

**Draft Amendment to the Recovery Plan for Northwestern Hawaiian Islands Passerines: Laysan Finch (*Telespiza cantans*), Nihoa Finch (*Telespiza ultima*), and Nihoa Millerbird (*Acrocephalus familiaris kingi*)**

**Original Approved:** [October 1984](#)

**Original Prepared by:** Pacific Region, U.S. Fish and Wildlife Service

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**Species addressed in Draft Amendment:** Laysan Finch (*Telespiza cantans*), Nihoa Finch (*Telespiza ultima*), and Nihoa Millerbird (*Acrocephalus familiaris kingi*)

We have analyzed the best available scientific and commercial information and find that an amendment to the recovery criteria for these species is warranted. The current recovery criteria have been in place since the recovery plan was completed in 1984. In this proposed modification, we discuss the adequacy of the existing recovery criteria, show amended recovery criteria, and present the rationale supporting the proposed recovery plan modification. We consider new information about the threat of sea level rise to these species. The proposed modification of the criteria is presented as an appendix that supplements the recovery plan, superseding only page 31 in Section II (Recovery) of the recovery plan (USFWS 1984).

## **BACKGROUND INFORMATION**

Recovery plans should be consulted frequently, used to initiate recovery activities, and updated as needed. A review of the recovery plan and its implementation may show that the plan is out of date or its usefulness is limited, and therefore warrants modification. Keeping recovery plans current ensures that the species benefits through timely, partner-coordinated implementation based on the best available information. The need for, and extent of, plan modifications will vary considerably among plans. Maintaining a useful and current recovery plan depends on the scope and complexity of the initial plan, the structure of the document, and the involvement of stakeholders.

An amendment involves a substantial rewrite of a portion of a recovery plan that changes any of the statutory elements. The need for an amendment may be triggered when, among other possibilities: (1) the current recovery plan is out of compliance with regard to statutory requirements; (2) new information has been identified, such as population-level threats to the species or previously unknown life history traits, that necessitates new or refined recovery actions and/or criteria; or (3) the current recovery plan is not achieving its objectives. The amendment replaces only that specific portion of the recovery plan, supplementing the existing recovery plan, but not completely replacing it. An amendment may be appropriate in cases where significant plan improvements are needed, but resources are too scarce to accomplish a full recovery plan revision in a short time.

Although it would be inappropriate for an amendment to include changes in the recovery program that contradict the approved recovery plan, it could incorporate study findings that enhance the scientific basis of the plan, or that reduce uncertainties as to the life history, threats, or species' response to management. An amendment could serve a critical function while awaiting a revised recovery plan by: (1) refining and/or prioritizing recovery actions that need to

be emphasized, (2) refining recovery criteria, or (3) adding a species to a multispecies or ecosystem plan. An amendment can, therefore, efficiently balance resources spent on modifying a plan against those spent on managing implementation of ongoing recovery actions.

#### **METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT**

We utilized a group of expert biologists already involved in planning conservation efforts such as translocations and improvements to the monitoring methods for these species and their habitats in the uninhabited northwest Hawaiian Islands. It included representatives from Ecological Services staff of the Pacific Islands Fish and Wildlife Office of the U.S. Fish and Wildlife Service, the Service's National Wildlife Refuge System, and a representative from a non-profit that has supported translocation and monitoring efforts. We met in person, by phone and through email to develop these draft amended downlisting and delisting criteria. A priority of the group was to ensure the threats associated with island endemism and rising sea levels were addressed in the criteria. The working group was composed of species experts with firsthand experience with these species and their habitats, and their knowledge of the species' current status and threats supplemented the most recent information provided in the 5-year reviews (USFWS 2017a,b,c).

Peer review of the updated delisting criteria will be concurrent with the public comment period on the draft amendment, and comments received will be incorporated into the final recovery plan amendment.

#### **ADEQUACY OF RECOVERY CRITERIA**

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

#### **Recovery Criteria**

See previous version of criteria on page 31 in Part II (Recovery) of the Recovery Plan for Northwestern Hawaiian Islands Passerines (USFWS 1984).

#### **Synthesis**

In its current form, the recovery plan addresses objectives to perpetuate the populations of each of the species by protecting their habitats from non-native species, by developing techniques to monitor for non-native species, and by regularly surveying the populations to verify they are stable. While important for protection and management, none of these objectives would result in direct improvement to the status of the species so that it progresses toward recovery. The new criteria take into consideration the need for redundancy in the populations through assisted colonization to additional islands, managing threats that directly impact the species, and maintaining genetic diversity across the populations.

For instance, in 1967 the Service introduced Laysan finches to Pearl and Hermes Reef, supplemented the new population with additional birds over the next six years, and successfully established a population there. Morphological measurements by Conant (1988) and genetic

analysis by Callicrate (2015) show the Pearl and Hermes Reef population has marked morphological differentiation but only slight indications of genetic differentiation from the population on Laysan Island. The species has experienced periods where the population size was small (the population was reduced to approximately 100 birds in 1923), which likely resulted in reduced genetic variability (i.e., the species likely experienced a genetic bottleneck). It is probable that most of the currently existing genetic variation of Laysan finches was represented in the translocation to Pearl and Hermes Reef (Tarr *et al.* 1998). Thus, in this instance we do not expect the morphological differences to have been the result of genetic differentiation having taken place in the approximately 50 years since translocation.

Genetic diversity of Nihoa millerbirds on Nihoa is extremely low (Addison and Diamond 2011). In 2011 and 2012, 24 and 26 Nihoa millerbirds, respectively, were translocated to Laysan Island in an effort to establish an additional population that would reduce the species' vulnerability to extinction. This translocation also served as an ecological replacement for the extinct Laysan millerbird (*Acrocephalis familiaris familiaris*), which was extinct by 1923. Post-release monitoring through 2014 showed the population had grown to at least 165 birds (Dalton *et al.* 2014, Freifeld *et al.* 2016). In preparation for a translocation of Nihoa finches, samples were collected from birds across the island to determine whether genetic differentiation exists among geographic locations on the island, i.e., subpopulations (S. Plentovich, USFWS, pers. comm. 2018). The results for Nihoa finches are not available at this time, but these results could influence the scope of the translocation if genetic differentiation is significant. Future introduction efforts for each of these species should ensure that the genetic and morphological characteristics of the source population are evaluated, since such information is readily available.

The population size of these species fluctuate dramatically, and because of their remote location, surveys occur infrequently and often opportunistically, resulting in surveys conducted during different times of the year which can influence the number of birds detected. Because of this variability there is inherent statistical uncertainty around the population trend for each of these species. As with the original criteria, the revised criteria address the need to survey these species, but provide guidance to reduce the statistical uncertainty around the population estimate and trend. The Service has been collaborating with the U.S. Geological Survey's Pacific Islands Ecosystem Research Center to increase confidence in population estimates and population trends for these species, which are surveyed infrequently. Therefore we anticipate analyzing the survey results using an equivalency testing framework which allows for biologically meaningful trends to be statistically assessed (Camp *et al.* 2008, K. Brink, pers. comm. 2018).

#### **AMENDED RECOVERY CRITERIA**

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

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

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

We provide both downlisting and delisting criteria for the Laysan finch, Nihoa finch, and Nihoa millerbird, which will supersede those included in the Recovery Plan for Northwestern Hawaiian Islands Passerines (USFWS 1984), as follows:

#### **Downlisting Recovery Criteria**

The Laysan finch, Nihoa finch, and Nihoa millerbird will be considered for downlisting when:

Criterion 1: Viable, self-sustaining populations of the species occur on at least two islands that are resistant to ocean inundation.

Criterion 2: Over a minimum 15-year period, populations of the species show a stable or increasing trend (i.e., finite rate of annual population increase, or Lambda, greater than or equal to 1) that is statistically significant, as determined through quantitative surveys of abundance, or an index of abundance derived from quantitative surveys or demographic monitoring.

Criterion 3: Threats to the species, including those from small population size, disease, climate variability, and invasive species, are sufficiently managed or addressed to allow Criteria 1 and 2 above to be met.

Criterion 4: The genetic diversity of extant populations of the species is maintained, and this diversity is represented and maintained in all translocated populations.

In addition, any rule to downlist the Laysan finch, Nihoa finch, or Nihoa millerbird should incorporate a rule under section 4(d) of the Act granting protections regarding take.

## **Delisting Recovery Criteria**

The Laysan finch, Nihoa finch, and Nihoa millerbird will be considered for delisting when:

Criterion 1: Viable, self-sustaining populations of the species occur on at least four islands that are resistant to ocean inundation.

Criterion 2: Over a minimum 30-year period, populations of the species show a stable or increasing trend (i.e., finite rate of annual population increase, or Lambda, greater than or equal to 1) that is statistically significant, as determined through quantitative surveys of abundance, or an index of abundance derived from quantitative surveys or demographic monitoring.

Criterion 3: Threats to the species, including those from small population size, disease, climate variability, and invasive species, are sufficiently managed or addressed to allow Criteria 1 and 2 above to be met.

Criterion 4: The genetic diversity of extant populations of the species is maintained, and this diversity is represented and maintained in all translocated populations.

All classification decisions consider the following five factors: (A) the present or threatened destruction, modification, or curtailment of the species' habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms (outside the ESA, and taking into account the efforts by states and other organizations to protect the species or habitat); and (E) other natural or manmade factors affecting its continued existence. When delisting or downlisting a species, we first propose the action in the *Federal Register* and seek public comment and peer review. Our final decision is announced in the *Federal Register*.

## **Rationale for Recovery Criteria**

The amended downlisting and delisting criteria are based upon the best available scientific and commercial information about the species' biology and habitat. Timeframes for downlisting and delisting are based on our current understanding of life history characteristics of the species, such as fecundity and age at first reproduction, which influence how quickly a population can grow. In general, island species are believed to exhibit a shift toward slower life history strategies in which reproduction is delayed, clutch size is reduced, parental care is extended, and adults have a relatively long lifespan (Cody 1966, MacArthur and Wilson 1967). Demographic information and reproductive biology for the Laysan finch were summarized by Morin (1992). The Laysan finch's reproductive strategy is adaptive to an unpredictable environment, with reproductive success increased through a long lifespan and a long breeding season with the potential for multiple broods in a year. Specific demographic data are not available for the Nihoa millerbird or Nihoa finch. However, all three species are small passerine birds that are likely to be generally similar in life history characteristics and are subject to similar environmental stressors such as temperature extremes, storms, drought, and fluctuations in food availability that exert selection pressure on breeding strategy, so we determined it is appropriate for recovery criteria to be similar among the three species. We concluded that the Laysan finch, Nihoa millerbird, and Nihoa finch have the potential for intermediate population growth if environmental stressors are

reduced. In Downlisting Criterion 2 and Delisting Criterion 2, the duration of time that the population must be stable or increasing reflects the species' intermediate intrinsic potential for growth, in combination with the remoteness of the population and the consequently infrequent opportunities for population surveys (resulting in more statistical uncertainty). The difference in duration between Downlisting Criterion 2 and Delisting Criterion 2 reflects the need for greater statistical confidence about the population trend to support the conclusion that delisting is appropriate.

The number of populations identified in Downlisting Criterion 1 provides improved redundancy from current levels (one or no populations on islands resilient to ocean inundation); for Delisting Criterion 1, the number of populations was increased such that the species would occupy all known potential habitat to further improve redundancy supporting delisting.

According to the most recent 5-year reviews (USFWS 2017a,b,c), ongoing threats to the Laysan finch, Nihoa finch, and Nihoa millerbird include habitat loss and degradation, nonnative species (invasive insects and plants, potential introduction of nonnative competitors or predators), the inherently small and isolated populations, environmental catastrophes such as storms, and climate change and sea level rise. Multiple invasive plant species occur on Laysan Island with control efforts in progress; on Nihoa, habitat degradation is caused by sandbur (*Cenchrus echinatus*) and outbreaks of the gray bird grasshopper (*Schistocerca nitens*). There is an ongoing risk of introduction of rats and yellow crazy ants from visiting vessels. Inundation projections indicate Laysan Island is particularly vulnerable to progressive loss of land area. Avian diseases (West Nile virus and avian influenza) also pose a risk if introduced to the islands. The recovery criteria address these threats to the species. Population size and trend sufficient to meet Downlisting Criterion 2 and Delisting Criterion 2 would also protect the species from impacts related to small population size (Factor E), such as vulnerability to stochastic events. Maintenance of genetic diversity would also minimize a risk specific to small population size (Factor E) and meet Downlisting Criterion 4 and Delisting Criterion 4. Effective management of threats from habitat degradation/nonnative species (Factors A, C, E), disease (Factor C), and small population size (Factor E) that minimizes mortality and meets population targets would meet Downlisting Criterion 3 and Delisting Criterion 3. Establishing a breeding population on additional islands would meet Downlisting Criterion 1 and Delisting Criterion 1 and help to protect the species in the event of climate change impacts from storms or sea level rise (Factors A, E) or other threats causing catastrophic loss of population on specific islands.

The Service uses the conservation biology principles of resiliency, representation, and redundancy (Shaffer and Stein 2000) as a lens to evaluate current and future condition of species. The amended recovery criteria for Laysan finch, Nihoa finch, and Nihoa millerbird will allow meeting recovery goals by: (1) managing for stable or increasing populations with adequate reproduction and recruitment (resiliency), (2) ensuring the ecological, morphological, behavioral, and genetic diversity of the species is conserved within their current range (representation), and (3) recommending assisted colonization to additional locations (redundancy). The recovery criteria are objective and measurable. Information is accurate, unbiased, and based upon the best known data at this time. Information sources include but are not limited to the most recent 5-year reviews (USFWS 2017a,b,c), and expert opinion.

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