with the principal community coverage requirements of the Commission's rules at coordinates 31–19–53.0 N and 85–51–43.0 W. In addition, we find that this channel change meets the technical requirements set forth in our regulations.

This is a synopsis of the Commission's *Notice of Proposed Rulemaking,* MB Docket No. 21–70; RM–11886; DA 21–267, adopted March 4, 2021, and released March 4, 2021. The full text of this document is available for download at *https://www.fcc.gov/edocs.* To request materials in accessible formats (braille, large print, computer diskettes, or audio recordings), please send an email to *FCC504@fcc.gov* or call the Consumer & Government Affairs Bureau at (202) 418–0530 (VOICE), (202) 418–0432 (TTY).

This document does not contain information collection requirements subject to the Paperwork Reduction Act of 1995, Public Law 104–13. In addition, therefore, it does not contain any proposed information collection burden ''for small business concerns with fewer than 25 employees,'' pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107–198, *see* 44 U.S.C. 3506(c)(4). Provisions of the Regulatory Flexibility Act of 1980, 5 U.S.C. 601–612, do not apply to this proceeding.

Members of the public should note that all *ex parte* contacts are prohibited from the time a notice of proposed rulemaking is issued to the time the matter is no longer subject to Commission consideration or court review, *see* 47 CFR 1.1208. There are, however, exceptions to this prohibition, which can be found in § 1.1204(a) of the Commission's rules, 47 CFR 1.1204(a). See §§ 1.415 and 1.420 of the Commission's rules for information regarding the proper filing procedures for comments, 47 CFR 1.415 and 1.420.

List of Subjects in 47 CFR Part 73

Television.

Federal Communications Commission.

Thomas Horan,

Chief of Staff, Media Bureau.

Proposed Rule

For the reasons discussed in the preamble, the Federal Communications Commission proposes to amend 47 CFR part 73 as follows:

PART 73—RADIO BROADCAST SERVICE

■ 1. The authority citation for part 73 is revised to read as follows:

Authority: 47 U.S.C. 154, 155, 301, 303, 307, 309, 310, 334, 336, and 339.

■ 2. In § 73.622, amend paragraph (i) by revising the Post-Transition Table of DTV Allotments under Georgia the entry for Albany to read as follows:

§ 73.622 Digital television table of allotments.

* * * * *

(i) * * *

Community	Channel No.
* * * * *	
Georgia	
* * * * *	
Albany	10, 29
* * * * *	

[FR Doc. 2021–05990 Filed 3–24–21; 8:45 am]

BILLING CODE 6712–01–P

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 73 and 74

[MB Docket No. 15–146; GN Docket No. 12–268; Report No. 3169; FRS 17596]

Petition for Reconsideration of Action in Proceedings

AGENCY: Federal Communications Commission.

ACTION: Petition for Reconsideration.

SUMMARY: Petition for Reconsideration (Petition) has been filed in the Commission's proceeding by Michael Lazarus, on behalf Sennheiser Electronic Corporation and Catherine Wang, on behalf of Shure Incorporated.

DATES: Oppositions to the Petition must be filed on or before April 9, 2021. Replies to an opposition must be filed on or before April 19, 2021.

ADDRESSES: Federal Communications Commission, 45 L Street NE, Washington, DC 20554.

FOR FURTHER INFORMATION CONTACT: Shaun Maher, Media Bureau, (202) 418–2324.

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's document, Report No. 3169, released March 17, 2021. The full text of the Petition can be accessed online via the Commission's Electronic Comment Filing System at: *http://apps.fcc.gov/ecfs/.* The Commission will not send a Congressional Review Act (CRA) submission to Congress or the Government Accountability Office pursuant to the CRA, 5 U.S.C. 801(a)(1)(A), because no rules are being adopted by the Commission.

Subject: Amendment of Parts 15, 73 and 74 of the Commission's Rules to Provide for the Preservation of One Vacant Channel in the UHF Television Band For Use By White Spaces Devices and Wireless Microphones, published 86 FR 9297, February 12, 2021, in MB Docket No 15–146. This document is being published pursuant to 47 CFR 1.429(e). *See also* 47 CFR 1.4(b)(1) and 1.429(f), (g).

Number of Petitions Filed: 2.

Federal Communications Commission.

Marlene Dortch,

Secretary, Office of the Secretary.

[FR Doc. 2021–06099 Filed 3–24–21; 8:45 am]

BILLING CODE 6712–01–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R1–ES–2020–0079; FF09E22000 FXES11130900000 212]

RIN 1018–BE02

Endangered and Threatened Wildlife and Plants; Reclassification of the Hawaiian Stilt From Endangered to Threatened With a Section 4(d) Rule

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to reclassify (downlist) the Hawaiian stilt (*Himantopus mexicanus knudseni*) from endangered to threatened under the Endangered Species Act of 1973, as amended (Act). After a review of the best available scientific and commercial information, we find that the subspecies' status has improved such that it is not currently in danger of extinction throughout all or a significant portion of its range, but that it is still likely to become so in the foreseeable future. We also propose a rule under section 4(d) of the Act that provides for the conservation of the Hawaiian stilt. Additionally, we also recognize the name ''aeo'' as an alternative common name.

DATES: We will accept comments received or postmarked on or before May 24, 2021. Comments submitted electronically using the Federal eRulemaking Portal (see **ADDRESSES**, below) must be received by 11:59 p.m. Eastern Time on the closing date. We

must receive requests for public hearings, in writing, at the address shown in **FOR FURTHER INFORMATION CONTACT** by May 10, 2021.

ADDRESSES: You may submit comments by one of the following methods:

(1) *Electronically:* Go to the Federal eRulemaking Portal: *http://www.regulations.gov.* In the Search box, enter FWS–R1–ES–2020–0079, which is the docket number for this rulemaking. Then, click on the Search button. On the resulting page, in the Search panel on the left side of the screen, under the Document Type heading, check the Proposed Rule box to locate this document. You may submit a comment by clicking on ''Comment Now!''

(2) *By hard copy:* Submit by U.S. mail to: Public Comments Processing, Attn: FWS–R1–ES–2020–0079, U.S. Fish and Wildlife Service, MS: PRB/3W, 5275 Leesburg Pike, Falls Church, VA 22041–3803.

We request that you send comments only by the methods described above. We will post all comments on *http://www.regulations.gov.* This generally means that we will post any personal information you provide us (see *Public Comments,* Information Requested, below, for more information).

Availability of supporting materials: This proposed rule and supporting documents, including the 5-year review and the Recovery Plan, are available at *https://www.fws.gov/Pacificislands/* and at *http://www.regulations.gov* under Docket No. FWS–R1–ES–2020–0079.

FOR FURTHER INFORMATION CONTACT: Katherine Mullett, Field Supervisor, U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, 300 Ala Moana Boulevard, Room 3–122, Honolulu, HI 96850; telephone 808–792–9400. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Relay Service at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why We Need To Publish a Rule

Under the Act, a species may warrant reclassification from endangered to threatened if it no longer meets the definition of endangered (in danger of extinction). The Hawaiian stilt is listed as endangered, and we are proposing to reclassify (downlist) the Hawaiian stilt as threatened because we have determined is it not currently in danger of extinction. Reclassifying a species can only be completed by issuing a rulemaking.

What This Document Does

This rule proposes to downlist the Hawaiian stilt from endangered to threatened on the Federal List of Endangered and Threatened Wildlife, based on the species' current status, which has been improved through implementation of conservation actions. In addition, we propose in this rule to prohibit certain activities in relation to the species under section 4(d) of the Act.

The Basis for Our Action

Under the Act, we may determine that a species is an endangered species or a threatened species because of any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence. We may reclassify a species if the best available commercial and scientific data indicate the species no longer meets the applicable definition in the Act. For the reasons discussed below, we have determined that the Hawaiian stilt is no longer in danger of extinction and, therefore, does not meet the definition of an endangered species, but is still affected by the following current and ongoing threats to the extent that the species meets the definition of a threatened species under the Act:

- Habitat degradation, destruction, and modification due to urban development, altered ground and surface water, nonnative plants, and coastal inundation and groundwater flooding due to sea level rise;
- Predation by nonnative animals such as mongooses, black rats, feral cats, feral dogs, bullfrogs, black-crowned night herons, cattle egrets, and barn owls, and native animals such as the Hawaiian short-eared owl;
- Disease, primarily botulism caused by the bacterium *Clostridium botulinum* (type C);
- Environmental contaminants resulting from human activities; and
- Stochastic events such as hurricanes, which are anticipated to increase in frequency and intensity.

We Are Proposing To Promulgate a Section 4(d) Rule

In the 4(d) rule, we propose to prohibit all intentional take and most incidental take of the Hawaiian stilt under section 9(a)(1) of the Act with a few specific exceptions to allow incidental take as a means to further the conservation and recovery of the species by providing management flexibilities for our State, Federal, and private partners. Additionally, these exceptions will help to guide Hawaiian stilts away from hazardous habitat and toward habitat managed to meet the species' individual and species-level needs.

Because we will consider all comments and information we receive during the comment period, our final determinations may differ from this proposal. Based on the new information we receive (and any comments on that new information), we may conclude that the species should remain listed as endangered instead of being reclassified as threatened, or we may conclude that the species no longer warrants listing as either an endangered species or a threatened species. In addition, we may change the parameters of the prohibitions and conservation measures in the 4(d) rule if we conclude it is appropriate in light of comments and new information received. For example, we may expand the incidental-take prohibitions to include prohibiting activities that these proposed regulations would allow if we conclude that additional activities are likely to cause direct injury or mortality to the species. Conversely, we may establish additional exceptions to the incidental-take prohibitions so as to allow activities that this proposed rule would prohibit if we conclude that the activities would not cause direct injury or mortality to the species and will facilitate the conservation and recovery of the species. Such final decisions would be a logical outgrowth of this proposal.

Information Requested

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments or information from other concerned governmental agencies, Native American tribes, the scientific community, industry, or any other interested parties concerning this proposed rule.

We particularly seek comments concerning:

(1) Reasons we should or should not reclassify the Hawaiian stilt as a threatened species.

(2) New information on the historical and current status, range, distribution, and population size of the Hawaiian stilt.

(3) New information on the known and potential threats to the Hawaiian stilt, including predation; urban

development, nonnative plants, alterations in surface or ground water; data on avian botulism; contaminants; impacts associated with climate change; or trends in the status and abundance of wetlands used by the subspecies.

(4) New information regarding the life history, ecology, and habitat use of the Hawaiian stilt.

(5) Current or planned activities within the geographic range of the Hawaiian stilt that may have adverse or beneficial impacts on the subspecies.

(6) Information on regulations that are necessary and advisable to provide for the conservation of the Hawaiian stilt and that the Service can consider in developing a 4(d) rule for the subspecies.

(7) Information concerning the extent to which we should include any of the section 9 prohibitions in the 4(d) rule or whether any other forms of take should be excepted from the prohibitions in the 4(d) rule.

Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include.

Please note that submissions merely stating support for, or opposition to, the action under consideration without providing supporting information, although noted, will not be considered in making a determination, as section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or a threatened species must be made ''solely on the basis of the best scientific and commercial data available.'' You may submit your comments and materials concerning this proposed rule by one of the methods listed in **ADDRESSES**. We request that you send comments only by the methods described in **ADDRESSES**.

If you submit information via *http://www.regulations.gov,* your entire submission—including any personal identifying information—will be posted on the website. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on *http://www.regulations.gov.*

Comments and materials we receive, as well as supporting documentation we used in preparing this proposed rule, will be available for public inspection on *http://www.regulations.gov,* under Docket No. FWS–R1–ES–2020–0079.

Public Hearing

Section 4(b)(5) of the Act provides for a public hearing on this proposal, if requested. Requests must be received by the date specified in **DATES**. Such requests must be sent to the address shown in **FOR FURTHER INFORMATION CONTACT**. We will schedule a public hearing on this proposal, if requested, and announce the date, time, and place of the hearing, as well as how to obtain reasonable accommodations, in the **Federal Register** and local newspapers at least 15 days before the hearing. For the immediate future, we will provide these public hearings using webinars that will be announced on the Service's website, in addition to the **Federal Register**. The use of these virtual public hearings is consistent with our regulation at 50 CFR 424.16(c)(3).

Peer Review

In accordance with our policy, ''Notice of Interagency Cooperative Policy for Peer Review in Endangered Species Act Activities,'' which was published on July 1, 1994 (59 FR 34270) and our August 22, 2016, Director's Memorandum ''Peer Review Process,'' we will seek the expert opinion of at least three appropriate and independent specialists regarding scientific data and interpretations contained in this proposed rule. We will send copies of this proposed rule to the peer reviewers immediately following publication in the **Federal Register**. We will ensure that the opinions of peer reviewers are objective and unbiased by following the guidelines set forth in the Director's Memo, which updates and clarifies Service policy on peer review (U.S. Fish and Wildlife Service 2016a). The purpose of such review is to ensure that our decisions are based on scientifically sound data, assumptions, and analysis. Accordingly, our final decision may differ from this proposal.

Previous Federal Actions

The Hawaiian stilt was listed as an endangered species under the Act on October 13, 1970 (35 FR 16047). A recovery plan for four Hawaiian waterbirds, including the Hawaiian stilt, was issued in 1978 (U.S. Fish and Wildlife Service (USFWS) 1978, entire), and the first revision of this plan was issued in 1985. The final Recovery Plan for Hawaiian Waterbirds, Second Revision (Service 2011, entire), was made publicly available January 19, 2012 (77 FR 2753). We completed the most recent 5-year review of the subspecies in March 2020, in which we recommended downlisting the Hawaiian stilt (Service 2020, entire). This document serves as our proposed rule to reclassify the Hawaiian stilt from endangered to threatened based on the recommendation in our 2020 5-year review.

Proposed Reclassification Determination

Background

A thorough review of the biological information on Hawaiian stilts including taxonomy, life history, ecology, and conservation activities, as well as threats facing the subspecies or its habitat is presented in our recent Hawaiian stilt 5-year review (USFWS 2020, entire) and the Recovery Plan for Hawaiian Waterbirds (USFWS 2011, entire), which are available at *http://www.regulations.gov* under Docket No. FWS–R1–ES–2020–0079. The following is a summary of the best available information on Hawaiian stilts. Please refer to the 2020 5-year review and 2011 recovery plan for additional discussion and background information.

Taxonomy and Species Description

The Hawaiian stilt (*Himantopus mexicanus knudseni*) is a waterbird endemic to the Hawaiian Islands (Stejneger 1887, entire). Another commonly accepted name for the Hawaiian stilt is the aeo (from a Hawaiian name for the bird and word for stilts). The Hawaiian stilt is widely recognized as a subspecies of the black-necked stilt *Himantopus mexicanus* (American Ornithology Union (AOU) 1998). It is black and white with long, pink legs (Bryan 1901, p. 26; Shallenberger 1977, p. 24), is slender in appearance, and grows to about 16 inches (in) (40 centimeters (cm)) in height. Plumage is black on the back, and white on the front and underside of the bird. Juveniles have a brownish back, and more extensive white on the cheeks and forehead than adults. Chicks are well camouflaged in a downy plumage that is tan with black speckling (Coleman 1981, pp. 33, 35, 86–87). The Hawaiian stilt is a long-lived vertebrate, as the life span of the Hawaiian Stilt can reach at least 30 years (Reed *et al.* 2014, p. 4).

Range, Abundance, and Population Trends

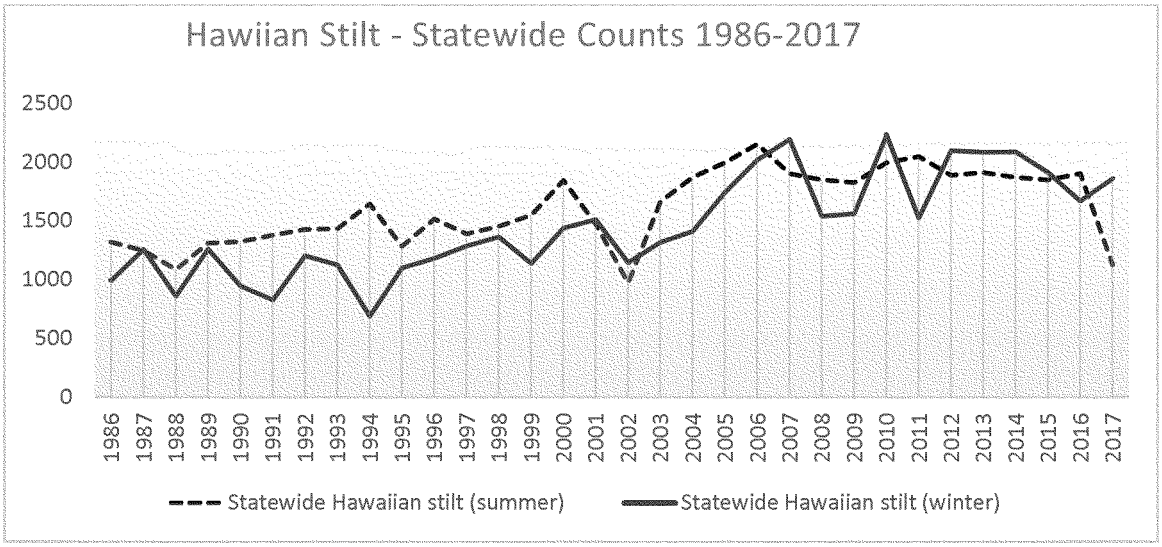
Hawaiian stilts were historically known from all the main Hawaiian Islands (*i.e.,* Niihau, Kauai, Oahu, Maui, Molokai, Lanai, Kahoolawe, and Hawaii) except Lanai (until recently) and Kahoolawe. Hawaiian stilts move between islands, based on observations of sudden large increases in numbers at certain sites (from several hundred to a thousand or more), and concomitant

decreases at other sites, including certain wetlands over the years (Engilis and Pratt 1993, pp. 142, 156, 148; Banko 1988, p. 6). Hawaiian stilts began colonizing the island of Lanai following developments during the 1980s, including construction of a water treatment plant that provided foraging and breeding habitat (Engilis and Pratt 1993, p. 147; Pyle and Pyle 2017, unpaginated). The subspecies consists of one single population dispersed across the main Hawaiian Islands (except Kahoolawe), and individuals move freely between wetlands both within and between islands (Munro 1944, pp. 59–60; Telfer and Burr 1979, p. 8; Coleman 1981, pp. 7–8; Reed *et al.* 1998a, pp. 36, 38; Reed *et al.* 1998b, pp. 791–796; Battista 2008, p. 2; Nishimoto 2014, p. 3; Paxton and Kawasaki 2015, *in litt.;* Dibben-Young 2017, *in litt.*). Hawaiian stilts disperse readily, exploit seasonally flooded wetlands, and readily colonize newly restored or created habitats (van Rees *et al.* 2020, p. 3). The population naturally fluctuates according to climatic and hydrologic conditions (Banko 1988, pp. 2–7; Engilis and Pratt 1993, pp. 145, 147; Reed *et al.* 1998b, pp. 791–797). Because the subspecies consists of one large population, any discussion regarding the subspecies' needs (below) also addresses the population's needs.

The Hawaii Department of Land and Natural Resources, Division of Forestry and Wildlife (DOFAW) conducts a biannual waterbird population census (count), and those data offer the best available information to assess trend and abundance of the subspecies (DOFAW 2020). Data were available from 1986 through 2017 for our analysis. The DOFAW surveys take place Statewide on a single day in the winter and a single day in the summer to try to avoid counting the same birds twice. Niihau is no longer included in the counts as it is a privately owned island that has not been surveyed since 1999; this island shares birds seasonally with Kauai (Engilis and Pratt 1993, p. 156). However, periodic low numbers on Kauai are often due to Hawaiian stilts moving to Niihau, particularly in years with increased precipitation (Laut, 2020, *pers. comm.*).

Winter and summer surveys for Hawaiian stilts show a fluctuating population, which generally increased from 1987 to 2004 and since then has been roughly stable at 1,500 to 2,000 individuals. Years where counts surpassed 2,000 individuals have been followed in the subsequent year by a decrease of 300 to 700 birds (DOFAW 2020).

Figure 1. Statewide census counts for Hawaiian stilt 1986–2017 (Source: DOFAW 2020).



Variability in population count numbers can be partially explained by variation in reproductive success (Engilis and Pratt 1993, p. 155) and predation. Summer counts are generally more variable than winter counts due to the variability in hatch-year bird survival (Reed and Oring 1993, pp. 1, 57; Reed *et al.* 2011b, p. 475). Given that the Hawaiian stilt is conspicuous and most wetlands are surveyed during the Statewide waterbird surveys, the data provide a fairly reliable index of overall population abundance and indicate that the population continues to be stable or increasing with short-term fluctuations (Reed *et al.* 2011b, pp. 475–476, 478–479; USFWS 2011, p. iv; DOFAW 2020). Using indices to monitor abundance can make detecting changes in populations difficult, potentially masking declines (Staples 2005, p. 1909). We recognize this limitation but conclude the use of this data represents the best available information to ascertain status, trends, and abundance of this subspecies.

Habitat and Life History Requirements

The Hawaiian stilt primarily occurs from sea level up to 656 feet (ft) (200 meters (m)) in elevation, in natural and human-made lowland coastal wetlands (Perkins 1903, p. 452; Shallenberger 1977, pp. 23–25; Coleman 1981, pp. 8–18; Griffin *et al.* 1989, p. 1169; Engilis and Pratt 1993, pp. 155–156; Evans *et al.* 1994, p. 6; USFWS 2005, p. 31; USFWS 2011, pp. 50–60). However, Hawaiian stilts are not restricted to lowland coastal wetlands as they have been observed at slightly higher elevations and outside of the coastal wetlands, such as foothill impoundments, reservoirs, and other wetlands (USFWS 2005, pp. 28–29; Kawasaki *et al.* 2020, p. 431). Hawaiian stilts use areas of sparse, low-growing (up to 18 in (46 cm) tall) perennial vegetation or exposed tidal flats for nesting and breeding, and sometimes foraging (Smith and Polhemus 2003, p. 61; United States Department of Agriculture–Natural Resources Conservation Service (USDA–NRCS) 2009, p. 5 and Appendix B; Gee

2007, pp. 70–71; Reed *et al.* 2011a, pp. 3, 4). The most common foraging depth for adults appears to be 5 in (13 cm) or less below the surface of the water (Ohashi and Burr 1977, p. 3; Smith and Polhemus 2003, pp. 60–61; Gee 2007, p. 62; Reed *et al.* 2011a, pp. 3–4). Shallow water (approximately 2–3 in (7.6 cm)) and wet mudflats are particularly important for foraging chicks (Morin 1998, p. 11; USDA–NRCS 2009, p. 4; Reed *et al.* 2011a, p. 4; Reed 2017, *in litt.*).

Hawaiian stilts typically begin breeding at age two (Reed *et al.* 1998a, p. 36). Nests are simple scrapes on the ground (Coleman 1981, p. 53; Smith and Polhemus 2003, p. 61; Gee 2007, p. 98). Pairs usually lay three to four eggs that are incubated for approximately 24 days (Coleman 1981, p. 56; Chang 1990, p. 43). Chicks are precocial, leaving the nest within 24 hours of hatching. After the last chick hatches, parents lead their brood to shallow feeding areas (Coleman 1981, p. 77). Chicks fledge approximately 28 days post-hatching (Reed *et al.* 1999, p. 478), and young may remain with both parents for several months after hatching (Coleman 1981, pp. 83–84). Parents are extremely aggressive toward unrelated young (Robinson *et al.* 1999, pp. 11–13).

During the nesting season, incubating pairs move between their nest site and a foraging area (USFWS 2011, p. 60). Foraging areas may be directly adjacent to the nest site or quite a distance away (Coleman 1981, p. 77; Engilis and Pratt 1993, pp. 155–156; Reed and Oring 1993, p. 57). Food availability is at least one factor that drives foraging at greater distances from the nest site (Reed and Oring 1993, p. 57). Adults with 3-day-old chicks have been observed foraging 0.3 mile (mi) (1.5 kilometer (km)) from the nest site (Reed and Oring 1993, p. 57). Within a few hours of the last chick hatching, parents lead their brood to shallow feeding areas that may be the same feeding areas used by the adults during incubation (Coleman 1981, p. 77).

Hawaiian stilts are opportunistic feeders. They eat a wide variety of invertebrates and other aquatic organisms found in shallow water and mudflats (Perkins 1903, p. 452; Shallenberger 1977, pp. 23–25; Robinson *et al.* 1999, pp. 8–9; USFWS 2011, p. 58). They also sometimes forage in grasslands adjacent to wetlands. Managed wetlands with desirable water depth are common foraging sites (Underwood *et al.* 2013, p. 6). Hawaiian stilts move intraisland and interisland as they exploit food resources (Engilis and Pratt 1993, pp. 155–156).

We consider the specific breeding and rearing conditions described above as necessary for both individual and subspecies needs. The Hawaiian stilt is considered a conservation-reliant subspecies (Reed *et al.* 2012, p. 888; Underwood *et al.* 2013, p. 1), which means that it will require active management into perpetuity because of our inability to eliminate the dominant threats (Scott *et al.* 2005, pp. 383–389; Scott *et al.* 2010, pp. 92–93: Goble *et al.* 2012, pp. 869–872). It is also considered conservation-reliant because it relies almost solely upon managed wetlands for successful nesting and breeding (Reed *et al.* 2012, p. 888; Underwood *et al.* 2013, p. 1). The accepted management regime for creating and maintaining optimal Hawaiian stilt breeding and rearing habitat has three major components: Control of invasive introduced plant species; manipulation of water levels to mimic natural hydrological processes and benefit life-history needs; and control of predators (USFWS 2011, pp. 163–169; Underwood *et al.* 2014, p. 32 and supporting references). More information on the subspecies' management dependency is presented in the Summary of Biological Status and Threats, below.

Recovery Criteria

Section 4(f) of the Act directs us to develop and implement recovery plans for the conservation and survival of endangered and threatened species unless we determine that such a plan will not promote the conservation of the species. Recovery plans must, to the maximum extent practicable, include ''objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions [of section 4 of the Act], that the species be removed from the list.''

Recovery plans provide a roadmap for us and our partners on methods of enhancing conservation and minimizing threats to listed species, as well as measurable criteria against which to evaluate progress towards recovery and assess the species' likely future condition. However, they are not regulatory documents and do not substitute for the determinations and promulgation of regulations required under section 4(a)(1) of the Act. A decision to revise the status of a species, or to delist a species, is ultimately based on an analysis of the best scientific and commercial data available to determine whether a species is no longer an endangered species or a threatened species, regardless of whether that information differs from the recovery plan.

There are many paths to accomplishing recovery of a species, and recovery may be achieved without all of the criteria in a recovery plan being fully met. For example, one or more criteria may be exceeded while other criteria may not yet be accomplished.

In that instance, we may determine that the threats are minimized sufficiently and that the species is robust enough that it no longer meets the definition of an endangered species or a threatened species. In other cases, we may discover new recovery opportunities after having finalized the recovery plan. Parties seeking to conserve the species may use these opportunities instead of methods identified in the recovery plan. Likewise, we may learn new information about the species after we finalize the recovery plan. The new information may change the extent to which existing criteria are appropriate for identifying recovery of the species. The recovery of a species is a dynamic process requiring adaptive management that may, or may not, follow all of the guidance provided in a recovery plan.

For the purposes of this discussion, we assess the progress of Hawaiian stilt recovery relative to recovery targets in the second revision of the Recovery Plan for Hawaiian Waterbirds (Service 2011, entire). The 2011 revision included more specific recovery recommendations for Hawaiian stilt and modified population target levels. In developing recovery criteria for the Hawaiian stilt, we used a 1998 population viability analysis (PVA) for the subspecies (see Reed *et al.* 1998a, entire) as the basis for population target levels. For recovery criteria for the Hawaiian stilt, we also assessed and categorized wetlands on each island into core and supporting wetlands. Core wetlands provide habitat essential for the larger populations of Hawaiian waterbirds that comprise the bulk of the numbers prescribed for recovery. Supporting wetlands are additional areas that provide habitat important for smaller populations or provide habitat needed seasonally by segments of the population during part of their life cycle. Wetlands identified as ''protected'' (whether core, supporting, or neither) are those considered secure from development. In general, protected wetlands are National Wildlife Refuges (NWR), State-owned wildlife sanctuaries, or mitigation wetlands, where the primary purpose of management is wildlife conservation or does not conflict with the goal of wildlife conservation. The core and supporting wetlands identified in the

2011 recovery plan are the sites on each island that provide the greatest potential for recovery of Hawaiian stilts (USFWS 2011, p. 114; USFWS 2020 pp. 2–3).

The overall goal for recovery of the Hawaiian stilt is to restore and maintain multiple self-sustaining populations within the subspecies' historical range (Service 2011, p. 120). The plan provides four criteria for reclassifying the Hawaiian stilt from endangered to threatened status and two additional criteria for delisting the subspecies. We describe and assess the recovery criteria as they relate to evaluating the status of the Hawaiian stilt below.

Criterion 1 for Downlisting

Criterion 1 states that all core wetlands on the island groups of Kauai-Niihau, Oahu, Maui-Molokai, and Hawaii are protected and managed in accordance with the management practices outlined in the recovery plan (Service 2011, pp. 124, 126, 163–165). The plan states that it is crucial for wetlands at these sites to be secure from conversion to non-wetland condition and to have sufficient enduring management to recover Hawaii's waterbirds.

Currently, of the recovery plan's 17 identified core wetlands, 14 are protected from development and have some predator and habitat management activities in place. Only 3 lack protection from development and predator and habitat management (see Table 1, below).

TABLE 1—STATUS AND CHARACTERISTICS OF CORE WETLANDS IDENTIFIED FOR RECOVERY OF THE HAWAIIAN STILT

Wetland name/location	Island	Hectares (acres)	Core or supporting	Protected [1]	Managed	Responsibility [2]
Kaloko-Honokohau, National Historic Park.	Hawaii	22 (55)	Core	X	predators and habitat	NPS.
Loko Waka Ponds	Hawaii	10 (24.5)	Core			Private.
Hanalei NWR	Kauai	371 (917)	Core	X	predators and habitat	USFWS.
Huleia NWR	Kauai	98 (241)	Core	X	predators and habitat	USFWS.
Lumahai Valley Wetlands	Kauai	51 (125)	Core			Private.
Mana Plains Forest Reserve (formerly Kawaiele Wild Bird Sanctuary).	Kauai	14 (35)	Core	X	predators and habitat	DOFAW.
Kanaha Pond Wildlife Sanctuary	Maui	59 (145)	Core	X	predators and habitat	DOFAW.
Kealia Pond NWR	Maui	280 (692)	Core	X	predators and habitat	USFWS.
Kakahaia NWR	Molokai	18 (45)	Core	X	predators and habitat	USFWS.
Ohiapilo Pond Bird Sanctuary	Molokai	10 (25)	Core	X	predators and habitat	County.
Playa Lakes (wetland complex)	Niihau	769 (1,900)	Core			Private.
Hamakua Marsh Waterbird Sanctuary	Oahu	35.6 (88)	Core	X	predators and habitat	DOFAW/DU.
James Campbell NWR, Kii and Punamano Units.	Oahu	66 (164)	Core	X	predators and habitat	USFWS.
Kawainui Marsh	Oahu	304 (750)	Core	X	predators and habitat	DOFAW.
Marine Core Base Hawaii, Nuupia Ponds	Oahu	196 (483)	Core	X	predators and habitat	MCBH.
Pearl Harbor NWR, Honouliuli and Waiawa Units.	Oahu	25 (61)	Core	X	predators and habitat	USFWS.
Pouhala Marsh Waterbird Sanctuary	Oahu	28 (78)	Core	X	predators and habitat	DOFAW.

Legend:
[1] Protected refers to wetland areas that are secure from development.
[2] Responsibility: DOFAW = Hawaii Division of Forestry and Wildlife; DU = Ducks Unlimited; MCBH = Marine Corps Base Hawaii; NPS = National Park Service; USFWS = U.S. Fish and Wildlife Service; USN = U.S. Navy; County = County Government; State = State Government entity; Private = private landowner(s).

Although we conclude that this criterion has not been completely met, we have made substantial progress toward meeting it, and the ongoing management on core wetlands has contributed toward the stabilization of the Hawaiian stilt population and helped to further the recovery of the subspecies.

Criterion 2 for Downlisting

Criterion 2 states that at least 50 percent of the supporting wetlands on the islands of Kauai, Oahu, Maui-Molokai-Lanai, and Hawaii are protected and managed in accordance with the management practices outlined in the recovery plan. The plan states that protection and management of these wetlands is required to recover Hawaii's waterbirds, but there is more flexibility with regard to which sites must be managed, as it is possible that other sites may fulfill the same needs as those identified.

The recovery plan identified 34 sites as supporting wetlands throughout the State; of these, 15 are protected, 11 have predator or habitat management or both, but only 7 of the 34 supporting wetlands are in protective status and have some form of management (Table 2). Therefore, we conclude that this criterion has been partially met.

TABLE 2—SUPPORTING WETLANDS AND CHARACTERISTICS IDENTIFIED FOR RECOVERY OF THE HAWAIIAN STILT

Wetland name/location	Island	Hectares (acres)	Core or supporting	Protected [1]	Managed	Responsibility [2]
Kealakehe (Kona) Sewage Treatment Plant.	Hawaii	12 (30)	Supporting		predators	County.
Keanae Pond (Keaau/Shipman)	Hawaii	2.9 (7.2)	Supporting	X		Private.
Keanakolu Road Stock Ponds (1–5) (Part of Kohala–Mauna Kea Ponds and Streams).	Hawaii	18+ (45+)	Supporting			Private/State.
Opaeula Pond	Hawaii	3 (7.5)	Supporting			Private.
Waiakea Pond	Hawaii	16 (39.5)	Supporting			State/County.
Waimanu Valley	Hawaii	(*)	Supporting			County.
Waipio Valley	Hawaii	(**)	Supporting	X		County.
Hanalei Trader Taro Fields (Hanalei River and Taro fields that are not part of Hanalei NWR).	Kauai	40.4 (100)	Supporting			Private/State.
Hanapepe Salt Ponds	Kauai	20 (50)	Supporting			Private/DOFAW.

TABLE 2—SUPPORTING WETLANDS AND CHARACTERISTICS IDENTIFIED FOR RECOVERY OF THE HAWAIIAN STILT—Continued

Wetland name/location	Island	Hectares (acres)	Core or supporting	Protected [1]	Managed	Responsibility [2]
Mana Base Pond and Wetlands (Part of Mana Plain).	Kauai	81 (200)	Supporting	X	predators and habitat	Private/State.
Opaekaa Marsh	Kauai	20 (50)	Supporting			Private/DOFAW.
Smith's Tropical Paradise	Kauai	1.9 (4.7)	Supporting	X		Private/State.
Wailua River Bottoms	Kauai	20 (50)	Supporting			Private/State.
Waimea River System	Kauai	64 (158)	Supporting			Private/State.
Wainiha Valley River and Taro Fields	Kauai	44 (109)	Supporting			Private/County.
Waita Reservoir	Kauai	151 (373)	Supporting			Private.
Lanai Sewage Treatment Ponds	Lanai	3 (7.4)	Supporting		predators	Private/County.
Keanae Point	Maui	1.5 (3.7)	Supporting	X		State.
Waihee Coastal Dunes and Wetlands (Waihe'e Refuge).	Maui	101 (250)	Supporting	X	predators and habitat	Private.
Kaunakakai Wastewater Reclamation Facility Ponds.	Molokai	1.5 (3.7)	Supporting	X	predators	County.
Kualapu'u Reservoir	Molokai	30 (74)	Supporting	X		State.
Paialoa Fish Ponds	Molokai	2 (5)	Supporting			Private.
Haleiwa Lotus and Taro Fields	Oahu	4.2 (10.6)	Supporting			Private/County.
Haleiwa Waialua Lotus Fields	Oahu	30 (75)	Supporting			Private.
Heeia Marsh	Oahu	162 (400)	Supporting	X	predators and habitat	DOFAW.
Kaelepulu Mitigation Pond (Enchanted Lake).	Oahu	2.2 (5.6)	Supporting	X	predators and habitat	Private.
Kahuku Prawn Farm (Includes Amoriant and Kahuku Aquaculture Farms).	Oahu	41 (100)	Supporting			Private.
Laie Wetlands	Oahu	81 (200)	Supporting	X		Private.
Lualualei RTF, Niulii Ponds	Oahu	16 (40)	Supporting	X	predators and habitat	USN/USFWS.
Paiko Lagoon Wildlife Sanctuary	Oahu	13 (33)	Supporting	X	predators and habitat	DOFAW.
Punahoolapa Marsh	Oahu	41 (100)	Supporting	X		Private.
Turtle Bay, Kuilima Wastewater Treatment Plant.	Oahu	5 (12.4)	Supporting	X		Private.
Ukoa Marsh	Oahu	122 (300)	Supporting		predators and habitat	Private.
Waihee Marsh	Oahu	10 (25)	Supporting		predators and habitat	Private.

Legend:
[1] Protected refers to wetland areas that are secure from development.
[2] Responsibility: HDOFAW = Hawaii Division of Forestry and Wildlife; DU = Ducks Unlimited; MCBH = Marine Corps Base Hawaii; NPS = National Park Service; USFWS = U.S. Fish and Wildlife Service; USN = U.S. Navy; County = County Government; State = State Government entity; Private = Private Landowner(s).
* Large area of intermixed wetland, upland, and agricultural lands where specific habitat areal extent cannot be determined.
** Large area of intermixed wetlands and agricultural lands where specific habitat areal extent cannot be determined.

Criterion 3 for Downlisting

Criterion 3 states that a PVA should be conducted to update the findings of Reed *et al.* (1998a, entire), and the population size necessary for long-term viability of the subspecies should be reassessed; and (2) the Statewide surveyed number of Hawaiian stilts show a stable or increasing trend and has not declined below 2,000 birds (or an alternative target based on the updated PVA) for at least 5 consecutive years. Researchers have produced two PVAs for the subspecies to support and inform the creation of recovery criteria and recovery decisions for the subspecies (Reed *et al.* 1998a, entire; Reed and van Reese 2019, entire). The most recent analysis in 2019, completed with data collected since 1998, incorporated additional peer-reviewed data on adult survival rates and variances in adult or juvenile survival rates (Reed *et al.* 2014, entire); these additional data were not available at the time of the initial modelling effort. The 2019 effort also included data on individual movement patterns for Hawaiian stilt (Reed *et al.* 1998b, entire). The authors of the 2019 PVA stressed that the results are considered preliminary; that said, we find that the results inform the best available information regarding the viability of Hawaiian stilt.

Modeling from the 2019 PVA indicates that the Hawaiian stilt's population growth is affected by density-dependent population dynamics on managed wetlands beginning at approximately 1,000 birds. When population densities are high, the aggressive territorial behavior of adult stilts can lead to violent and occasionally fatal attacks on conspecific chicks and adults, sometimes with extensive chick fatalities as well as the potential for large numbers of nest failures or abandonment. Local adult density has a strong negative correlation with nest success (proportion of nests hatching at least one chick) at Kealia Pond National Wildlife Refuge (NWR) on Maui, where few alternative breeding habitats are available, but no such effect at a refinery pond on Oahu, where many nearby alternative wetlands are available. Therefore, optimizing the distribution of birds during breeding across the landscape (as opposed to concentrating breeding populations on one/few sites) to mitigate the effects of density dependence will benefit the conservation of the subspecies. Additionally, because this density-dependence is closely associated with available managed habitat, increased management (*i.e.,* predator control, water-level, and nonnative plant removal) across the range of the species, in both core and supporting wetlands, will create more suitable breeding habitat and thus increase the carrying capacity. Adequate representation across multiple sites on multiple islands—as illustrative of the approach of managed core and supporting wetlands developed by the recovery team—offers the most effective pathway to recovery of this conservation-reliant subspecies.

The PVA suggests that, under the current management efforts on core and supporting wetlands the Statewide carrying capacity of Hawaiian stilts is below 2,000 individuals. This means that the Hawaiian stilt has reached its equilibrium population size (*i.e.,* the population size the landscape can currently support). Data used in the PVA was collected from sites that are both protected and managed, as well as data from sites that are protected but do

not have management. The vital rates (reproduction and mortality) used in this PVA come from birds almost exclusively from managed sites as there are few to no birds able to successfully breed elsewhere due to the myriad threats present at non-managed sites. If the management practices continue and the environmental conditions of the managed sites are stable over the next 80 years, the rangewide population has no chance of extinction within the 80-year modelling period. This analysis demonstrates that under the current management practices the rangewide population is stable within the limited available managed sites and will continue to be stable as long as these management practices and environmental conditions continue. The three key factors that influence the probability of extinction, in order of importance, are adult mortality, juvenile mortality, and nest failure rate. The PVA predicted a sharp rise in the probability of extinction when adult mortality rates exceeded approximately 24 percent; at approximately 34 percent, the probability of extinction for the stilt approached 80 percent (Reed and van Reese 2019, pp. 24, 30).

The PVA also found that the Hawaiian stilt's viability is sensitive to changes in both annual juvenile mortality rates and nest failure rates. The PVA model indicated that the probability of extinction begins to increase sharply when annual juvenile mortality begins to exceed 40 percent, with almost certain extinction at 79 percent annual juvenile mortality (Reed and van Rees 2019; p. 31). Nest failure rates also influence changes in the model's outcomes on probability of extinction within 80 years (*i.e.,* the likelihood the species will not persist in 80 years). Nest failure rate would need to double, from approximately 19 percent to approximately 40 percent to reach a high probability of extinction within 80 years, with almost certain extinction if nest failure rates reaches 50 percent.

The PVA stresses that the successful reproduction and survival of stilts occurs almost exclusively at protected and managed wetlands and that birds at unmanaged wetlands tend to disappear, and consequently, a loss (or reduction) of management would decrease the species persistence likelihood (Reed and van Reese 2019, p. 36). This insight means in the absence (or reduction) of management at the currently managed sites, the species probability of extinction would substantially increase, and therefore, the species viability would substantially decrease. Further, adult mortality, juvenile mortality, and nest success are not independent factors. For example, if there are fewer adults there are fewer nests, so any reduction in management or habitat quality is likely to impact all life stages of the Hawaiian stilt.

Another potential limitation of the PVA is that changes in the environmental conditions of the protected and managed sites attributed to sea-level rise or other factors was not included as a variable in any of the models included in this PVA. Sea-level rise in particular is already impacting some wetlands in Hawaii (see Summary of Biological Status and Threats, below) (Kane *et al.* 2015, p. 353; Htun *et al.* 2016, pp. 50–51; van Reese and Reed 2018, pp. 2–3; van Reese and Reed 2019, p. 4; van Reese 2020, *pers. comm.*). Over the next several decades, sea-level rise could inundate enough core wetlands (*e.g.,* Kanaha and Kealia on Maui, and almost all wetlands on Molokai) across the islands and result in changes to the species' persistence estimates in the PVA due to changes or loss of available habitat and subsequent increases in mortalities of adults, eggs, or young (Kane *et al.* 2015, p. 353; Htun *et al.* 2016, pp. 50–51; van Reese and Reed 2018, pp. 2–3; Reed and van Rees 2019, p. 4; Harmon 2020, *in litt.;* van Reese 2020, *pers. comm.*).

The insights from the PVA justify the need for long term conservation actions such as managing habitat conditions and controlling predation. The robustness of the populations on core managed wetlands, as well as the effectiveness of management efforts focusing on producing conditions that result in the successful protection of nests, chicks, and adults, are well established. For example, although the Service's NWR units contain only 15 percent of the total coastal plan wetland acreage in the State, they supported between 37 and 47 percent of the total Hawaiian stilt Statewide population using data from 1986 through 2007 (Underwood *et al.* 2013, p. 6). Effective and sustained habitat and predator management produces conditions that result in the successful protection of nests, chicks, and adults, thereby significantly mitigating risk to the subspecies and improving resiliency into the foreseeable future. Long-term commitment towards conservation management actions are essential to continued progress towards recovery. Furthermore, additional and more expansive management on core and supporting wetland sites will also benefit the status of the subspecies into the foreseeable future.

Regarding population trends for Hawaiian stilt, winter and summer surveys for the subspecies show a fluctuating population, which generally increased from 1986 to 2004 and since then has been roughly stable at 1,500 to 2,000 individuals (see *Range, Abundance, and Population Trends*). While the number of Hawaiian stilts counted during the surveys has only occasionally exceeded 2,000 individuals during winter or summer counts over the last 10 years, the population has remained relatively stable over the past 16 years.

We conclude that this criterion has not fully been met because although a new preliminary PVA has been produced, the Service has not yet reassessed the subspecies population size necessary for long-term viability. The Service will conduct this reassessment once the PVA has undergone peer review and is published in the scientific literature. Further, winter and summer surveys for the Hawaiian stilt show a fluctuating population with a stable to increasing trend, but the total population has not consistently been near 2,000 birds for 5 consecutive years (see *Range, Abundance, and Population Trends*).

Criterion 4 for Downlisting

Criterion 4 states that there should be multiple self-sustaining breeding populations, including multiple breeding populations on at least the following: The island group of Kauai and Niihau, the island of Oahu, the island group of Maui, Molokai, and Lanai, and the island of Hawaii. Because the Hawaiian stilt exists in one intermixed population, we refer to breeding populations solely to distinguish groups of Hawaiian stilts that breed at a specific wetland on a specific island at any given time. They may or may not be the same stilts over time.

The recovery plan defines a self-sustaining breeding population as a population that is large enough to make extirpation from stochastic forces unlikely, and that is able to remain stable or grow with little human intervention except for predator control and vegetation management (USFWS 2011, p. 121). The recovery strategy further strengthens this concept by incorporating the need to satisfy two widely recognized and scientifically accepted goals for promoting viable self-sustaining breeding populations: (1) By increasing the population size and distribution across the islands, a single or series of catastrophic events will not result in the extinction of the subspecies; and (2) increasing the population size throughout its range to a level where the threats of genetic,

demographic (population dynamics), and normal environmental uncertainties are diminished (USFWS 2011, p. 112). Furthermore, for these population and distribution goals to ensure the long-term viability of the subspecies, they will require the successful control or elimination of the identified threats.

Present distribution of the Hawaiian stilt encompasses all islands where historically known (Niihau, Kauai, Oahu, Maui, Molokai, and Hawaii), as well as the island of Lanai due to the expansion in range that occurred in the mid-1980s from the development of the Lanai wastewater treatment facility. As previously summarized, since 1986, census data indicate a Statewide population that is relatively stable or slightly increasing (Service 2011, pp. 48–49; Service 2020, pp. 5, 18; van Rees *et al.* 2020, p. 3; DOFAW 2020). Additionally, the implementation of adaptive management predator control practices over the last decade at multiple core wetland sites has demonstrated that the response of the subspecies to predator control is positive, with higher fledgling success rates and overall improvements in population densities of Hawaiian stilts than in unmanaged sites (Underwood *et al.* 2014, p. 35; Price 2020, p. 10). Current management of threats at most core wetlands and some supporting wetland sites (Tables 1 and 2) has contributed toward the stabilization of the population and likely also plays an important role in creating a Hawaiian stilt population that is at or near carrying capacity (Reed and van Rees 2019, entire; van Rees *et al.* 2020, entire). As noted above, carrying capacity in this case is really more an equilibrium population, which is the population size the habitat can support under current conditions. If additional management was implemented at more core and supporting wetlands then the carrying capacity or equilibrium population size would increase. The expansion of effective predator and vegetation control methods (*e.g.,* mammalian exclusion fencing, trapping methods, and vegetation control) into more core and supporting wetlands may increase the carrying capacity or equilibrium population size for the subspecies and further improve the status of the species into the foreseeable future. Additionally, implementation of the three essential management actions (predator, vegetation, and water level control) at the same time, at the same location, on a more regular basis, at wetlands that currently receive management and expanding such practices to those that do not, will further benefit the species. Although it is generally accepted by wetland managers in Hawaii that all three management actions in concerted effort are required restore the functionality of wetlands to meet the life-history requirements of waterbirds, currently, all three of these essential management actions do not necessarily happen at the same time on managed wetlands (Underwood *et al.* 2013, p. 2). Sustained management over time at many core and some supporting wetlands has advanced the recovery of the Hawaiian stilt by securing essential breeding habitat enabling the subspecies to increase its population size and distribution.

The wide distribution of the Hawaiian stilt population, spread out across the multiple islands, provides the subspecies with the resiliency and redundancy necessary to withstand a stochastic (*e.g.,* single wetland) or catastrophic (*e.g.,* islandwide) event, respectively. However, within-island distribution can be quite limited. For example, the number of birds on the island of Hawaii are still relatively low (200 to 250 at any given time on the island) and the birds have been highly dependent on a local wastewater treatment facility (Kealakehe) for breeding (National Park Service (NPS) 2020, *pers. comm.*). Biologists at Kaloko-Honokohau National Park (NP) have more recently been creating mudflats and more suitable habitat for Hawaiian stilts which has increased nesting attempts (eight to 10 pairs of birds on average) at the park; however, there is low nest success and very few fledglings (NPS 2020, *pers. comm.*). The birds tend to increase in number outside of the breeding season, but are primarily just foraging (NPS 2020, *pers. comm.*). Similarly, the occurrence of birds on Lanai demonstrates an expansion in range, but they are utilizing the artificial habitat of a wastewater treatment facility and there are only approximately 20 breeding pairs (Pulama Lanai 2020, *pers. comm.*). Likewise, Hawaiian stilts on Molokai also largely depend on a wastewater treatment facility, and most of Molokai's coastal wetlands are only 1 ft (0.30 meter) above sea level and thus expected to be reduced by sea-level rise resulting in a reduction of both nesting and foraging areas on the island (Jenkins 2016, *in litt.;* Dibben-Young 2017, *in litt.*). Further, recent analyses of Hawaiian stilt numbers at several NWR wetlands show a slight decline in Hawaiian stilts in recent years (Rounds 2020, *pers. comm.*), which may lead to reduced distribution. The population size does fluctuate, and the birds appear to favor some wetlands over others during different years; however, monitoring such trends is important to understanding the conservation needs of the subspecies. Therefore, we conclude that this criterion is partially met.

Discussion/Summary of Downlisting Criteria Assessment

The downlisting criteria in the recovery plan (USFWS 2011, entire) represented our best assessment, at the time the plan was prepared, of the conditions that would result in a determination that the Hawaiian stilt could be considered for reclassification under the Act as threatened rather than endangered. While the downlisting criteria in the recovery plan have not yet been completely met, we have made substantial progress as: (1) Ongoing management is occurring at most core wetlands (Criterion 1); (2) protection has been secured for about 40 percent of supporting wetlands, and about 33 percent of the supporting wetlands are being managed (Criterion 2); (3) preliminary results from a 2019 PVA have been obtained (Criterion 3) (Reed and van Reese 2019, entire); and (4) census data indicate a rangewide stable to increasing population with the resiliency and redundancy to withstand both stochastic and catastrophic events (Criterion 4).

Recovery criteria for the Hawaiian stilt may need to be revisited once the PVA is finalized. Using its assessment of population size necessary for long-term viability of the subspecies, the PVA indicates that under current vital rates at managed sites, current management effort, and current condition and availability of habitat, the Statewide carrying capacity may be below the conditional target of 2,000 individuals as listed in Recovery Criterion 3. The PVA notes that it can be shown easily that a long-lived species in a setting with low environmental stochasticity could steadily decline for 80 years but still have a probability of persistence, particularly if the starting population size is in the hundreds or thousands of individuals (van Reese and Reed 2019, p. 35). Further, the PVA questions the target goal of 2,000 individuals, citing that population sizes of long-lived vertebrates tends to be greater (van Reese and Reed 2019, p. 38). Increasing management (predator control, vegetation removal, and water-level control) across the species' range at both core and supporting wetlands is the most effective way to meet this recovery criterion. See *Current Voluntary and Regulatory Conservation Efforts,* below, for a summary of the partnerships that have contributed toward the

stabilization of the Hawaiian stilt population and efforts to manage the subspecies throughout its range.

Delisting Criteria

We provided two delisting criteria in our recovery plan. Criterion 1 states that of the supporting wetlands on the islands of Kauai, Oahu, Maui–Molokai–Lanai, and Hawaii, at least 85 percent are protected and managed in accordance with the management practices outlined in this recovery plan. Criterion 2 states that the Statewide surveyed number of Hawaiian stilts shows a stable or increasing trend and has not declined below 2,000 birds (or an alternative target based on the updated population viability analysis) for at least 10 consecutive years. The information presented above for the downlisting criteria indicates that the criteria for delisting have not yet been met; we provide a summary of information relating to the delisting criteria below.

With regard to Criterion 1, the Service finds that progress towards securing management actions on supporting wetlands has been made and is showing success, but the criterion has not been fully realized to date. For supporting wetland sites, producing long-term and sustained Hawaiian stilt habitat management is complicated by the following factors. First, many supporting wetlands are owned or managed by multiple entities, which complicates coordination and intensity of management effort. Additionally, the primary purpose of many of these sites is not waterbird conservation (*e.g.,* water reclamation facilities, wastewater pond, taro production, and flood control), and, therefore, management of conditions conducive to Hawaiian stilt breeding is secondary. Finally, achieving long-term management efforts on many of these sites is more uncertain than core and supporting sites owned by the Federal and/or State conservation agencies; this is due to a general lack of secured and dedicated funding sources and lack of internal operational capacity. Partnerships at supporting wetland sites have contributed to recovery progress for the Hawaiian stilt and other waterbirds (see *Current Voluntary and Regulatory Conservation Efforts*) and are contributing to recovery. Progress toward achieving this criterion is currently ongoing but not yet at an acceptable level of permanency or extent to achieve the greatest conservation outcomes to meet this criterion.

With regard to delisting Criterion 2, winter and summer surveys for Hawaiian stilt show a fluctuating population, which generally increased from 1986 to 2004 and since then has been roughly stable at 1,500 to 2,000 individuals (see *Range, Abundance, and Population Trends*). The number of Hawaiian stilts counted during the surveys has only occasionally exceeded 2,000 individuals during winter or summer counts over the last 10 years; thus, we will revisit this target once the PVA has been peer reviewed and published.

Regulatory and Analytical Framework

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species is an ''endangered species'' or a ''threatened species.'' The Act defines an endangered species as a species that is ''in danger of extinction throughout all or a significant portion of its range,'' and a threatened species as a species that is ''likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.'' The Act requires that we determine whether any species is an ''endangered species'' or a ''threatened species'' because of any of the following factors:

(A) The present or threatened destruction, modification, or curtailment of its habitat or range;

(B) Overutilization for commercial, recreational, scientific, or educational purposes;

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

(E) Other natural or manmade factors affecting its continued existence.

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects. We consider these same five factors in reclassifying a species from endangered to threatened (50 CFR 424.11(c)–(e)).

We use the term ''threat'' to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term ''threat'' includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term ''threat'' may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an ''endangered species'' or a ''threatened species.'' In determining whether a species meets either definition, we must evaluate all identified threats by considering the species' expected response and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species—such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an ''endangered species'' or a ''threatened species'' only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

The Act does not define the term ''foreseeable future,'' which appears in the statutory definition of ''threatened species.'' Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term foreseeable future extends only so far into the future as we can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. ''Reliable'' does not mean ''certain;'' it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions.

It is not always possible or necessary to define foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

In addition to the threat analysis, to assess the Hawaiian stilt's viability, we used the three conservation biology principles of resiliency, redundancy, and representation (Shaffer and Stein 2000, pp. 306–310). Briefly, resiliency supports the ability of the subspecies to withstand environmental and demographic stochasticity (for example, wet or dry, warm or cold years), redundancy supports the ability of the subspecies to withstand catastrophic events (for example, droughts, large pollution events), and representation supports the ability of the species to adapt over time to long-term changes in the environment (for example, climate changes). In general, the more resilient and redundant a subspecies is and the more representation it has, the more likely it is to sustain populations over time, even under changing environmental conditions. Using these principles, we identified the subspecies' ecological requirements for survival and reproduction at the individual, population, and (sub)species levels, and described the beneficial and risk factors influencing the subspecies' viability.

Our assessment of viability is categorized into three sequential stages. During the first stage, we evaluated the subspecies' life-history needs. The next stage involved an assessment of the historical and current condition of the subspecies' demographics and habitat characteristics, including an explanation of how the subspecies arrived at its current condition. The recent PVA provided a synthesis of this information. The third and final stage involved making predictions about the subspecies' responses to positive and negative environmental and anthropogenic influences. Throughout all of these stages, we used the best available information to characterize viability as the ability of a subspecies to sustain populations in the wild over time.

Summary of Biological Status and Threats

In this section, we review the biological conditions of the subspecies and its resources, and the threats that influence the subspecies' current and future condition, in order to assess the subspecies' overall viability and the risks to that viability.

The sources cited in this proposed rule represent the best scientific and commercial data available concerning the current status of the subspecies, including the past, present, and future threats. We used this information to evaluate the current and future resiliency, redundancy, representation, and viability of the Hawaiian stilt. (See Regulatory and Analytical Framework.) The effects of conservation actions were also assessed as part of the current condition of the subspecies. We note that overutilization for commercial, recreational, scientific, or educational purposes (Factor B) was not identified as a threat at the time of listing, and we have no additional information to suggest it is currently, or will become, a threat in the foreseeable future; hunting of the subspecies has been prohibited since the 1940s. Furthermore, as per our policy, in this proposed rule we consider regulatory mechanisms (Factor D) with respect to how both regulatory and volunteer conservation measures might reduce or ameliorate threats to the species, rather than in the context of a potential stand-alone threat. Threats to the subspecies are reduced by voluntary and regulatory actions initiated by the Service, DOFAW, and voluntary actions by a large network of organizations interested in wetland and waterbird conservation rangewide. A summary of these efforts is found in *Current Voluntary and Regulatory Conservation Efforts.*

The primary threats to Hawaiian stilts are habitat loss and degradation (due to urban development, ground and surface water alterations that affect core and supporting wetlands, nonnative plants, and foreseeable changes in habitat quality and quantity due to sea level rise (such as groundwater flooding and inundation and coastal flooding and inundation)) (Factor A); nonnative predators (Factor C); avian disease (Factor C); environmental contaminants (Factor E); and foreseeable tropical cyclone intensity and frequency resulting from climate change (Factor E).

These threats should be considered in the context of a stable and resilient subspecies indicated from surveys over the past several decades, and peer-reviewed studies including past (Reed *et al.* 1998, entire) and most recent (Reed and van Rees 2019, entire) PVA analyses, and radio telemetry studies (Kawasaki *et al.* 2020, p. 431). Below we discuss these threats and their relationship to Hawaiian stilt current and future condition.

Habitat Loss and Degradation Due to Urban Development

Some of the largest core wetlands have been lost over the past century. On Oahu, Waikiki, Pearl Harbor, Kaelepulu (now Enchanted Lake), and Salt Lake were lost to development, each with only remnants left behind, some of which, like Waikiki, are no longer able to support the Hawaiian stilt. A small preserve (Kaelepulu Wetland Preserve, 1.2 ha (3 ac)) was set aside in 1955, a remnant of the once expansive Kaelepulu wetland. Pearl Harbor wetlands have also been greatly degraded or diminished by means of filling, urban development, nonnative plant overgrowth, and water pollution. The Mana Plains on Kauai, once the largest wetland in Hawaii at over 1,600 ac (650 ha) (circa 1910) was reduced to only 200 ac (80 ha) by 2006, primarily due to water diversions for sugar cane (Munro 1944, p. 59; Shallenberger 1977, p. 218; Erickson and Puttock 2006, p. 40). Within these last 200 ac (80 ha), 35 ac (14 ha) are designated as the Mana Plain Forest Reserve (formerly the Kawaiele Waterbird Sanctuary). Although magnitudes smaller in size, it is still considered a core wetland (USFWS 2011, pp. 207, 214). The greater Mana Plain area is also an important supporting wetland habitat for the Hawaiian stilt due to remaining scattered ephemeral (temporary) wetlands (Nadig 2017, *pers. comm.*). The adjacent Navy wastewater treatment facility at the Pacific Missile Range Facility also serves to support the subspecies as a supporting (albeit human-made) wetland. Most wetland losses in Hawaii have been human induced, ranging from water diversions, discharging fill, building dams, channelizing, pumping, grubbing (the removal of trees, shrubs, stumps, and rubbish from a site), grading, deep ripping, and other agricultural or military land use practices (Erickson and Puttock 2006, p. 40).

Many of Hawaii's wetlands, including core and supporting wetlands occupied by Hawaiian stilts, occur in coastal areas that are highly valued for development and are becoming increasingly urbanized. Although the rate of permanent losses of coastal wetlands has significantly been slowed due to wetland protection laws, suitable Hawaiian stilt breeding wetland sites continue to be subject to degradation effects of adjacent urbanization and other incompatible land uses, water extraction, and diversion. This continuous encroachment raises concerns regarding human disturbance, urban runoff impacts on water quality, and an increased incidence of domestic cats and dogs in wildlife areas (Stone 1989, pp. 129–130, 134; Wright *et al.* 2006, pp. 13–60). Further, ongoing urbanization could limit or prohibit the inland movement of coastal wetlands as areas are inundated with groundwater and marine water resulting from sea level rise because the ground is impermeable (Clausen and Clausen 2014, p. 177).

Ground and Surface Water Alterations Resulting From Urban Development

Ground and surface water alterations, such as flood control and channelization, often make wetland habitat less suitable or unusable for Hawaiian stilts by altering both water depth and timing of water level fluctuations. Nearly all surface-water features (*e.g.,* streams, lakes, reservoirs, wetlands, and estuaries) interact with ground water (United States Geological Survey (USGS) 1998, p. III). As a result, withdrawal of water from streams can deplete ground water. Similarly, pumping of ground water can deplete water in streams, lakes, and wetlands (USGS 1998, p. III). Hawaiian stilts are not always able to adjust their breeding behavior to accommodate such modifications, which results in decreased reproductive success and therefore decreased resiliency. Alternatively, water released after prolonged diversion can negatively impact habitat for Hawaiian stilts (Morin 1998, p. 27; Underwood 2017, *pers. comm.*). For example, recent (2014) water disputes on west Maui resulted in less upstream water diversion for agriculture, and subsequently a more-steady stream flow of water into Kealia Pond NWR. This steady water influx decreased the amount of stilt habitat (*i.e.,* mudflats and shallow water areas), raising water levels so high the NWR had to breech water out into the ocean so the water did not get too deep (Underwood 2017, *pers. comm.*). Prior to this surface water alteration, Kealia Pond was a common breeding site for Hawaiian stilts (sometimes supporting over 1,000 individuals) (Nishimoto 2006, p. 40; Nishimoto 2014, p. 1; Underwood 2017, *pers. comm.*). The shift to deeper, year-round water has resulted in reduction of Hawaiian stilt numbers at Kealia Pond (Underwood 2017, *pers. comm.*). The natural cycle of seasonal inundation and evaporation of fresh or brackish water mudflats has been altered, resulting in a decrease in quality of habitat. More recently, the NWR manager at Kealia has increased management practices and is starting to see more stilts on the NWR again, although in low numbers (USFWS waterbird hui 2020, *pers. comm.*).

The depletion of freshwater aquifers also causes saltwater intrusion into coastal groundwater resulting in changes to salinity levels in associated wetlands. Changes in salinity may alter the composition of the vegetation and invertebrate communities, which subsequently may affect food availability at such sites for Hawaiian stilts (Chang 1990, pp. 65, 71, 73; Morin 1998, p. 27; Wirwa 2007, pp. 86, 91; Silbernagle 2008, *pers. comm.* cited in USFWS 2011, p. 80). Further, invertebrate die-offs from salinity changes could trigger a botulism outbreak (see *Avian Disease,* below) (Morin 1998, p. 27). Records of salinity in Hawaii's wetlands range from 0 parts per thousand (ppt) up to 200 ppt (Ueoka *et al.* 1979, p. 6; Coleman 1981, pp. 12, 15, 18; Wirwa 2007, p. 91; Nadig 2017, *pers. comm.*). Alterations in ground and or surface water could result in complete habitat loss (*e.g.,* Waikiki), as mentioned above under Habitat Loss and Modification due to Urban Development.

Habitat Loss and Degradation by Nonnative Plants

Hawaii experiences a year-round growing season; therefore, management of invasive wetland plants, and sometimes native plants, must be constant (Underwood *et al.* 2013, p. 1; Nadig 2017, *pers. comm.*) to provide good habitat for the Hawaiian stilt. Invasive species such as California grass, pickleweed, water hyacinth *(Eichornia crassipes*), Indian fleabane (*Pluchea indica*), and mangrove (*Rhizophora mangle*) present serious problems in most Hawaiian wetlands by outcompeting native species and eliminating open water, mudflats, and shallow water areas (Shallenberger 1977, pp. 154, 184, 238; Griffin 1989, p. 1171; Henry 2006, p. 26). At least one native plant, aeae (*Bacopa monnieri*) may also need management as it too has the potential to smother wetland habitat (Nadig 2017, *pers. comm.*). The alteration of wetland plant communities due to extensive, blanketing overgrowth of invasive plants can greatly reduce the usefulness of wetland areas for native waterbirds, including the Hawaiian stilt (Shallenberger 1977, pp. 154, 184, 238; Griffin 1989, p. 1171; Morin 1994, p. 69; Morin 1998, p. 21; Pacific Rim Conservation 2012, p. 6; Jenkins 2016, *in litt.*). The establishment of nonnative red mangrove may facilitate the use of wetlands by introduced cattle egrets and the indigenous black-crowned night-heron or aukuu (*Nycticorax nycticorax*), thereby increasing the threat of predation on Hawaiian stilts (Rauzon and Drigot 2002, p. 240). Efforts to remove such invasive species are expensive and require ongoing vegetation management as well as periodic sweeps for removing seedlings. Nonnative plant control is a key problem facing wetland managers in the State of Hawaii (USFWS 2011, p. 80).

Sea Level Rise

Global mean sea level (GMSL) is rising and is expected to continue to rise for centuries due to thermal expansion, even if all Nations ceased production of greenhouse gasses today (Meehl *et al.* 2012, p. 576; Golledge *et al.* 2015, pp. 421, 424; DeConto and Pollard 2016, p. 591). This is because of the warming that has already occurred. Additionally, GMLS may rise even more due to warming that is yet to occur from the still uncertain level of future greenhouse gas emissions (National Oceanic Atmospheric Administration (NOAA) 2017, p. 1). The level of projected rise in GMSL is different depending on the corresponding Representative Concentration Pathway (RCP) emissions scenario (RCP 2.6, 4.5, 6, or 8.5) (van Vuuren *et al.* 2011, p. 5; Intergovernmental Panel on Climate Change 2014, p. 8). The NOAA, along with other Federal and academic science institutions, laid out six risk-based GMSL scenarios describing potential future conditions, with lower and upper bounds of GMSL rise between 0.2 and 0.6 m (0.7 and 1.9 ft) through 2040 (NOAA 2017, pp. vi–vii, 1–55 and Appendices A–D). This is highly relevant to Hawaiian stilt conservation because, even at the lowest current estimate, substantial habitat may be lost or degraded.

Sea level rise is not expected to be uniform throughout the world, due to factors including, but not limited to: (1) Variations in oceanographic factors such as circulation patterns; (2) changes in Earth's gravitational field and rotation, and the flexure of the crust and upper mantle, due to melting of land-based ice; and (3) vertical land movement due to glacial isostatic adjustments, sedimentation compaction, groundwater and fossil fuel withdrawals, and other non-climactic factors (Spada *et al.* 2013, p. 484; NOAA 2017, pp. vi–vii, 9, 19). The Hawaiian Islands are expected to receive higher increases in sea level rise than the GMSL rise (Spada *et al.* 2013, p. 484; Polhemus 2015, p. 7; NOAA 2017, p. 9). Further, sea level rise in Hawaii will not be uniform across the islands due, in part, to vertical land motion resulting from the actively growing Hawaii Island (Kane 2014, p. 3 and references therein; Polhemus 2015, p. 3). Both marine inundation and groundwater inundation will contribute to wetland habitat loss and modification, but as sea level rise increases beyond 2.4 ft (0.74 m), marine inundation will be the dominant source of inundation (Polhemus 2015, p. 25). Lastly, sea level rise is not expected to be a slow, gradual, and linear

phenomenon; it is anticipated to accelerate and at times be quite rapid (Polhemus 2015, pp. 6–7). Sea level rise is of particular concern for conservation of the Hawaiian stilt because most of Hawaii's wetlands are located just inland of a narrow coastal strand and are dependent upon natural or pumped groundwater sources to maintain pond water levels (Kane 2014, p. 7 and references therein).

Our assessment of sea level rise and its effects on Hawaiian stilt wetland habitat has been limited to the foreseeable future. We have assessed the foreseeable future as through the year 2040, based that many climate models diverge at year 2040, and the medium-term forecast of 0.98 ft (0.3 m) sea level rise effects on Hawaiian coastal wetlands (Kane and Fletcher 2013, entire). Availability of climate change models for this timeframe and localized area is limited.

By 2040, marine flooding and inundation resulting from sea level rise is anticipated to result in coastal flooding in Hawaii (Kane and Fletcher 2013, pp. 1–33, and Appendix). Marine flooding and inundation is expected to occur through a combination of storm surge (rising sea level associated with a storm), marine overwash (waves overtopping sand dunes) and tidal waves (periodic tidal fluctuations caused by gravitational pull), intensified by sea level rise and increases in tropical storm frequency and intensity (see Tropical Cyclone Intensity and Frequency) (Fletcher *et al.* 1995, p. 193). This wave action can change coastal geomorphology, increasing the flooding risks of the coastal floodplain (Theuerkauf *et al.* 2014, p. 5146) and low-island overwash (Hoeke *et al.* 2013, p. 137). In coastal wetlands with no significant barrier from the ocean, marine inundation is expected to have a greater effect on Hawaiian stilt habitat than groundwater inundation by approximately 2040 (Kane and Fletcher 2013, p. 16; Jenkins 2016, *in litt.*).

Marine overwash poses a substantial threat to Hawaiian stilt reproduction. Flooding from marine overwash during the breeding season (February thru July) will destroy nests with eggs (Coleman 1981, p. 57), although Hawaiian stilts have been observed re-nesting if nest failure occurs early in the breeding season (Coleman 1981, p. 59; Browning 2020, *in litt.*). If re-nesting did not occur over many years at wetlands on Kauai, Oahu, and Maui, the resilience and redundancy of this subspecies (Reed *et al.* 2007, p. 616) would decrease due to lack of natural recruitment.

Marine flooding and inundation also will cause an increase in salinity levels, changing the composition of vegetation in coastal wetlands (Kane *et al.* 2014, p. 1685). This could impact shallow foraging and nesting mudflat areas by allowing invasive, salt-tolerant, emergent vegetation to become established which could in turn reduce nesting habitat for the Hawaiian stilt. However, Hawaiian stilts currently occupy core wetlands that are hypersaline (*e.g.,* the Waiawa unit of Pearl Harbor NWR). Usually there is a freshwater source somewhere near these highly saline wetlands in Hawaii as there are many springs scattered across the islands, even occurring in ocean tidal zone.

Some of the most vulnerable wetlands in Hawaii are on the south shore of Molokai. Palaau and Kahanui wetlands—both supporting wetlands—may be completely inundated at 1 ft (0.3 m) and 2 to 3 ft (0.6 to 0.9 cm), respectively, and Ohiapilo may similarly be inundated at 2 ft (0.6 m) (Jenkins 2016, *in litt.*). Even under some of the most conservative sea level rise estimates, a large portion of Molokai's wetlands may be obliterated. A critical elevation point is when sea level rise impacts will rapidly accelerate after a particular increase of sea level occurs. At Kanaha State Wildlife Sanctuary on Maui, the critical elevation point is 0.7 ft (0.2 m) and it is predicted to be exceeded by year 2028 [±25 years] (Kane and Fletcher 2013, p. 18). The critical elevation point at Kealia Pond NWR (Maui) and James Campbell NWR (Oahu) is 2 ft (0.6 m) and is predicted to be exceeded by year 2066 [±16 years] (Kane and Fletcher 2013, p. 18). As on Molokai, even the more conservative estimates of sea level rise place these wetlands at risk.

Tropical Cyclone Intensity and Frequency

Tropical cyclone frequency and intensity are projected to change as a result of increasing temperature and changing circulation associated with climate change (Vecchi and Soden 2007, pp. 1068–1069, Figures 2 and 3; Emanuel *et al.* 2008, p. 360, Figure 8; Yu *et al.* 2010, p. 1371, Figure 14). A projected shift in the path of the subtropical jet stream northward, away from Hawaii, will increase the number of storms reaching the Hawaiian Islands from an easterly direction similar to Hurricane Iselle in 2014 (Murakami *et al.* 2013, p. 751). This shift may result in extreme rainfall events and associated flooding impacts to core and supporting wetland sites located on the northern and eastern shores of the affected islands. Between 1950 and 1997, 22 hurricanes passed near or over the Hawaiian Islands; five of these caused serious damage to the islands, including stilt habitat (Businger 1998, *in litt.*). Impacts from a tropical cyclone can degrade and destroy habitat as well as cause direct mortality of eggs and chicks (*e.g.,* flooding of nests and separation of chicks from parents).

Groundwater Inundation and Flooding

As sea level rises, the water table will rise simultaneously, eventually rising above the land surface, creating new wetlands and expanding others (Rotzoll and Fletcher 2012, p. 477). This will subsequently change surface drainage, saturate the soil, and inundate land in lower lying areas (Rotzoll and Fletcher 2012, p. 447). The rising groundwater table will change certain aspects of spatial configuration and vegetative zonation in some wetlands, and the freshwater resources will degrade in quality due to the underlying saltwater intrusion (Polhemus 2015, p. 21 and references therein). There are also several reports that note although ecogeopmorphic (interactions between organisms and the development of landforms) feedbacks will allow some coastal wetlands to adapt to the lower estimates of sea level rise, they all predict that more rapid and higher estimates of sea level rise will likely submerge many wetlands by the year 2100 (Kirwan *et al.* 2010, pp. 1–5; Langley *et al.* 2009, p. 6182).

Effects of groundwater flooding may have already begun at Kealia Pond NWR and wetlands with similar characteristics (Kane 2014, p. 13). The net effect, or expected rate of change, on the narrow band of habitat suitable for Hawaiian stilt has not been specifically analyzed and remains unclear. More research needs to be conducted to better understand how much wetland losses and gains we can anticipate in Hawaii due to sea level rise, as well as the impacts on the Hawaiian stilt and other Hawaiian waterbirds, and wetland ecosystems in general. Some actively managed wetlands, such as NWR units in Hawaii, will have some management flexibility to provide both foraging and breeding habitat for Hawaiian stilts at least during the early signs of groundwater inundation. However, as marine flooding and inundation exacerbates this threat, NWR units may run out of land area to meet the needs of the subspecies. Other core and supporting wetland managers may not be able to manage for adaptation as readily due to lack of funding or support, or they may too find there is no land left for which to manage.

Although the upslope expansion or creation of new wetlands from groundwater and marine flooding and inundation (ecogeomorphic feedback) could help to counteract at least some habitat losses from sea level rise, many of these sites would be outside of current landownership as well as predator control programs on current core or supporting wetlands. To take advantage of these changes, State and Federal agencies would need to commit and potentially increase funding to adjust predator control programs at newly created or expanded core and supporting wetlands, and perhaps acquire new lands; historically, predator control funding has not always been consistent (Nadig 2018, *pers. comm.*). Additionally, urban development directly adjacent to coastal wetlands, or surrounding wetlands as is the situation at Kanaha Pond State Wildlife Sanctuary, will limit or prohibit such wetlands from a natural landward migration or ecogeomorphic shift (Kane 2014, p. 29).

Because Hawaiian stilts compete for brood territories and nesting ground in mudflats and shallow water, reduction of this habitat may have negative impacts on the population, specifically reduced resiliency, redundancy, representation, and therefore reduced viability. Hawaiian stilts that are forced to use nest sites and brood-rearing habitat outside predator control areas are likely to suffer higher mortality (Price 2020, p. 10).

Predation

Predation by nonnative animals is one of the greatest threats influencing the overall viability of the Hawaiian stilt (USFWS 2011, p. v; Underwood *et al.* 2013, pp. 1–2; Underwood *et al.* 2014, pp. 32–38; Price 2020, p. 1; Harmon 2020, *in litt.*). Introduced predators have negatively influenced the overall viability of the Hawaiian stilt since the mid-1800s (Griffin *et al.* 1989, pp. 1165–1174). Birds in the Hawaiian Islands evolved in the absence of mammalian predators and are consequently highly vulnerable to these introduced animals. Predators of Hawaiian stilts include both introduced and native animals, including mongooses (*Herpestes javanicus*), black rats (*Rattus rattus*), feral cats (*Felis catus*), feral dogs (*Canis lupus familiaris*), black-crowned night herons or aukuu (*Nycticorax nycticorax*), cattle egrets (*Bubulcus ibis*), Hawaiian short-eared owl or pueo (*Asio flammeus sandwichensis*), barn owls (*Tyto alba*), common mynas (*Acridotheres tristis*), and bullfrogs (*Anas wyvilliana*) (Coleman 1981, pp. 70–73; Robinson *et al.* 1999, p. 13; Eijzenga 2004, *in litt.;* K. Viernes *pers. comm.* 1994, in Service 2011, p. 58).

Mongooses were first introduced to the island of Hawaii in 1883, and subsequently to Oahu, Maui, and Molokai. They do not seem to have established on Kauai, although sightings continue to be reported (Phillips and Lucey 2016, pp. 1–23). Mongoose have become a serious threat to Hawaiian stilts where they occur, taking eggs, young birds, and nesting adults. Feral cats became established in Hawaii shortly after European contact and were common in Oahu forests as early as 1892 (Tomich 1986, pp. 101–102). Feral cats range from sea level to at least 2,900 m (9,500 ft) on Hawaii Island (Hu *et al.* 2001, p. 236) and 3,055 m (10,000 ft) on Maui (Hodges and Nagata 2001, pp. 308, 312). The proliferation of feral cat feeding stations near parks and other areas that support Hawaiian stilts contributes toward the predation. Cats have been observed taking adult Hawaiian waterbirds (including Hawaiian stilts) and are presumed to take chicks as well (Dibben-Young 2017, *in litt.*). Rats are known to prey on eggs and young Hawaiian stilts (Underwood *et al.* 2014, pp. 32, 37). Other introduced species, such as the cattle egret, bullfrog, and barn owl, are known to prey on Hawaiian waterbirds. The introduced bullfrog is considered a voracious predator of all small animals (Berger 1981, p. 86; Viernes 1995 cited in Adams and Pearl 2007, p. 680; Robinson *et al.* 1999, p. 13; Eijzenga 2004, *in litt.*). Underwood and Letchworth (2016, pp. 380–383) hypothesize that improving bullfrog trapping will result in the improved survival of waterbird chicks. Cattle egrets play an unquantified role as a predator of nestling birds. Nonnative cats, rats, mongooses, dogs, and, to a lesser extent, pigs, barn owls, cattle egrets, predatory fish and bullfrogs all directly depredate either eggs, young, or adult Hawaiian waterbirds (Underwood *et al.* 2013, p. 1).

The effect of predation on reproductive success is a known point of vulnerability for viability of Hawaiian stilt populations and if unmanaged could result in rangewide population declines. Predator control programs in wetlands result in higher fledgling success rates and overall population densities of Hawaiian stilts (Underwood *et al.* 2014, p. 35). Without active predator control, survival is expected to be lower, particularly in the hatch-year class (Reed *et al.* 2015, p. 183). Some predation of hatch-year individuals continues to occur even where extensive predator control programs are in effect (Coleman 1981, p. 89; Reed *et. al.* 2015, p. 183). Analysis of data collected over two nesting seasons across Oahu revealed hatching success (number of nests that produced at least one chick per number of total nests) averaged between 40 and 60 percent across wetlands, with predation at 65 percent of all nest failures (Harmon 2020, *in litt.*). All data used in this analysis were collected in wetlands that actively trap and remove introduced predators, thus predation is expected to be higher without predator removal. Managed wetlands using mammal exclusion fences (*e.g.,* Honouliuli Unit of Pearl Harbor NWR) result in a greater number of eggs laid per nest and a greater number of eggs hatched per nest than managed wetlands that rely solely on mammalian trapping methods (*e.g.,* Waiawa Unit of Pearl Harbor NWR and most other managed wetlands in Hawaii) (Price 2020, p. 7; Christensen 2020, *in litt.* in Harmon 2020, *in litt.*). Notably, nearly as many nests were abandoned as were depredated in this study. Cause of abandonment is often difficult to determine as there are several potential causes: Presence or harassment from predators, competition between Hawaiian stilts, poor egg development, undetected flooding, and human disturbance (Price 2020, p. 19).

Predator control programs continue to be implemented in most core wetland areas (See Recovery Criteria and Table 1); the resulting level of reproductive success, has been sufficient to support stable to increasing population indices over several decades. Improvements in predator control continue to be implemented (*e.g.,* predator-proof fencing at the Honouliuli Unit of Pearl Harbor NWR). New trapping technologies are also being implemented (*e.g.,* automatic self-resetting traps such as Goodnature A–24 devices). Because this technology is less labor-intensive to implement, effective trapping areas can be increased so that predator populations can be reduced over broader areas. As previously summarized above, ongoing management and predation control programs need to continue into the foreseeable future. For core and supporting wetlands under federal or state control, we expect these efforts to continue so long as supporting budgets are funded at current levels. This effort has currently resulted in a stable or slightly increasing population to the point at which it is approaching population equilibrium under current management practices (See Recovery Criteria discussion above). Continuation of, and expansion of, these predator control and habitat management actions

will further the stability (and expansion) of the conservation-reliant Hawaiian stilt population and its ability to withstand stochastic (*i.e.,* resiliency) and catastrophic (*i.e.,* redundancy) events, as well as maintain its widespread distribution on multiple islands (*i.e.,* representation) and therefore its long-term viability.

Avian Disease

Avian botulism is the most prevalent disease affecting waterbirds in Hawaii, including Hawaiian stilts, and has been documented at two dozen or more wetlands (including many core and supporting wetlands) across the State (Dibben-Young 2016, p. 4; USFWS 2016, *in litt.*). Some wetlands have more recurrence than others (*e.g.,* Kauai: Hanalei NWR; Oahu: James Campbell NWR, Kaelepulu Pond, Kawainui Marsh; Maui: Kanaha Pond State Wildlife Sanctuary, Kealia Pond NWR; Molokai: Ohiapilo Pond) (Dibben-Young 2016, p. 4). Since December 2011, Hanalei NWR has experienced year-round avian botulism type C and has reported deaths of Hawaiian stilts from this disease (USFWS 2016, *in litt.*). Avian botulism is caused by a toxin produced by the anaerobic bacteria *Clostridium botulinum* type C in stagnant water. The disease may reappear annually and can affect all native and migratory waterbirds, causing paralysis evidenced by staggering and the eventual loss of use of legs. Death is likely due to respiratory failure or drowning from the inability to hold their head above water.

Botulism is an ongoing issue for mortality risk, and we have no specific data or information suggesting the degree of threat will change in the future. Procedures have been developed for response to botulism outbreaks through Hawaii's State Wildlife Action Plan, in coordination with the DOFAW, wildlife centers, and veterinarians. Improvements in response to outbreaks may benefit in reducing mortality rates, as quick carcass disposal is essential to contain the diseases' spread. This threat remains persistent and rangewide.

Environmental Contaminants

Many wetlands in Hawaii are adjacent to urban development (Kane 2014, p. 29). This proximity results in potential for the Hawaiian stilt to be exposed to contaminants from storm drains and roadside ditches that empty into streams, wetlands, and the ocean (Stone 1989, p. 132; Wright *et al.* 2006, pp. 13–60). Some wetlands used as flood control basins, such as Kawai Nui marsh, are expected to accumulate contaminants from urban runoff. Non-point source pollution from septic wastewater, agricultural runoff, roads, and contaminated storm water can overwhelm the filtering capacity of wetlands, including wetlands in Hawaii, impacting downstream coastal waters (DeCarlo and Anthony 2002, p. 490; Zhang and Zhang 2011, entire; DOFAW 2015, *in litt.;* Einoder *et al.* 2018, p. 102; van Reese 2018, p. 38). Additionally, two featherless chicks have been found at Marine Corp Base Hawaii, one each in the 2018–2019 and 2019–2020 nesting seasons, the latter of which is undergoing a toxicology analysis (DOD 2017, entire; Fry 2020, *pers. comm.*). Several core wetlands are on or adjacent to military installations and airports which further increase the risk of contaminants (Fry 2020, *pers. comm.*). Contaminants in wetlands can enter the diet of waterbirds, resulting in accumulation of toxins (Ratner 2000, entire; Einoder *et al.* 2018, p. 103). In Switzerland, polychlorinated biphenyls have been detected in waterbirds at levels within the range that could result in reproductive impairment (Zimmerman *et al.* 1997, p. 1379). Due to ocean current patterns and Hawaii's location in the Pacific Ocean, Hawaii receives an enormous amount of plastic marine debris each year. This debris not only impacts Hawaii's beaches, but also pollutes Hawaii's coastal wetlands. At this time, we know of no contaminant surveys being conducted in Hawaii wetlands or specific information about contaminant effects on the Hawaiian stilt; however, because Hawaiian stilts eat fish and aquatic invertebrates, they are particularly at risk from elevated concentrations of contaminants that accumulate in streams around Hawaii, many of which are tributaries to Hawaii's coastal wetlands (Brasher and Wolff 2007, p. 284).

Cumulative Threats Analysis

The Hawaiian stilt is threatened by ongoing predation, combined with loss or degradation of habitat resulting from urban development, ground and surface water alterations associated with urban development, nonnative plants, and flooding and inundation of habitat resulting from sea level rise. Threats such as botulism and environmental contaminants are also rangewide and persistent. Torrential rains associated with increases in hurricane frequency and intensity will increase urban runoff of oil, heavy metals, and other undesirable chemicals into Hawaii's lowland coastal wetlands. Similarly, torrential rain will increase sedimentation which, among other factors (increased temperature, pH, and salinity), is linked to increased botulism outbreak events (Rocke and Samual 1999, pp. 1250, 1255–1256). However, Hawaiian stilts have demonstrated strong resilience and adaptability, as long as active management of predators, vegetation, and water levels give them a safe place with suitable habitat to meet their needs for breeding, foraging, and sheltering. More wetlands are being fenced to exclude predators and most core wetlands are managed to some extent to meet the needs of Hawaiian stilts (see Recovery Criteria).

Management is the influencing factor that counters all of the above influence factors, easing the burden of predation, habitat loss and modification, and disease. Continuing the current level of habitat management and predation control efforts has resulted in a largely stable population to a point at which the subspecies may have reached an equilibrium population size (the number of birds the existing habitat can support) (See Recovery Criteria discussion above). Expansion of management on additional acreage and at additional locations should create enhanced stability (and expansion of) of the Hawaiian stilt population rangewide. Further, expansion and continuation of these essential actions will allow the subspecies to withstand stochastic (*i.e.,* resiliency) and catastrophic (*i.e.,* redundancy) events, as well as maintain its widespread distribution on multiple islands (*i.e.,* representation) and therefore its long-term viability.

Current Voluntary and Regulatory Conservation Efforts

The recovery of Hawaiian stilt requires strong partnerships among Federal, State, local, and private groups. The State of Hawaii and the Department of Defense have been important partners with the NWRs' efforts to protect, manage, and conserve the significant wetland habitats and to support Hawaiian stilt populations over the last 30 years. The U.S. Marine Corps Base—Hawaii has worked to maintain Hawaiian stilt habitat on its properties and facilitated events that promote Hawaiian stilt conservation and involve both the public and military personnel. Their overall goal is to contribute to regional recovery efforts of the Hawaiian stilt, with a view to building regional partnerships and strengthening the Hawaiian stilt population outside of the core habitat on the Marine Corps Base. The Navy's Pacific Missile Range Facility on Kauai has committed to habitat restoration and management actions in important nearby wetland habitat in proximity to actions involving military readiness associated with

implementation of their Integrated Natural Resources Management Plans and associated section 7 biological opinions. Several wastewater treatment facilities across the islands conduct predator control to protect nesting Hawaiian stilts and adults with chicks. Local and county governments also contribute to conservation actions. Additionally, several academic researchers continue to produce data that help guide management actions and inform policy.

In addition to the protections afforded by the Endangered Species Act, the Hawaiian stilt is protected under a variety of other laws, including the Migratory Bird Treaty Act (MBTA). The MBTA (16 U.S.C. 703–712, 50 CFR 10.13), is a domestic law that implements the U.S. commitment to four international conventions (with Canada, Japan, Mexico, and Russia) for the protection of shared migratory bird resources.

The Hawaii Endangered Species law (Hawaii Revised Statutes (HRS) 195D) prohibits take, possession, sale, transport, or commerce in designated species. This State law also recognizes as endangered or threatened those species determined to be endangered or threatened pursuant to the Federal Endangered Species Act. This Hawaii law states that a threatened species (under the Act) or an indigenous species may be determined to be an endangered species under State law. Protection of these species is under the authority of Hawaii's DLNR, and under administrative rule (Hawaii Administrative Rules (HAR) 13–124–11). Incidental take of threatened and endangered species may be authorized through the issuance of a temporary license as part of a safe harbor agreement (SHA) or habitat conservation plan (HCP) (HRS 195D–21, HCPs; 195D–22, SHAs). Although this State law can address threats such as habitat modification, collisions, and other human-caused mortality through HCPs that address the effects of individual projects or programs on Hawaiian stilt, it does not address the pervasive threats to the Hawaiian stilt posed by introduced mammalian predators.

The federal Clean Water Act (CWA) (33 U.S.C. 1251 *et seq.* (1972)) was designed, in part, to protect surface waters of the United States from unregulated pollution from point sources. The CWA provides some benefit to Hawaiian stilts through the regulation of discharge into surface waters through a permitting process. The CWA has significantly slowed the permanent loss of wetlands throughout Hawaii.

In addition to these federal and state regulatory programs, a variety of voluntary conservation partnerships have been formed to protect and manage waterbird habitat. Examples of such partnership opportunities include our Pacific Coast Joint Venture, Partners for Fish and Wildlife Program, Coastal Program, and Habitat Conservation Plan and Safe Harbor Agreement Programs; the multiagency Coastal America program; restoration plans for hazardous materials spills that target waterbird habitat; and the Natural Resources Conservation Service's wetland restoration programs. Partnerships aim to encourage landowners and private citizens to protect and preserve waterbirds and their habitats through cooperative agreements and funding for habitat restoration and creation.

Additional conservation organizations are contributing to the recovery of Hawaii's endangered waterbirds, including the Hawaiian stilt. The Nature Conservancy manages several ecological preserves in the State. Ahahui Malama I Ka Lokahi and Kawai Nui Heritage Foundation are watchdog organizations that oversee the future of Kawainui Marsh on Oahu. They sponsor and lead educational tours and coordinate plant restoration projects at Na Pohaku o Hauwahine. The Nature Center, Wildlife Society, and University of Hawaii's Pacific Cooperative Studies Unit all work on waterbird recovery issues. Private landowners that also contribute to waterbird recovery include Kamehameha Schools, Midler Family Trust, Arleone Dibben-Young (Nene O Molokai), and Kaelepulu Wetland Preserve. Additionally, Ducks Unlimited, a nonprofit wetlands conservation organization, works cooperatively with State and Federal agencies as well as with private landowners and local corporations on wetlands conservation and habitat restoration and protection efforts.

The Service also facilitates recovery implementation, including a cooperative agreement with Chevron Refinery on Oahu during 1993–2004 that implemented terms to manage Rowland's Pond to maintain it as nesting habitat for Hawaiian stilts. Activities included predator control and vegetation management at Rowland's Pond, the Impounding Basin, and Oxidation Ponds. From 2004 through 2016, Chevron Refinery continued to manage the refinery grounds for the benefit of the Hawaiian stilt and Hawaiian coot under a Safe Harbor Agreement. As a result of this agreement, at least 419 Hawaiian stilt chicks fledged at Chevron Refinery Hawaii during this period. In 2016, the complex was purchased by IES Downstream, LLC (IES), and in 2018, IES sold a portion of the refinery to PAR Hawaii Refining, LLC (PAR). Rowland's pond remains within the IES owned portion of the refinery but IES has not yet reached out to the Service for consultation. The Service is currently providing technical assistance to PAR, who is currently seeking a Habitat Conservation Plan for a low level of take. There are no recent updates regarding the status of the Hawaiian stilts at this site.

The Service has also worked with a variety of partners implementing management techniques that benefit Hawaiian stilts throughout its range. Habitat management activities for the conservation of the Hawaiian stilt include activities that maintain suitable habitat conditions. These include vegetation management activities (for example, weeding, mowing, herbicide application, out-planting of native plants, mud flat creation), activities that maintain water levels suitable for breeding or that maintain water quality (for example, irrigating wetland habitat for conservation purposes), activities for minimizing disease outbreaks (for example, monitoring for and addressing dead or decaying animals, emergency botulism outbreak responses), and large-scale restoration of native habitat (*e.g.,* feral ungulate, rat, and mongoose, control, and fencing).

Determination of Hawaiian Stilt Status

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species meets the definition of an ''endangered species'' or a ''threatened species.'' The Act defines endangered species as a species that is ''in danger of extinction throughout all or a significant portion of its range,'' and a threatened species as a species that is ''likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.'' The Act requires that we determine whether a species meets the definition of ''endangered species'' or ''threatened species'' because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) Overutilization for commercial, recreational, scientific, or educational purposes; (C) Disease or predation; (D) The inadequacy of existing regulatory mechanisms; or (E) Other natural or manmade factors affecting its continued existence.

Status Throughout All of Its Range

We have carefully assessed the best scientific and commercial information available regarding the past, present, and future threats to the Hawaiian stilt and its habitat. After evaluating threats to the subspecies and assessing the cumulative effect of the threats under the section 4(a)(1) factors, we have concluded that threats identified in the earlier 5-year status review (USFWS 2010, entire) and the recovery plan (USFWS 2011, entire) are ongoing at similar to increasing levels (USFWS 2020, p. 20). The main threats to the Hawaiian stilt continue to be the loss and degradation of habitat, including urban development, alteration in ground and surface water associated with urban development, invasion of habitat by nonnative plants, and sea level rise (Factor A); predation by a variety of introduced mammalian species (Factor C); and botulism (Factor C). Environmental contaminants are also considered a rangewide threat (Factor E). A variety of voluntary and regulatory conservation measures have helped to limit or reduce the impact of these threats to the subspecies, and are anticipated to continue into the foreseeable future (Factor D). A summary of these efforts are outlined in Current Voluntary and Regulatory Conservation Efforts, above. The best available information does not suggest that collection of Hawaiian stilt is a current or future concern (Factor B) and no other natural or manmade factors that operate at a scope, magnitude, and intensity as to affect the viability of the subspecies, either currently or in the future (Factor E).

The three key aspects of successful management of Hawaiian stilt breeding populations are predator control, vegetation management to provide more open areas, and water-level controls. These actions are in place for the vast majority of the core wetlands (see Recovery Criteria and Table 1). Further, 15 of the 34 supporting wetlands are in protected status, and 11 have some form of either habitat or predator management (see Recovery Criteria and Table 2).

Based on predictions of groundwater and coastal flooding and inundation in Hawaiian coastal wetlands, sea level rise is likely to continue to progressively affect Hawaiian stilt habitat (Factor A), as by 2040, wetlands that exist at elevations near sea level without dune barriers may be most affected (Kane and Fletcher 2013, p. 10). The resulting groundwater and marine flooding and inundation can change the amount of available Hawaiian stilt foraging and breeding habitat. Expansion of current wetlands and newly created wetlands from rising groundwater will create some new shallow water and mudflat areas for foraging and breeding; however, currently existing shallow water and mudflat areas will also be flooded (Rotzoll and Fletcher 2012, p. 477). Coastal plain wetlands are also at risk of marine flooding and inundation by storm surges, marine overwash, and high tides due to coastal erosion from rising sea levels that elevate normal tides (Fletcher *et al.* 1995, p. 203). Inundation can cause mortality to eggs and chicks, with impacts that vary temporally and spatially (Peakall 1970, p. 73; Staples *et al.* 2005, p. 1910; Holmes and York 2003, p. 1795; Miles *et al.* 2015, p. 1). Creation of new or expansion of existing wetlands due to marine flooding and inundation may also change the salinity in wetlands which may encourage the expansion of salt tolerant nonnative plants on mudflats. Increased vegetation on mudflats can reduce available Hawaiian stilt nesting habitat. Marine inundation and groundwater inundation will modify wetland habitat, but whether there will be a net gain or loss of habitat is unknown (Polhemus 2015, p. 25). Increases in foraging and breeding habitat from expanding or newly created wetlands could offset losses from sea level rise; however, this may occur outside of the area of current predator control programs (Factor C). State and Federal land managers may need to adjust existing programs and/or acquire lands in order to effectively support Hawaiian stilt habitat in the new areas.

Avian botulism (Factor C) continues to be documented at wetlands Statewide as a cause of mortality events in Hawaiian stilt and other waterbird and waterfowl species (Dibben-Young 2016, pp. 4–5). Environmental contaminants (Factor E) may also be a threat to Hawaiian stilts using wetland habitats near urban areas.

As previously stated, the Hawaiian stilt is a conservation-reliant subspecies (Reed *et al.* 2012, p. 888; Underwood *et al.* 2013, p. 1), which means that it will require active management in perpetuity (Scott *et al.* 2005, pp. 383–389; Scott *et al.* 2010, pp. 92–93: Goble *et al.* 2012, pp. 869–872). Management actions aimed at reducing or eliminating predators and control of both vegetation and water levels occurs in the majority of the core wetlands. Sea level rise due to climate change adds a high degree of uncertainty to the net gain or loss of foraging and breeding habitat, which will likely challenge current management strategies.

Despite these ongoing threats, the Hawaiian stilt population is stable to increasing population (Reed *et al.* 2011b, pp. 475–476, 478–479; USFWS 2011a, p. iv; DOFAW 2020). We conclude that the Hawaiian stilt population has maintained resiliency, redundancy, and representation over the past few decades. Having multiple breeding populations spread out across the main Hawaiian Islands affords the subspecies some protection from both stochastic and catastrophic events. Additionally, the subspecies will continue to be monitored in the biannual waterbird count, as well as at numerous NWRs across the State, to detect any changes that reflect a change in the current status of the subspecies. The current status of the subspecies has improved from the time of listing.

Considering the best available information, including the stability of the population demonstrated over decades, the new data presented in the preliminary 2019 PVA, and the demonstrated adaptability and resiliency of the subspecies, in combination with the expectation that existing conservation actions at their present scope and intensity will continue into the foreseeable future, we conclude that the subspecies no longer meets the Act's definition of an endangered species throughout all of its range. Therefore, we proceed with determining whether the Hawaiian stilt is likely to become endangered within the foreseeable future throughout all of its range.

To determine if a species is considered a threatened species under the Act, we look to future threats facing the species and how the species will likely respond to those threats. The foreseeable future considers population status, trends, and threats for the species. Collective management efforts aimed at the subspecies for the conservation of Hawaiian stilt have been sufficient to maintain a stable population, and it appears that the subspecies is at or near carrying capacity—limited primarily by amount of managed wetland habitat as this is a conservation-reliant subspecies. Hawaiian stilts continue to face significant ongoing threats, as discussed under Summary of Biological Status and Threats. The threat of predation of Hawaiian stilt eggs, chicks, and adults by a myriad of animals is ongoing, despite implementation of predator control at most core wetlands and many supporting wetlands (Tables 1 and 2). Impacts of sea level rise are expected to progressively increase, resulting in moderate impacts on coastal habitat by 2040. Pressure to alter ground and

surface water continues with ongoing urban development. Although the preliminary results from a 2019 PVA predict a zero percent chance of extinction over 80 years as long as current management practices continue, it also notes that the population is sensitive to changes in vital rates. For example, if adult mortality increases by just 10 percent, the species has a high probability of extinction (Reed and van Rees 2019 p. 1). Thus, the best available information is consistent with these threats (excluding sea-level rise) having been managed sufficiently over the past several decades such that reproductive success in managed sites supports a stable Statewide population, so that the subspecies is not immediately in danger of extinction. The PVA does have several limitations that suggests this is only one tool for us to consider reclassification. Foremost is that the PVA does not account for changes in quality or availability of currently managed habitat due to the effects of sea level rise.

The Hawaiian stilt remains vulnerable to the continuing threat of predation and habitat loss and degradation by several means, and maintaining current population levels (and viability) is contingent upon ongoing commitment to management of wetland habitat and predators at their present scope and intensity. In particular, the demographic data used to provide working assumptions of the preliminary results of the 2019 PVA derives from studies on sites with active habitat and predator management, so reducing management efforts would render its conclusions less applicable; risk of extinction appears particularly sensitive to increases in adult mortality (Reed and van Rees 2019 p. 24). Sustained management commitments are necessary to keep these vital rates at manageable levels (*e.g.,* below 34 percent annual adult mortality). Expansion of existing efforts on current core and supporting wetlands and expansion of the habitat and predator management onto new sites (other core, other supporting wetlands or other suitable locations) would greatly enhance the recovery potential of this subspecies.

The threat of sea level rise is also likely to increase over time and can be expected to alter the spatial distribution and quality of wetland habitats and require adaptive changes in which sites will be the focus of management. Thus, after assessing the best available information, we conclude that the Hawaiian stilt is not currently in danger of extinction, but is likely to become in danger of extinction in the foreseeable throughout all of its range (*i.e.,* meets the Act's definition of a threatened species).

Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. The court in *Center for Biological Diversity* v. *Everson,* 2020 WL 437289 (D.D.C. Jan. 28, 2020) (*Center for Biological Diversity*), vacated the aspect of the 2014 Significant Portion of its Range Policy that provided that the Services do not undertake an analysis of significant portions of a species' range if the species warrants listing as threatened throughout all of its range. Therefore, we proceed to evaluating whether the species is endangered in a significant portion of its range—that is, whether there is any portion of the species' range for which both (1) the portion is significant; and (2) the species is in danger of extinction in that portion. Depending on the case, it might be more efficient for us to address the ''significance'' question or the ''status'' question first. We can choose to address either question first. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species' range.

Following the court's holding in *Center for Biological Diversity,* we now consider whether there are any significant portions of the subspecies' range where the subspecies is in danger of extinction now (*i.e.,* endangered). In undertaking this analysis for Hawaiian stilt, we choose to address the status question first—we consider information pertaining to the geographic distribution of both the subspecies and the threats that the subspecies faces to identify any portions of the range where the subspecies is endangered.

Based upon best available information, Hawaiian stilts disperse frequently between the main Hawaiian Islands and they readily colonize newly restored or created habitats suggesting that Hawaiian stilt in Hawaii form one large population (van Rees *et al..* 2020, p. 3, with supporting literature). Thus, there is no biologically meaningful way to break this subspecies' range into portions, and the threats that the subspecies faces affect the subspecies throughout its entire range. This means that no portions of the subspecies' range have a different status from its rangewide status. Therefore, no portion of the subspecies' range can provide a basis for determining that the subspecies is in danger of extinction in a significant portion of its range, and we determine that the subspecies is likely to become in danger of extinction within the foreseeable future throughout all of its range. Our analysis is consistent with the courts' holdings in *Desert Survivors* v. *Department of the Interior,* No. 16–cv–01165–JCS, 2018 WL 4053447 (N.D. Cal. Aug. 24, 2018), and *Center for Biological Diversity* v. *Jewell,* 248 F. Supp. 3d, 946, 959 (D. Ariz. 2017).

Determination of Status

Our review of the best available scientific and commercial information indicates that the Hawaiian stilt meets the definition of a threatened subspecies. Therefore, we propose to reclassify the Hawaiian stilt as a threatened subspecies in accordance with sections 3(20) and 4(a)(1) of the Act.

Proposed Rule Issued Under Section 4(d) of the Act

Background

Section 4(d) of the Act contains two sentences. The first sentence states that the ''Secretary shall issue such regulations as he deems necessary and advisable to provide for the conservation'' of species listed as threatened. The U.S. Supreme Court has noted that statutory language like ''necessary and advisable'' demonstrates a large degree of deference to the agency (see *Webster* v. *Doe,* 486 U.S. 592 (1988)). Conservation is defined in the Act to mean ''the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to [the Act] are no longer necessary.'' Additionally, the second sentence of section 4(d) of the Act states that the Secretary ''may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants.'' Thus, the combination of the two sentences of section 4(d) provides the Secretary with wide latitude of discretion to select and promulgate appropriate regulations tailored to the specific conservation needs of the threatened species. The second sentence grants particularly broad discretion to us when adopting the prohibitions under section 9.

The courts have recognized the extent of the Secretary's discretion under this standard to develop rules that are appropriate for the conservation of a species. For example, courts have

upheld rules developed under section 4(d) as a valid exercise of agency authority where they prohibit take of threatened wildlife or include a limited taking prohibition (see *Alsea Valley Alliance* v. *Lautenbacher,* 2007 U.S. Dist. Lexis 60203 (D. Or. 2007); *Washington Environmental Council* v. *National Marine Fisheries Service,* 2002 U.S. Dist. Lexis 5432 (W.D. Wash. 2002)). Courts have also upheld 4(d) rules that do not address all of the threats a species faces (*see State of Louisiana* v. *Verity,* 853 F.2d 322 (5th Cir. 1988)). As noted in the legislative history when the Act was initially enacted, ''once an animal is on the threatened list, the Secretary has an almost infinite number of options available to him with regard to the permitted activities for those species. He may, for example, permit taking, but not importation of such species, or he may choose to forbid both taking and importation but allow the transportation of such species'' (H.R. Rep. No. 412, 93rd Cong., 1st Sess. 1973).

Exercising this authority under section 4(d), we have developed a proposed rule that is designed to address the specific threats to and conservation needs of the Hawaiian stilt. Although the statute does not require us to make a ''necessary and advisable'' finding with respect to the adoption of specific prohibitions under section 9, we find that this proposed rule as a whole satisfies the requirement in section 4(d) of the Act to issue regulations deemed necessary and advisable to provide for the conservation of the Hawaiian stilt.

As discussed under Summary of Biological Status and Threats, we have concluded that the Hawaiian stilt is likely to become in danger of extinction within the foreseeable future primarily due to predation by nonnative animals (*i.e.,* mongooses, rats, cats, dogs, carnivorous birds, and bullfrogs); habitat loss and degradation by urban development, altered ground and surface water for urban expansion, overgrowth of nonnative plants, sea level rise associated with climate change (both coastal and groundwater flooding and inundation); disease, primarily botulism caused by the bacterium *Clostridium botulinum* (type C); and environmental contaminants. Additionally, Hawaiian stilt habitat is anticipated to be negatively impacted in the near future by an increase in frequency and intensity of hurricanes associated with climate change, which may also directly harm individuals, eggs, or nesting success through flooding.

The provisions of this proposed 4(d) rule would promote conservation of the Hawaiian stilt by encouraging activities that facilitate conservation and management of the Hawaiian stilt and its habitat where it currently occurs and may occur in the future. Thus, we are encouraging management of the landscape in ways that meet both land management considerations and the conservation needs of the Hawaiian stilt. The provisions of this proposed rule are one of many tools that we would use to promote the conservation of the Hawaiian stilt. This proposed 4(d) rule would apply only if and when we make final the reclassification of the Hawaiian stilt as a threatened subspecies.

Provisions of the Proposed 4(d) Rule

This proposed 4(d) rule would provide for the conservation of the Hawaiian stilt by prohibiting the following activities, except as otherwise authorized or permitted: Take (*i.e.,* harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct); importing or exporting; possession and other acts with unlawfully taken specimens; delivering, receiving, transporting, or shipping in interstate or foreign commerce in the course of commercial activity; or selling or offering for sale in interstate or foreign commerce. These prohibitions would result in regulating a range of human activities that have the potential to affect the viability of the Hawaiian stilt, including agricultural or urban development; recreational and commercial activities; introduction of predators; and direct capture, injury, or killing of Hawaiian stilts. Regulating these activities will help preserve the Hawaiian stilt population. This proposed 4(d) rule would also provide for the conservation of the subspecies by providing select exceptions to the prohibitions for the purpose of promoting conservation of Hawaiian stilt and expansion of their range by increasing flexibility in management activities for State and private landowners. Below we outline each prohibition and any exceptions, as well as provide our justification for their inclusion in this proposed 4(d) rule.

Prohibition of Take

Under the Act, ''take'' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Some of these provisions have been further defined in regulation at 50 CFR 17.3. Take can result knowingly or otherwise, by direct and indirect impacts, intentionally or incidentally. Regulating incidental and intentional take will help preserve the Hawaiian stilt population and decrease synergistic, negative effects from other threats.

Rangewide threats continue to act on the subspecies, and its viability remains reliant on the implementation of conservation actions (see Summary of Biological Status and Threats). However, as explained below, there are a few circumstances in which allowing either intentional or incidental take will benefit the Hawaiian stilt as a subspecies and further its recovery. We have outlined three circumstances below as proposed exceptions to the proposed prohibition of take. By allowing take under these three circumstances, the proposed rule would provide needed protection to the subspecies while allowing management flexibility to benefit the subspecies' long-term conservation.

Proposed Take Exceptions

1. Take that is incidental to conducting lawful nonnative predator control or conducting lawful habitat management activities (from a Service and DOFAW-approved list of such activities) for the conservation benefit of Hawaiian stilts or other native waterbirds.

Rationale: Control of introduced predators and habitat management are identified as primary recovery actions for the Hawaiian stilt (USFWS 2011, p. 10). Predation is the greatest threat to Hawaiian stilts, followed by habitat loss and degradation or modification. We propose a take exception for the incidental take of stilts during control of predators (*e.g.,* mongoose, dogs (feral and domestic), feral pigs, cats (feral and domestic), rats, bullfrogs, cattle egrets, and barn owls) designed to protect stilts (or other native waterbirds) or habitat management activities designed to protect stilts (or other native waterbirds). This exception to the prohibition of take will help to reduce or eliminate the depredation of Hawaiian stilts during all life stages, provide sufficient nesting habitat to support the reproductive needs of the population, and provide our conservation partners the flexibility to practice adaptive management to meet the needs of the subspecies. The Service and DOFAW will maintain a list of acceptable habitat conservation management activities; for the current list, contact the Service or DOFAW. We propose this exception to take year-round.

Predators are managed using a variety of methods, including fencing, trapping,

shooting, and toxicants. All methods must be used in compliance with State and Federal regulations. In addition to the application of the above tools, predator control as defined includes activities related to predator control, such as performing efficacy surveys, trap checks, and maintenance duties. Nesting success is higher for Hawaiian stilts that nest earlier in the season; therefore, implementing predator control during this time may be most beneficial to the subspecies (Price 2020, p. 1).

During lawful predator control, or lawful habitat management activities from the Service and DOFAW-approved list, incidental take of Hawaiian stilts (eggs, chicks, fledglings, or adults) may occur in the form of temporary displacement due to human presence, unintentional injury, or death (*e.g.,* accidental ingestion of chemical approved for predator control, collision or crushing by means of mechanical machinery). Reasonable care must be practiced to minimize the effects of such taking and may include, but is not limited to: (a) Procuring and implementing technical assistance from a qualified biologist(s) on predator control or habitat management methods, techniques, and protocols prior to application of methods; (b) compliance with all applicable regulations and following principles of integrated pest management and habitat management; and (c) judicious use of methods and tool adaptations to reduce hazards to Hawaiian stilts (*e.g.,* ingest bait, injury or death from an interaction with mechanical devices).

2. Take by authorized law enforcement officers for the purposes of aiding or euthanizing sick, injured, or orphaned Hawaiian stilts; disposing of dead specimens; and salvaging a dead specimen that may be used for scientific study.

Rationale: The increased interaction of Hawaiian stilts with the human environment subsequently increases the likelihood of encounters with orphaned, injured, sick, or dead Hawaiian stilts. By providing an exception for law enforcement officers in consultation with State wildlife biologists to provide aid to orphaned, injured, or sick Hawaiian stilts, or disposal or salvage of dead Hawaiian stilts, we increase the odds for saving orphaned, injured, or sick Hawaiian stilts and may maximize the use of carcasses for research purposes that may inform management decisions and further the recovery of the subspecies.

Prohibition of Import, Export, and Interstate and Foreign Commerce

We have proposed to include the prohibition of import, export, interstate and foreign commerce, and sale or offering for sale in such commerce of the Hawaiian stilt in this proposed rule to complement and support our proposal to include the prohibition of take. Because the Hawaiian stilt is not known to be held in captivity for commercial, recreational, scientific, or educational purposes, any such exchange of the subspecies would require removing one or more individuals (including eggs) from the sole population of the subspecies resulting in take. Additionally, because the Hawaiian stilt is a conservation-reliant subspecies and likely to become in danger of extinction within the foreseeable future due to the threats discussed above and under Summary of Biological Status and Threats, any major reduction in population size by intentional removal of individuals would negatively impact the viability of the subspecies. Therefore, regulating the import, export, and interstate and foreign commerce of Hawaiian stilt will help to preserve their population. There are no proposed exceptions for these prohibitions.

Prohibition of Possession and Other Acts With Unlawfully Taken Specimens

Although the Hawaiian stilt population is currently stable, it is considered a conservation-reliant subspecies and requires active management to maintain this stability. The Hawaiian stilt is not thriving to the degree that its population is considered capable of sustaining unrestricted capture or collection from the wild without the likelihood of negative impacts to the long-term viability of the subspecies. Because capture and collection of Hawaiian stilts remains prohibited as discussed above, maintaining the complementary prohibition on possession and other acts with illegally taken Hawaiian stilts will further discourage such illegal take. Thus, we propose to prohibit the possession, sale, offering for sale, delivery, receiving, carrying, transporting, or shipping of illegally taken Hawaiian stilts intrastate (within State), interstate (between States), and internationally in order to maintain the viability of the Hawaiian stilt population. Regulating these human activities will contribute to the preservation of the subspecies. There are no proposed exceptions to these prohibitions.

We may issue permits to carry out otherwise prohibited activities, including those described above, involving threatened wildlife under certain circumstances. Regulations governing permits are codified at 50 CFR 17.32. With regard to threatened wildlife, a permit may be issued for the following purposes: Scientific purposes, to enhance propagation or survival, for economic hardship, for zoological exhibition, for educational purposes, for incidental taking, or for special purposes consistent with the purposes of the Act. There are also certain statutory exemptions from the prohibitions, which are found in sections 9 and 10 of the Act.

We recognize the special and unique relationship with our State natural resource agency partners in contributing to conservation of listed subspecies. State agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State agencies, because of their authorities and their close working relationships with local governments and landowners, are in a unique position to assist us in implementing all aspects of the Act. In this regard, section 6 of the Act provides that we shall cooperate to the maximum extent practicable with the States in carrying out programs authorized by the Act. Therefore, any qualified employee or agent of a State conservation agency that is a party to a cooperative agreement with us in accordance with section 6(c) of the Act, who is designated by his or her agency for such purposes, would be able to conduct activities designed to conserve the Hawaiian stilt that may result in otherwise prohibited take without additional authorization.

Nothing in this proposed 4(d) rule would change in any way the recovery planning provisions of section 4(f) of the Act, the consultation requirements under section 7 of the Act, or our ability to enter into partnerships for the management and protection of the Hawaiian stilt. However, interagency cooperation may be further streamlined through planned programmatic consultations for the subspecies between us and other Federal agencies, where appropriate. We ask the public, particularly State agencies and other interested stakeholders that may be affected by the proposed 4(d) rule, to provide comments and suggestions regarding additional guidance and methods that we could provide or use, respectively, to streamline the implementation of this proposed 4(d) rule (see Information Requested).

If finalized, the provisions in this proposed 4(d) rule would address only Federal Endangered Species Act requirements, and would not change State law. State law requires the issuance of a temporary license for the take of endangered and threatened animal species, if the activity otherwise prohibited is: (1) For scientific purposes or to enhance the propagation or survival of the affected species (HRS 195D–4(f)); or (2) incidental to an otherwise lawful activity (HRS 195D–4(g)). Incidental take licenses require the development of a habitat conservation plan (HRS 195D–21) or a safe harbor agreement (HRS 195D–22), and consultation with the State's Endangered Species Recovery Committee. Therefore, if this rule is finalized, persons would still need to obtain a State permit for some of the actions described in this proposed 4(d) rule.

Required Determinations

Clarity of the Rule

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

(1) Be logically organized;

(2) Use the active voice to address readers directly;

(3) Use clear language rather than jargon;

(4) Be divided into short sections and sentences; and

(5) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in **ADDRESSES**. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

We have determined that environmental analyses as defined under the authority of the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*), need not be prepared in connection with determining and implementing a species' listing status under the Endangered Species Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

References Cited

A complete list of references cited in this rulemaking is available on the internet at *http://www.regulations.gov* and upon request from the Pacific Islands Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this proposed rule are the staff members of the U.S. Fish and Wildlife Service's Species Assessment Team and the Pacific Islands Fish and Wildlife Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

■ 1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

■ 2. Amend § 17.11(h) by revising the entry for ''Stilt, Hawaiian'' under BIRDS in the List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * * *

(h) * * *

Common name	Scientific name	Where listed	Status	Listing citations and applicable rules
*	*	*	*	*
Birds				
*	*	*	*	*
Stilt, Hawaiian (aeo)	*Himantopus mexicanus knudseni.*	Wherever found	T	35 FR 16047, 10/13/1970; [**Federal Register** citation of the final rule]; 50 CFR 17.41(j)4d.
*	*	*	*	*

■ 3. Amend § 17.41 by adding paragraph (j) to read as follows:

§ 17.41 Special rules—birds.

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(j) Hawaiian stilt (*Himantopus mexicanus knudseni*) (aeo).

(1) *Definition.* For the purposes of this paragraph (j), ''qualified biologist'' means an individual with a combination of academic training in the area of wildlife biology or related discipline and demonstrated field experience in the identification and life history of the Hawaiian stilt.

(2) *Prohibitions.* The following prohibitions that apply to endangered wildlife also apply to the Hawaiian stilt. Except as provided under paragraph (j)(3) of this section and §§ 17.4 through 17.6, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to this species:

(i) Import or export, as set forth at § 17.21(b) for endangered wildlife.

(ii) Take, as set forth at § 17.21(c)(1) for endangered wildlife.

(iii) Possession and other acts with unlawfully taken specimens, as set forth at § 17.21(d)(1) for endangered wildlife.

(iv) Interstate or foreign commerce in the course of commercial activity, as set forth at § 17.21(e) for endangered wildlife.

(v) Sale or offer for sale, as set forth at § 17.21(f) for endangered wildlife.

(3) *Exceptions from prohibitions.* In regard to this species, you may:

(i) Conduct activities as authorized by a permit under § 17.32.

(ii) Take, as set forth at § 17.21(c)(2) through (4) for endangered wildlife and

(c)(6) and (7) for endangered migratory birds.

(iii) Take when the take is incidental to an otherwise lawful activity caused by:

(A) *Nonnative predator control or habitat management activities for Hawaiian stilt or other native waterbird conservation purposes.* A qualified biologist, or personnel working under their direct supervision, may incidentally take Hawaiian stilt in the course of carrying out nonnative predator control or habitat management activities for Hawaiian stilt conservation purposes if reasonable care is practiced to minimize effects to the Hawaiian stilt as follows:

(*1*) Nonnative predator control activities for the conservation of the Hawaiian stilt, or other native Hawaiian waterbirds, which may include the use of fencing, trapping, shooting, and toxicants to control predators, and related activities such as performing efficacy surveys, trap checks, and maintenance duties. Reasonable care for predator control activities may include, but is not limited to, procuring and implementing technical assistance from a qualified biologist on predator control methods and protocols prior to application of methods; compliance with all State and Federal regulations and guidelines for application of predator control methods; and judicious use of methods and tool adaptations to reduce the likelihood of Hawaiian stilt ingesting bait or being injured or dying from interaction with mechanical devices. A list of currently acceptable predator control methods is available by contacting the Service or State of Hawaii Department of Land and Natural Resources, Division of Forestry and Wildlife.

(*2*) Habitat management activities for the conservation of the Hawaiian stilt, or other native waterbirds, as long as the activities benefit Hawaiian stilts, which may include: Weeding, mowing, fertilizing, herbicide application, water level maintenance, water quality monitoring and maintenance, sedimentation and dead or decaying animal monitoring and maintenance, outplanting native plants, creating mudflats, and irrigating wetland habitat for conservation purposes (if mechanical mowing of pastures adjacent to wetlands for conservation management purposes is not feasible, alternate methods of keeping grass short may be used, such as grazing); emergency botulism outbreak responses; and large-scale restoration of native habitat (*e.g.,* feral ungulate control, fencing). Reasonable care for habitat management may include, but is not limited to, procuring and implementing technical assistance from a qualified biologist on habitat management activities, and documented best efforts to minimize Hawaiian stilt exposure to hazards (*e.g.,* predation, crushing by vehicle or machinery). A list of currently acceptable management activities is available by contacting the Service or State of Hawaii Department of Land and Natural Resources, Division of Forestry and Wildlife.

(B) *Actions carried out by law enforcement officers in the course of official law enforcement duties.* When acting in the course of their official duties, State and local government law enforcement officers, working in conjunction with authorized wildlife biologists and wildlife rehabilitators in the State of Hawaii, may take Hawaiian stilt for the following purposes:

(*1*) Aiding or euthanizing sick, injured, or orphaned Hawaiian stilt;

(*2*) Disposing of a dead specimen; or

(*3*) Salvaging a dead specimen that may be used for scientific study; or

(*4*) Possession and other acts with unlawfully taken specimens as provided in § 17.21(d)(2) through (4).

(4) *Reporting and disposal requirements.* Any injury or mortality of Hawaiian stilt associated with the actions excepted under paragraphs (j)(3)(iii)(A) and (B) of this section must be reported to the Service and authorized State wildlife officials within 48 hours, and specimens may be disposed of only in accordance with directions from the Service. Reports should be made to the Service's Office of Law Enforcement (contact information is at 50 CFR 10.22) or the Service's Pacific Islands Fish and Wildlife Office (contact information for the Service regional offices is at 50 CFR 2.2). Alternatively, the State of Hawaii Department of Land and Natural Resources, Division of Forestry and Wildlife, may be contacted.

Signing Authority

The Principal Deputy Director, Exercising the Delegated Authority of the Director, U.S. Fish and Wildlife Service, approved this document and authorized the undersigned to sign and submit the document to the Office of the Federal Register for publication electronically as an official document of the U.S. Fish and Wildlife Service. Martha Williams, Principal Deputy Director, Exercising the Delegated Authority of the Director, U.S. Fish and Wildlife Service, approved this document on March 16, 2021, for publication.

Dated: March 16, 2021.

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[FR Doc. 2021–05846 Filed 3–24–21; 8:45 am]

BILLING CODE 4333–15–P