

Nihoa Finch
(Telespiza ultima)

5-Year Review
Summary and Evaluation

U.S. Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
Honolulu, Hawaii

5-YEAR REVIEW
Species reviewed: Nihoa Finch
(Telespiza ultima)

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5-YEAR REVIEW
Nihoa Finch (*Telespiza ultima*)

1.0 GENERAL INFORMATION

1.1 Reviewers

Lead Regional Office:

Region 1, Endangered Species Program, Division of Recovery, Jesse D'Elia,
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Lead Field Office:

Pacific Islands Fish and Wildlife Office, Loyal Mehrhoff, Field Supervisor, (808)
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Cooperating Field Office(s):

N/A

Cooperating Regional Office(s):

N/A

1.2 Methodology used to complete the review:

This review was conducted by staff of the Pacific Islands Fish and Wildlife Office (PIFWO) of the U.S. Fish and Wildlife Service (USFWS) between June 2010 and July 2011. The recovery plan for northwestern Hawaiian Islands passerines (USFWS 1984) was one source of information for this five-year review of the Nihoa finch (*Telespiza ultima*). Considerably more recent information about the status and biology of this species was obtained from additional sources, including new scientific information about the Nihoa finch and threats to its continued existence. The draft 5-year review was then reviewed by the Recovery Program Leader and the Assistant Field Supervisor for Endangered Species before submission to the Field Supervisor for approval.

1.3 Background:

1.3.1 FR Notice citation announcing initiation of this review:

U.S. Fish and Wildlife Service. 2009. Endangered and threatened wildlife and plants; initiation of 5-year reviews of 103 species in Hawaii. Federal Register 74(49):11130-111333.

1.3.2 Listing history

Original Listing

FR notice: U.S. Fish and Wildlife Service. 1967. Native fish and wildlife: Endangered species. Federal Register 32(48): 4001.

Date listed: March 11, 1967

Entity listed: Species

Classification: Endangered

Revised Listing, if applicable

FR notice: N/A

Date listed: N/A

Entity listed: N/A

Classification: N/A

1.3.3 Associated rulemakings: None

1.3.4 Review History:

Species status review FY 2011 Recovery Data Call (September 2011): Uncertain

Recovery achieved:

1 (0-25%) (FY 2007 Recovery Data Call – last year reported)

1.3.5 Species' Recovery Priority Number at start of this 5-year review: 2

1.3.6 Current Recovery Plan or Outline

Name of plan or outline: Northwestern Hawaiian Islands passerines recovery plan.

Date issued: October 4, 1984

Dates of previous revisions, if applicable: N/A

2.0 REVIEW ANALYSIS

2.1 Application of the 1996 Distinct Population Segment (DPS) policy

2.1.1 Is the species under review a vertebrate?

Yes

No

2.1.2 Is the species under review listed as a DPS?

Yes

No

2.1.3 Was the DPS listed prior to 1996?

Yes

No

2.1.3.1 Prior to this 5-year review, was the DPS classification reviewed to ensure it meets the 1996 policy standards?

Yes

No

2.1.3.2 Does the DPS listing meet the discreteness and significance elements of the 1996 DPS policy?

Yes

No

2.1.4 Is there relevant new information for this species regarding the application of the DPS policy?

Yes

No

2.2 Recovery Criteria

2.2.1 Does the species have a final, approved recovery plan containing objective, measurable criteria?

Yes

No

2.2.2 Adequacy of recovery criteria.

2.2.2.1 Do the recovery criteria reflect the best available and most up-to date information on the biology of the species and its habitat?

Yes

No

2.2.2.2 Are all of the 5 listing factors that are relevant to the species addressed in the recovery criteria?

Yes

No

2.2.3 List the recovery criteria as they appear in the recovery plan, and discuss how each criterion has or has not been met, citing information:

Three overarching objectives for downlisting are provided in the recovery plan for the three Northwestern Hawaiian Island (NWHI) Passerines (USFWS 1984). These objectives address the elimination or mitigation of human threats, especially the introduction of alien species, on the islands where these species occur in order to restore and protect the natural functioning of these islands' ecosystems. The first two

objectives address listing factors A, C, and E. Factors B and D are not known to be threats to this species. Alien species such as herbivores or invasive plants can modify the Nihoa finch's habitat (factor A); introduced mammals such as rats can prey on the finches and alien species can be vectors for pathogens, such as avian poxvirus and avian malaria, to both of which Nihoa finches may be susceptible as Laysan finches are (factor C; Morin and Conant 2002, Sincock and Kridler 1977, Warner 1968); alien herbivores, particularly granivores, may compete with finches for food (factor E). The third objective, verifying the existence of relatively stable numbers of birds, also addresses these factors and additional threats that fall under factor E (*e.g.*, demographic and environmental stochasticity, global climate change) by monitoring the population-level impacts of threats to the finch.

1. The first of these objectives is to put the necessary mechanisms in place that will protect these islands from invasion by alien species.

This recovery objective has been met in that quarantine procedures exist and are strictly enforced for all visitors permitted to visit the islands. However, these procedures do not protect the islands from biological invasions that may result from vessel groundings and other chance occurrences.

2. The second objective is to establish effective and reliable mechanisms to monitor for alien organisms.

This recovery objective has not been met.

3. The third objective is to verify the existence of reasonably stable populations of the Nihoa finch and the other two NWHI passerines at least annually.

This recovery objective has not been met for the Nihoa finch. The Nihoa finch population is small and estimates fluctuate widely between years (from 1,000 to 4,000 individuals) (Morin and Conant 2002). Current survey methods are insufficient to adequately monitor population size or trends with confidence (H. Freifeld, USFWS, pers. comm. 2010). Funds have been requested to evaluate and improve monitoring methods. The surveys do not in themselves change the status of the species, but understanding the status of the species is necessary to determine impacts of recovery efforts or catastrophic events.

2.3 Updated Information and Current Species Status

2.3.1 Biology and Habitat

2.3.1.1 New information on the species' biology and life history:

No new information.

2.3.1.2 Abundance, population trends (e.g. increasing, decreasing, stable), demographic features (e.g., age structure, sex ratio, family size, birth rate, age at mortality, mortality rate, etc.), or demographic trends:

The most recent population estimate is 2,807 (± 744 , 95 percent CI) from surveys in 2007 (BirdLife International 2011). Determining the population trend is difficult because population estimates based on survey data fluctuate widely between years. This fluctuation is thought to be in part real changes in numbers and in part an artifact of survey methodology. Efforts currently are underway in collaboration with USGS Pacific Island Ecosystems Research Center to review and revamp survey methods for this species (and the Nihoa millerbird) to improve the quality of data for estimation of population size and trend (Banko *in litt.* 2010).

2.3.1.3 Genetics, genetic variation, or trends in genetic variation (e.g., loss of genetic variation, genetic drift, inbreeding, etc.):

No new information.

2.3.1.4 Taxonomic classification or changes in nomenclature:

No new information.

2.3.1.5 Spatial distribution, trends in spatial distribution (e.g. increasingly fragmented, increased numbers of corridors, etc.), or historic range (e.g. corrections to the historical range, change in distribution of the species' within its historic range, etc.):

No new information. See above regarding monitoring methods.

2.3.1.6 Habitat or ecosystem conditions (e.g., amount, distribution, and suitability of the habitat or ecosystem):

It is thought that the introduced grasshopper *Schistocerca nitens* is causing the degradation and loss of habitat. Periodic population eruptions lead to the virtual defoliation of the island and may prove to be a significant threat (BirdLife International 2011). Fire is a past and potential threat as are storms and stochastic events (BirdLife International 2011).

2.3.1.7 Other:

Discussion is underway of possible translocation of this species to establish additional populations, but have not progressed sufficiently to affect the status of this species. Field work has been ongoing the past several years focused on the Nihoa millerbird (*Acrocephalus familiaris*) in

preparation for implementing millerbird translocations to Laysan. This field work will also benefit the Nihoa finch, by improving survey methodology for both species as well as developing translocation protocols that may be used for Nihoa finch translocations in the future.

2.3.2 Five-Factor Analysis (threats, conservation measures, and regulatory mechanisms)

2.3.2.1 Present or threatened destruction, modification or curtailment of its habitat or range:

See section 2.3.1.6, above and synthesis below.

2.3.2.2 Overutilization for commercial, recreational, scientific, or educational purposes:

Not considered a threat to this species.

2.3.2.3 Disease or predation:

West Nile virus and avian flu may pose a risk to the Nihoa finch if these diseases reach Hawai`i and the Northwestern Hawaiian Islands. The susceptibility of the Nihoa finch to avian malaria and avian poxvirus is unknown, however, both diseases are known to be severe threats to the Laysan finch (Warner 1968, Sincock and Kridler 1977) and most of the endemic forest birds in the main Hawaiian Islands.

2.3.2.4 Inadequacy of existing regulatory mechanisms:

Not considered a threat to this species.

2.3.2.5 Other natural or manmade factors affecting its continued existence:

The Nihoa finch is at risk from the special threats faced by small, isolated populations. Chance environmental occurrences, such as prolonged droughts or severe storms, or anthropogenic threats such as the introduction of rats or other predators to Nihoa, could lead rapidly to major population decline or extinction owing to loss of prey and cover, reproductive failure, or direct mortality. Single, small populations such as the Nihoa finch's also face extinction risk from demographic stochasticity, or changes to population traits such as sex-ratio and age-structure that can influence reproduction, population size, and population trend.

Climate change may also pose a threat to the Nihoa finch, as its range includes low-elevation habitat. However, current climate change models

do not allow us to predict specifically what those effects, and their extent, would be for this species.

2.4 Synthesis

The Nihoa finch currently exists as a single, small population on Nihoa Island. The population is relatively small (the most recent estimate is $2,807 \pm 744$ [95% CI; BirdLife International 2011]). Population estimates based on survey data fluctuate widely between years; this fluctuation is thought to be in part real changes in numbers and in part an artifact of survey methodology. Efforts currently are underway in collaboration with USGS Pacific Island Ecosystems Research Center to review and revamp survey methods for this species (and the Nihoa millerbird) to improve the quality of data for estimation of population size and trend (Banko *in litt* 2010).

The Nihoa finch is threatened by degradation and loss of habitat resulting from invasive alien species such as the gray bird grasshopper, the possible introduction of new diseases to Hawaii and the Northwestern Hawaiian Islands, and especially by the demographic and environmental stochasticity to which small populations are particularly vulnerable. For example, a chance vessel grounding or unauthorized landing on Nihoa that results in the introduction of rats could lead to the rapid demise of the Nihoa finch.

Discussions for establishing a second population of the Nihoa finch are ongoing, but have not progressed very far. The recovery objectives for this species have not been met. Therefore, the Nihoa finch meets the definition of endangered: it remains in danger of extinction throughout its range.

3.0 RESULTS

3.1 Recommended Classification:

Downlist to Threatened

Uplist to Endangered

Delist

Extinction

Recovery

Original data for classification in error

No change is needed

3.2 New Recovery Priority Number: N/A

Brief Rationale:

3.3 Listing and Reclassification Priority Number: N/A

Reclassification (from Threatened to Endangered) Priority Number: _____

Reclassification (from Endangered to Threatened) Priority Number: ____
Delisting (regardless of current classification) Priority Number: ____

Brief Rationale:

4.0 RECOMMENDATIONS FOR FUTURE ACTIONS

- Prevent unauthorized entry to Nihoa Island.
- Improve monitoring for new introductions of alien species throughout the Northwestern Hawaiian Islands.
- Develop accurate survey methods for estimating Nihoa finch population sizes and trends that minimize impacts to other resident species. Monitor finch populations and their habitat.
- Manage the gray bird grasshopper (*Schistocerca nitens*) on Nihoa to prevent outbreaks that negatively impact the resident endangered species.
- Prevent outbreak of avian disease.
- Almost all aspects of Nihoa finch natural history are unknown and thus our ability to manage the finch is hampered. Long-term research that does not impact the island negatively is needed to study the species' ecology.
- Pursue translocation to establish new populations in secure habitat on other islands.

5.0 REFERENCES

Baker, J.D., C.L. Littnan, and D.W. Johnston. 2006. Potential effects of sea level rise on the terrestrial habitats of endangered and endemic megafauna in the Northwestern Hawaiian Islands. *Endangered Species Research* 4: 1-10.

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U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of Nihoa Finch
(*Telespiza ultima*)

Current Classification: E


Recommendation resulting from the 5-Year Review:

- Downlist to Threatened
- Uplist to Endangered
- Delist
- No change needed

Appropriate Listing/Reclassification Priority Number, if applicable: _____

Review Conducted By:

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Assistant Field Supervisor for Endangered Species

Approved  Date SEP 20 2011
Field Supervisor, Pacific Islands Fish and Wildlife Office