the light-footed Ridgway’s rail may be delisted. Delisting is the removal of a species from the Federal Lists of Endangered and Threatened Wildlife and Plants. Downlisting is the reclassification of a species from an endangered species to a threatened species. The term “endangered species” means any species (species, subspecies, or DPS) which is in danger of extinction throughout all or a significant portion of its range. The term “threatened species” means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Revisions to the Lists, including delisting or downlisting a species, must reflect determinations made in accordance with sections 4(a)(1) and 4(b) of the Act. Section 4(a)(1) requires that the Secretary determine whether a species is an endangered species or threatened species (or not) because of threats to the species. Section 4(b) of the Act requires that the determination be made “solely on the basis of the best scientific and commercial data available.” Thus, while recovery plans provide important guidance to the Service, States, and other partners on methods of minimizing threats to listed species and measurable objectives against which to measure progress towards recovery, they are guidance and not regulatory documents.

Recovery criteria should help indicate when we would anticipate that an analysis of the species' status under section 4(a)(1) would result in a determination that the species is no longer an endangered species or threatened species. A decision to revise the status of or remove a species from the Federal Lists of Endangered and Threatened Wildlife and Plants, however, is ultimately based on an analysis of the best scientific and commercial data then available, regardless of whether that information differs from the recovery plan, which triggers rulemaking. When changing the status of a species, we first propose the action in the *Federal Register* to seek public comment and peer review, followed by a final decision announced in the *Federal Register*.

We provide both downlisting and delisting criteria for the light-footed Ridgway's rail, which will supersede those included in the Light-footed Clapper [Ridgway's] Rail Recovery Plan, as follows:

Downlisting Recovery Criteria

The light-footed Ridgway's rail will be considered for downlisting to threatened when all of the following criteria are met:

Factor A: Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range

- A1:** Coastal marsh areas where the light-footed Ridgway's rail is present are conserved and managed to maintain sufficient tidal flushing and freshwater influence to sustain rails' food and habitat resources.
- A2:** Occupied marsh areas maintain at least 50 percent appropriate marsh vegetation in the low littoral zone and include upper marsh habitats with sufficient cover to support rails year-round. These marsh areas have buffer zones to accommodate at least a century of projected sea level rise and have adjacent and appropriate high-water refugia and foraging habitat. At least 20 separate marsh areas of above-described suitable habitat or suitable freshwater habitats, are conserved, managed, occupied, and comprise a total of at least 4,000 ha (9,884 acres) to provide redundancy and the ability to withstand catastrophic events.
- A3:** Clean water is maintained within the occupied marshes such that siltation does not significantly change the vegetation community or that contaminants do not measurably affect the benthic community (forage) or health of light-footed Ridgway's rail.

Factor B: Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

There are no known current threats under this factor; therefore, no criteria are necessary.

Factor C: Disease or Predation

C1: Impacts from nonnative and/or subsidized predators (e.g., feral cats, raccoons, domestic dogs, avian predators, etc.) are sufficiently minimized or managed through ongoing predator management. Management is funded in perpetuity such that predation no longer poses a threat to the persistence of light-footed Ridgway's rail.

Factor D: Inadequacy of Existing Regulatory Mechanisms

No known threats exist under this factor; therefore, no criteria are necessary.

Factor E: Other Natural or Manmade Factors Affecting Its Continued Existence

E1: At least 800 breeding pairs can be detected, rangewide in the United States, to increase subspecies' resilience. At least 10 of the protected marshes comprise a minimum average of 20 breeding pairs (i.e., not including newly augmented populations) over at least 5 years.

E2: Light-footed Ridgway's rail are distributed across sites in each of the U.S. counties to provide redundancy and retain representation to be able to adapt to environmental changes and ensure there is sufficient genetic diversity to avoid potential inbreeding depression.

E3: An outreach program is implemented to educate the public about the plight of, and conservation efforts for, light-footed Ridgway's rail.

Delisting Recovery Criteria

The light-footed Ridgway's rail will be considered for delisting when the criteria for downlisting light-footed Ridgway's rail are met along with the following additions:

Factor A: Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range

A4: Occupied habitat is conserved and managed (including maintaining tidal influence of saltwater marshes, ensuring adequate forage in freshwater marshes, adequate and appropriate vegetation, and adjacent upland habitat refugia) to maintain and increase, where possible, the carrying capacity of marshes to ensure resiliency of the rail.

A5: Conserve and manage three freshwater systems to support three separate populations of light-footed Ridgway's rail (each with at least 30 actively breeding pairs) within the historical range.

Factor B: Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

There are no known threats under this factor; therefore, no criteria are necessary.

Factor C: Disease or Predation

No further threats to the subspecies due to disease or predation are currently known beyond what is stated above. Therefore, no further criteria are necessary.

Factor D: Inadequacy of Existing Regulatory Mechanisms

No known threats exist under this factor; therefore, no criteria are necessary.

Factor E: Other Natural or Manmade Factors Affecting Its Continued Existence

E4: At least 20 of the protected marshes (from A2 and A5) have a minimum average of 30 breeding pairs over 15 years, with a combined minimum of 100 pairs in each of the five counties across light-footed Ridgway's rail's historical range (Santa Barbara, Ventura, Orange, LA, and San Diego). These figures provide sufficient redundancy to prevent extinction due to catastrophic events and sufficient representation to help promote adaptation to shifting environmental pressures.

E5: The overall population is self-sustaining and growing, without augmentation from captive rearing, such that monitoring detects a statistically significant upward trend in adult population numbers over the course of at least 15 years.

Rationale for Amended Recovery Criteria

These amended criteria provide updated benchmarks that clearly link and address current threats to the light-footed Ridgway's rail. These criteria ensure that the underlying causes of declines of the populations are addressed and mitigated, providing a distinct path to recovery.

Factor A threats are addressed to ensure habitat loss and degradation from past events (e.g., development and agriculture use) and current threats (e.g., siltation, subsidence, contamination, inlet closure, lack of freshwater, lack of appropriate vegetative cover, and deficient upland refugia) are properly ameliorated. Maintaining adequate breeding and non-breeding season habitats are critical for redundancy and resiliency of the subspecies. The percentage and height of appropriate vegetation within the conserved habitat (50 percent at 60 cm or higher) is based on the knowledge that the birds require this habitat type for nesting and nest protection (from flooding and overhead predators) and utilize tidally-exposed mudflats. Since many of the occupied marsh areas are circumscribed by development (cannot be expanded) and are too small to support many rails at once, multiple locations are needed to cumulatively comprise enough total individuals for subspecies viability. Every known population is at risk to local extirpation due to a variety of factors that may occur concurrently. Therefore, there need to be enough areas dispersed across the range, close enough together, and with sufficient population sizes to allow populations to rebound and recolonization to ensure resiliency and redundancy.

Factor C threats are addressed to ensure predation is sufficiently controlled to minimally affect the persistence of light-footed Ridgway's rail populations. Predation by resource-subsidized predators such as raccoons and red-tailed hawks has had a measurable, negative impact on both

the reproductive success and adult rails. This kind of reduction in resiliency threatens the rail's continued existence, necessitating the criterion included here.

Factor E threats associated with a relatively sedentary subspecies and small population sizes (limited number of breeding pairs, low genetic diversity, inbreeding depression, susceptibility to local extirpation during stochastic or catastrophic events, etc.) are addressed through minimum numbers of breeding pairs, continued population management (breeding program or nest manipulations), and investigations into expansion to freshwater areas. Minimum population sizes need to be large enough to ensure resiliency.

The recommendation of 20 separate marsh areas with at least 30 breeding pairs and at least 100 individuals in each county was determined considering decades of observation of population trends, movement capabilities, and life-history strategy (i.e., rails reproduce in large numbers and can recover in number relatively quickly, but are thought to be short-lived). The small populations at the limited marsh habitats often blink out and take years of management to revegetate and recolonize. These numbers address the need to ensure (1) representation or genetic makeup for the conservation of adaptive capacity, (2) resiliency or that each population is sufficiently large to withstand stochastic events, and (3) redundancy to ensure that there is a sufficient number of populations such that extirpated occurrences can be recolonized by nearby dispersal events. Once monitoring has been able to detect a relatively stable upward trend, we should feel confident that these criteria were sufficient to recover the subspecies.

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Appendix 1.1. All light-footed Ridgway's rail sites as displayed from north to south in Figure 1. Data displayed by year represent breeding pairs detected during annual surveys from 1980 to 1989.

| County | Surveyed? | Marsh Name | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 |
|---------------|-----------|-------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Santa Barbara | Yes | Goleta Slough | 0 | 0 | - | 0 | - | - | - | - | 0 | 0 |
| Santa Barbara | Yes | Carpinteria Marsh | 16 | 14 | 20 | 18 | 26 | 7 | 4 | 5 | 2 | 0 |
| Ventura | Yes | Ventura River Mouth | - | - | 0 | 0 | - | - | - | - | - | 0 |
| Ventura | Yes | Santa Clara River Mouth | - | - | 0 | - | - | - | - | - | - | 0 |
| Ventura | No | Ormond Beach | - | - | - | - | - | - | - | - | - | - |
| Ventura | Yes | Mugu Lagoon | - | 0 | - | 1 | 3 | 7 | 6 | 7 | 7 | 5 |
| Los Angeles | No | Malibu Lagoon | - | - | - | - | - | - | - | - | - | - |
| Los Angeles | Yes | Whittier Narrows Marsh | - | - | - | nb | 0 | - | - | - | - | 0 |
| Los Angeles | Yes | Ballona Wetlands | - | - | - | - | - | - | - | - | - | - |
| Los Angeles | No | Dominguez Slough | - | - | - | - | - | - | - | - | - | - |
| Los Angeles | Yes | Cabrillo Wetlands | - | - | - | - | - | - | - | - | - | - |
| LA & Orange | No | Los Cerritos Wetlands | - | - | - | - | - | - | - | - | - | - |
| Orange | Yes | Seal Beach NWR and Anaheim Bay | 30 | 19 | 28 | 20 | 24 | 11 | 5 | 7 | 14 | 6 |
| Orange | Yes | Bolsa Chica | 0 | 0 | 0 | 0 | - | - | - | nb | 0 | Nb |
| Orange | Yes | Carlson Road Marsh | - | - | 5 | 4 | 2 | 0 | 0 | 1 | 0 | 0 |
| Orange | Yes | San Joaquin Reserve | - | - | 5 | 4 | 1 | 2 | 1 | 0 | 0 | 0 |
| Orange | Yes | Upper Newport Bay | 98 | 66 | 103 | 112 | 112 | 87 | 99 | 119 | 116 | 116 |
| Orange | Yes | Huntington Beach & Santa Ana River | - | 0 | - | - | - | - | 0 | 0 | 0 | 0 |
| Orange | No | Laguna Niguel | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | San Mateo Creek Mouth | - | - | 0 | 0 | - | - | 0 | - | 0 | 0 |
| San Diego | Yes | San Onofre Creek Mouth | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | Las Flores Marsh/ Las Pulgas Canyon | - | - | 0 | 0 | 0 | - | 0 | - | 0 | 0 |
| San Diego | Yes | French Canyon Mouth | - | - | - | 0 | 0 | - | - | - | - | 0 |
| San Diego | Yes | Cocklebur Canyon Mouth | - | - | 1 | 0 | 0 | - | - | 0 | 0 | 0 |
| San Diego | Yes | Guajome Lake Marsh | - | - | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 |
| San Diego | Yes | Santa Margarita Lagoon | 0 | 0 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | 0 |
| San Diego | Yes | San Luis Rey River | - | - | 0 | 0 | - | - | 0 | 0 | 0 | 0 |
| San Diego | Yes | Buena Vista Lagoon | 0 | 0 | 0 | nb | 0 | - | - | - | 0 | 0 |
| San Diego | Yes | Agua Hedionda Lagoon | 1 | 2 | 1 | 7 | 6 | 1 | 0 | 0 | 0 | 0 |
| San Diego | Yes | Batiquitos Lagoon | 0 | 0 | 0 | 0 | 0 | - | - | - | - | 0 |
| San Diego | No | Encinitas Creek | - | - | - | - | - | - | - | - | - | - |
| San Diego | No | Lusardi Creek/4S Ranch | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | San Elijo Lagoon | - | 5 | 4 | 4 | 10 | 1 | 0 | 2 | 5 | 7 |
| San Diego | Yes | San Dieguito River Watershed | - | - | - | - | - | - | - | nb | 0 | 0 |
| San Diego | Yes | Los Penasquitos Lagoon | - | 0 | - | 0 | 0 | - | 0 | - | 1 | 0 |
| San Diego | No | Kumeyaay Lake | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | Kendall-Frost Reserve | 18 | 16 | 6 | 20 | 24 | 17 | 12 | 6 | 4 | 4 |
| San Diego | Yes | San Diego River/Famosa Slough | - | 3 | 1 | 2 | 2 | 1 | 0 | 0 | 1 | 0 |
| San Diego | No | Upper Otay Lake | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | South San Diego Bay Marsh Complex | 14 | 17 | 20 | 14 | 25 | 7 | 13 | 7 | 11 | 10 |
| San Diego | Yes | Paradise Creek | 1 | 2 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| San Diego | Yes | Sweetwater | 4 | 5 | 7 | 6 | 14 | 3 | 9 | 5 | 5 | 5 |
| San Diego | Yes | E Street | 3 | 1 | 3 | 3 | 2 | 2 | 2 | 0 | 1 | 0 |
| San Diego | Yes | F Street | - | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| San Diego | Yes | J Street | - | 1 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 |
| San Diego | Yes | Otay River Mouth | 3 | 4 | 5 | 3 | 5 | 1 | 1 | 0 | 0 | 0 |
| San Diego | Yes | South Bay Marine Reserve | 3 | 3 | 1 | 1 | 2 | 1 | 1 | 2 | 5 | 5 |
| San Diego | Yes | Tijuana Marsh NWR | 26 | 31 | 25 | 41 | 38 | 0 | 2 | 23 | 14 | 15 |
| San Diego | Yes | Dairymart Ponds | - | - | - | - | - | - | 0 | nb | 1 | up |

nb = non-breeding rail detected during surveys; up = unpaired rail detected during surveys.

- = Indicates no breeding survey was conducted.

Appendix 1.2. All light-footed Ridgway's rail sites as displayed from north to south in Figure 1. Data displayed by year represent breeding pairs detected during annual surveys from 1990 to 1999.

| County | Surveyed | Marsh Name | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|---------------|----------|-------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Santa Barbara | Yes | Goleta Slough | 0 | 0 | 0 | 0 | - | - | 0 | 0 | - | - |
| Santa Barbara | Yes | Carpinteria Marsh | 0 | 0 | 0 | nb | 0 | 2 | 3 | 5 | 3 | 2 |
| Ventura | Yes | Ventura River Mouth | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | - |
| Ventura | Yes | Santa Clara River Mouth | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | - |
| Ventura | No | Ormond Beach | - | - | - | - | - | - | - | - | - | - |
| Ventura | Yes | Mugu Lagoon | 6 | 4 | 5 | 5 | 6 | 5 | 3 | 4 | 4 | 4 |
| Los Angeles | No | Malibu Lagoon | - | - | - | - | - | - | - | - | - | - |
| Los Angeles | Yes | Whittier Narrows Marsh | - | - | - | 0 | 0 | - | 0 | 0 | - | - |
| Los Angeles | Yes | Ballona Wetlands | - | - | - | - | - | - | - | - | - | - |
| Los Angeles | No | Dominguez Slough | - | - | - | - | - | - | - | - | - | - |
| Los Angeles | Yes | Cabrillo Wetlands | - | - | - | - | - | - | - | - | - | - |
| LA & Orange | No | Los Cerritos Wetlands | - | - | - | - | - | - | - | - | - | - |
| Orange | Yes | Seal Beach NWR and Anaheim Bay | 16 | 28 | 36 | 65 | 66 | 51 | 52 | 37 | 16 | 15 |
| Orange | Yes | Bolsa Chica | up | nb | up | up | nb | nb | nb | nb | nb | 0 |
| Orange | Yes | Carlson Road Marsh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | up |
| Orange | Yes | San Joaquin Reserve | 0 | 0 | up | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Orange | Yes | Upper Newport Bay | 131 | 128 | 136 | 142 | 129 | 114 | 158 | 149 | 105 | 104 |
| Orange | Yes | Huntington Beach & Santa Ana River | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - |
| Orange | No | Laguna Niguel | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | San Mateo Creek Mouth | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - |
| San Diego | Yes | San Onofre Creek Mouth | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | Las Flores Marsh/ Las Pulgas Canyon | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - |
| San Diego | Yes | French Canyon Mouth | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | Cocklebur Canyon Mouth | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| San Diego | Yes | Guajome Lake Marsh | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | - | - |
| San Diego | Yes | Santa Margarita Lagoon | 0 | 0 | 0 | up | 0 | 0 | 0 | up | 0 | 0 |
| San Diego | Yes | San Luis Rey River | up | 0 | 1 | 0 | - | 0 | 0 | 0 | 0 | 0 |
| San Diego | Yes | Buena Vista Lagoon | up | 2 | 5 | 2 | 3 | 1 | 6 | 7 | 4 | 5 |
| San Diego | Yes | Agua Hedionda Lagoon | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| San Diego | Yes | Batiquitos Lagoon | up | up | 0 | 1 | 1 | up | 2 | 2 | 1 | 3 |
| San Diego | No | Encinitas Creek | - | - | - | - | - | - | - | - | - | - |
| San Diego | No | Lusardi Creek/4S Ranch | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | San Elijo Lagoon | 5 | 5 | 4 | 6 | 1 | 3 | 3 | 8 | 3 | 5 |
| San Diego | Yes | San Dieguito River Watershed | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - |
| San Diego | Yes | Los Penasquitos Lagoon | 0 | up | up | up | 1 | 1 | 1 | 2 | 2 | 2 |
| San Diego | No | Kumeyaay Lake | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | Kendall-Frost Reserve | 5 | 9 | 11 | 5 | 5 | 4 | 1 | 2 | 2 | 4 |
| San Diego | Yes | San Diego River/Famosa Slough | 2 | 5 | 1 | 5 | 5 | 6 | 5 | 5 | 4 | 3 |
| San Diego | No | Upper Otay Lake | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | South San Diego Bay Marsh Complex | 7 | 7 | 9 | 5 | 7 | 11 | 14 | 8 | 9 | 6 |
| San Diego | Yes | Paradise Creek | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 |
| San Diego | Yes | Sweetwater | 2 | 4 | 4 | 3 | 7 | 7 | 8 | 3 | 4 | 3 |
| San Diego | Yes | E Street | 0 | 1 | 1 | 1 | up | 2 | 1 | 1 | 1 | 2 |
| San Diego | Yes | F Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| San Diego | Yes | J Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| San Diego | Yes | Otay River Mouth | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 3 | 2 | 1 |
| San Diego | Yes | South Bay Marine Reserve | 5 | 2 | 3 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| San Diego | Yes | Tijuana Marsh NWR | 17 | 47 | 67 | 63 | 64 | 61 | 77 | 77 | 68 | 80 |
| San Diego | Yes | Dairymart Ponds | up | up | up | 1 | 0 | - | - | - | - | - |

nb = non-breeding rail detected during surveys; up = unpaired rail detected during surveys.
 - = Indicates no breeding survey was conducted.

Appendix 1.3. All light-footed Ridgway's rail sites as displayed from north to south in Figure 1. Data displayed by year represent breeding pairs detected during annual surveys from 2000 to 2009.

| County | Surveyed? | Marsh Name | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---------------|-----------|-------------------------------------|------|------|------|------|------|------|------|------|------|------|
| Santa Barbara | Yes | Goleta Slough | - | 0 | 0 | 0 | - | - | - | - | 0 | 0 |
| Santa Barbara | Yes | Carpinteria Marsh | 1 | 1 | 2 | up | up | 0 | 0 | 0 | 0 | 0 |
| Ventura | Yes | Ventura River Mouth | - | - | 0 | 0 | - | - | - | - | 0 | - |
| Ventura | Yes | Santa Clara River Mouth | - | - | 0 | 0 | - | - | - | - | 0 | - |
| Ventura | No | Ormond Beach | - | - | - | - | - | - | - | - | - | - |
| Ventura | Yes | Mugu Lagoon | 7 | 7 | 10 | 14 | 19 | 14 | 17 | 15 | 5 | 9 |
| Los Angeles | No | Malibu Lagoon | - | - | - | - | - | - | - | - | - | - |
| Los Angeles | Yes | Whittier Narrows Marsh | - | - | 0 | - | - | - | - | 0 | - | 0 |
| Los Angeles | Yes | Ballona Wetlands | - | - | - | - | - | - | - | - | - | - |
| Los Angeles | No | Dominguez Slough | - | - | - | - | - | - | - | - | - | - |
| Los Angeles | Yes | Cabrillo Wetlands | - | - | - | - | - | - | - | - | - | - |
| LA & Orange | No | Los Cerritos Wetlands | - | - | - | - | - | - | - | - | - | - |
| | | Seal Beach NWR and Anaheim Bay | 10 | 11 | 24 | 23 | 16 | 15 | 21 | 24 | 17 | 19 |
| Orange | Yes | Bolsa Chica | 0 | 0 | nb | 0 | 0 | 0 | nb | nb | nb | nb |
| Orange | Yes | Carlson Road Marsh | up | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 |
| Orange | Yes | San Joaquin Reserve | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | nb | 0 |
| Orange | Yes | Upper Newport Bay | 150 | 124 | 129 | 144 | 165 | 174 | 158 | 165 | 88 | 148 |
| | | Huntington Beach & Santa Ana River | - | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | 5 |
| Orange | Yes | | - | - | - | - | - | - | - | - | - | - |
| Orange | No | Laguna Niguel | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | San Mateo Creek Mouth | 0 | 0 | 0 | 0 | 0 | - | - | - | 0 | - |
| San Diego | Yes | San Onofre Creek Mouth | - | - | - | - | - | - | - | - | - | - |
| | | Las Flores Marsh/ Las Pulgas Canyon | 0 | 0 | 0 | 0 | 0 | - | - | - | 0 | - |
| San Diego | Yes | French Canyon Mouth | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | Cocklebur Canyon Mouth | 0 | 0 | 0 | 0 | 0 | - | - | - | 0 | - |
| San Diego | Yes | Guajome Lake Marsh | 0 | - | - | 0 | - | - | 0 | 0 | 0 | - |
| San Diego | Yes | Santa Margarita Lagoon | 0 | 0 | 1 | 2 | 1 | 2 | 1 | 1 | 1 | - |
| San Diego | Yes | San Luis Rey River | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| San Diego | Yes | Buena Vista Lagoon | 5 | 3 | 6 | 5 | 5 | 6 | 8 | 8 | 9 | 9 |
| San Diego | Yes | Agua Hedionda Lagoon | 2 | 2 | 1 | 4 | 5 | 4 | 7 | 4 | 7 | 6 |
| San Diego | Yes | Batiquitos Lagoon | 2 | 3 | 3 | 5 | 11 | 16 | 19 | 22 | 22 | 26 |
| San Diego | No | Encinitas Creek | - | - | - | - | - | - | - | - | - | - |
| San Diego | No | Lusardi Creek/4S Ranch | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | San Elijo Lagoon | 1 | 1 | 2 | 7 | 7 | 6 | 15 | 12 | 5 | 8 |
| San Diego | Yes | San Dieguito River Watershed | 0 | 0 | 0 | 0 | 6 | 12 | 31 | 15 | 21 | 12 |
| San Diego | Yes | Los Penasquitos Lagoon | 1 | 1 | 2 | 1 | 2 | 2 | 7 | 12 | 2 | 4 |
| San Diego | No | Kumeyaay Lake | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | Kendall-Frost Reserve | 4 | 4 | 5 | 6 | 14 | 14 | 5 | 4 | 2 | 7 |
| San Diego | Yes | San Diego River/Famosa Slough | 3 | 4 | 6 | 6 | 8 | 5 | 4 | 6 | 4 | 3 |
| San Diego | No | Upper Otay Lake | - | - | - | - | - | - | - | - | - | - |
| | | South San Diego Bay Marsh Complex | 6 | 4 | 5 | 3 | 3 | 2 | 9 | 8 | 3 | 7 |
| San Diego | Yes | Paradise Creek | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| San Diego | Yes | Sweetwater | 2 | 3 | 3 | 1 | 3 | 1 | 4 | 4 | 3 | 5 |
| San Diego | Yes | E Street | 2 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 | 0 |
| San Diego | Yes | F Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| San Diego | Yes | J Street | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| San Diego | Yes | Otay River Mouth | 1 | 1 | 1 | 0 | 0 | 1 | 2 | 1 | 0 | 1 |
| San Diego | Yes | South Bay Marine Reserve | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 1 |
| San Diego | Yes | Tijuana Marsh NWR | 61 | 52 | 78 | 64 | 87 | 87 | 102 | 142 | 47 | 57 |
| San Diego | Yes | Dairymart Ponds | - | - | - | 2 | 1 | 1 | 0 | 1 | - | 0 |

nb = non-breeding rail detected during surveys; up = unpaired rail detected during surveys.

- = Indicates no breeding survey was conducted.

Appendix 1.4. All light-footed Ridgway’s rail sites as displayed from north to south in Figure 1. Data displayed by year represent breeding pairs detected during annual surveys from 2010-2018 and summary data.

| County | Surveyed? | Marsh Name | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 5-yr mean | 15-yr mean |
|---------------|-----------|-------------------------------------|------|------|------|------|------|------|------|------|------|-----------|------------|
| Santa Barbara | Yes | Goleta Slough | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | - | 0.0 | 0.0 |
| Santa Barbara | Yes | Carpinteria Marsh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 |
| Ventura | Yes | Ventura River Mouth | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 |
| Ventura | Yes | Santa Clara River Mouth | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 |
| Ventura | No | Ormond Beach | - | - | - | - | - | - | - | - | - | - | - |
| Ventura | Yes | Mugu Lagoon | 12 | 16 | 22 | 23 | 16 | 12 | 16 | 12 | 7 | 12.6 | 14.3 |
| Los Angeles | No | Malibu Lagoon | - | - | - | - | - | - | - | - | - | - | - |
| Los Angeles | Yes | Whittier Narrows Marsh | 0 | - | - | - | - | - | - | - | - | Unknown | Unknown |
| Los Angeles | Yes | Ballona Wetlands | - | - | - | - | - | - | up | - | up | Present | Present |
| Los Angeles | No | Dominguez Slough | - | - | - | - | - | - | - | - | - | - | - |
| Los Angeles | Yes | Cabrillo Wetlands | - | - | - | - | - | - | - | - | - | - | - |
| LA & Orange | No | Los Cerritos Wetlands | - | - | - | - | - | - | - | - | - | - | - |
| Orange | Yes | Seal Beach NWR and Anaheim Bay | 25 | 34 | 42 | 40 | 49 | 66 | 60 | 60 | 43 | 55.6 | 35.4 |
| Orange | Yes | Bolsa Chica | 1 | nb | nb | 1 | 2 | 7 | 9 | 7 | 6 | 6.2 | 3.7 |
| Orange | Yes | Carlson Road Marsh | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 | 0.0 |
| Orange | Yes | San Joaquin Reserve | up | 2 | 1 | 2 | 1 | 1 | up | 0 | 0 | 0.5 | 0.6 |
| Orange | Yes | Upper Newport Bay | 131 | 137 | 165 | 191 | 222 | 234 | 202 | 161 | 76 | 179.0 | 161.1 |
| Orange | Yes | Huntington Beach & Santa Ana River | 6 | 6 | 6 | 7 | 9 | 12 | 12 | 3 | 4 | 8.0 | 5.3 |
| Orange | No | Laguna Niguel | - | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | San Mateo Creek Mouth | - | - | - | - | - | - | - | - | - | Unknown | 0.0 |
| San Diego | Yes | San Onofre Creek Mouth | - | 0 | - | 1 | - | 0 | - | - | - | Unknown | 0.3 |
| San Diego | Yes | Las Flores Marsh/ Las Pulgas Canyon | - | 0 | - | 0 | - | 0 | - | - | - | Unknown | 0.0 |
| San Diego | Yes | French Canyon Mouth | - | - | - | - | - | - | - | - | - | Unknown | Unknown |
| San Diego | Yes | Cocklebur Canyon Mouth | - | 0 | - | 0 | - | 0 | - | - | - | 0.0 | 0.0 |
| San Diego | Yes | Guajome Lake Marsh | - | - | - | - | - | 0 | 0 | 0 | 0 | 0.0 | 0.0 |
| San Diego | Yes | Santa Margarita Lagoon | - | 2 | 0 | 0 | - | 3 | - | - | - | 3.0 | 1.2 |
| San Diego | Yes | San Luis Rey River | 2 | 3 | 3 | 4 | 5 | 3 | 0 | 0 | 0 | 1.6 | 1.3 |
| San Diego | Yes | Buena Vista Lagoon | 6 | 3 | 9 | 2 | 4 | 10 | 4 | 7 | 9 | 6.8 | 6.6 |
| San Diego | Yes | Agua Hedionda Lagoon | 2 | 7 | 9 | 8 | 6 | 8 | 4 | 9 | 4 | 6.2 | 6.0 |
| San Diego | Yes | Batiquitos Lagoon | 36 | 43 | 43 | 45 | 40 | 45 | 52 | 41 | 16 | 38.8 | 31.8 |
| San Diego | No | Encinitas Creek | - | - | - | - | - | - | - | - | - | - | - |
| San Diego | No | Lusardi Creek/4S Ranch | - | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | San Elijo Lagoon | 15 | 15 | 31 | 20 | 30 | 60 | 70 | 68 | 54 | 56.4 | 27.7 |
| San Diego | Yes | San Dieguito River Watershed | 28 | 12 | 45 | 37 | 23 | 15 | 15 | 26 | 31 | 22.0 | 21.9 |
| San Diego | Yes | Los Penasquitos Lagoon | 9 | 12 | 11 | 12 | 5 | 5 | 21 | 19 | 5 | 11.0 | 8.5 |
| San Diego | No | Kumeyaay Lake | - | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | Kendall-Frost Reserve | 10 | 19 | 16 | 8 | 23 | 33 | 20 | 18 | 9 | 20.6 | 13.5 |
| San Diego | Yes | San Diego River/Famosa Slough | 7 | 6 | 6 | 10 | 9 | 11 | 20 | 17 | 15 | 14.4 | 8.7 |
| San Diego | No | Upper Otay Lake | - | - | - | - | - | - | - | - | - | - | - |
| San Diego | Yes | South San Diego Bay Marsh Complex | 10 | 11 | 10 | 9 | 9 | 10 | 14 | 13 | 15 | 12.2 | 8.9 |
| San Diego | Yes | Paradise Creek | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0.0 | 0.0 |
| San Diego | Yes | Sweetwater | 6 | 7 | 4 | 4 | 4 | 5 | 7 | 7 | 8 | 6.2 | 4.8 |
| San Diego | Yes | E Street | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1.2 | 0.9 |
| San Diego | Yes | F Street | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0.0 | 0.0 |
| San Diego | Yes | J Street | 0 | 1 | 1 | 1 | 1 | 1 | 2 | 0 | 0 | 0.8 | 0.5 |
| San Diego | Yes | Otay River Mouth | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 3 | 2 | 1.4 | 1.1 |
| San Diego | Yes | South Bay Marine Reserve | 1 | 1 | 3 | 2 | 2 | 2 | 4 | 2 | 3 | 2.6 | 1.6 |
| San Diego | Yes | Tijuana Marsh NWR | 76 | 113 | 101 | 105 | 75 | 98 | 127 | 53 | 62 | 83.0 | 88.8 |
| San Diego | Yes | Dairymart Ponds | 0 | - | 0 | - | 0 | - | - | 0 | - | 0.0 | 0.3 |

nb = non-breeding rail detected during surveys; up = unpaired rail detected during surveys.
 - = Indicates no breeding survey was conducted.