

Nihoa Millerbird
(*Acrocephalus familiaris kingi*)

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 Millerbird
(Acrocephalus familiaris kingi)

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5-YEAR REVIEW
Nihoa millerbird /*Acrocephalus familiaris kingi*

1.0 GENERAL INFORMATION

1.1 Reviewers

Lead Regional Office:

Region 1, Endangered Species Program, Division of Recovery, Jesse D'Elia,
(503) 231-2071

Lead Field Office:

Pacific Islands Fish and Wildlife Office, Loyal Mehrhoff, Field Supervisor, (808)
792-9400

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 2008 and July 2010. The Recovery Plan for the Northwestern Hawaiian Islands Passerines. (USFWS 1984), was one source of information for this five-year review of the Nihoa millerbird (*Acrocephalus familiaris kingi*); considerably more recent information about the status and biology of this species were obtained from additional sources, especially from the team (of which the PIFWO lead biologist is a member) developing a translocation project for this species and other researchers recently or currently working on this species. The draft five-year review was then reviewed by the Assistant Field Supervisor for Endangered Species and Acting Deputy Field Supervisor before before submittal 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. 2008. Endangered and threatened wildlife and plants; initiation of 5-year status reviews for 70 species in Idaho, Montana, Oregon, Washington, and the Pacific Islands. Federal Register 73(83):23264-23266.

1.3.2 Listing history

Original Listing

FR notice: U.S. Fish and Wildlife Service. FR notice: USFWS. 1967.

Endangered species list; Federal Register 32: 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 2009 Recovery Data Call (September 2009): Uncertain

Recovery achieved:

1 (0-25%) (FY 2007 Recovery Data Call – this was the last year this was 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: The Recovery Plan for the Northwestern Hawaiian Islands Passerines, 1984.

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:

1. Put the necessary mechanisms in place that will protect [Nihoa Island] from exotic influences.

The Hawaiian Islands National Wildlife Refuge and Papahānaumokuākea Marine National Monument, of which Nihoa Island is a part, enforces strict quarantine procedures to minimize the likelihood of alien species introductions to the island. A primary objective of every trip to Nihoa Island is to control existing alien species as feasible (e.g., removal of invasive alien weeds such as New Zealand spinach [*Tetragonia tetragonioides*]).

2. Establish effective and reliable mechanisms to monitor for exotic organisms;

Other than the opportunistic observations of biologists visiting the island, no standardized methods have been developed or implemented for the detection of new alien species on Nihoa.

3. Periodically assure and verify the existence of [a] reasonably stable [population of the Nihoa millerbird].

Although standardized surveys for the Nihoa millerbird are conducted during each visit to the island, the survey methodology does not generate data adequate for monitoring the status (*i.e.*, increasing/stable/decreasing) of the species.

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:

No new information. See above regarding monitoring methods.

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

Recent analysis indicates that the Nihoa millerbird is among the most genetically depauperate species ever recorded (Addison and Diamond *in review*).

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):

Concern about impacts of the invasive gray bird locust (*Schistocerca nitens*) to Nihoa's ecosystem has risen with observations since 2000 of increasing numbers of this alien species. This species undergoes periodic population explosions that result in the virtual denuding of the island. These extreme herbivory events may ultimately lead to wholesale changes in the island's flora and vegetation structure, with unknown consequences for the Nihoa millerbird and its prey base.

2.3.1.7 Other:

Planning is underway to create a second population of millerbirds on Laysan Islands, where a closely related subspecies once occurred. A draft translocation plan detailing methods and contingencies currently is in peer review. The first translocation will take place in 2011.

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 2.3.2.6, above and synthesis below.

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

Not considered a threat to this species. See synthesis below.

2.3.2.3 Disease or predation:

West Nile virus and avian flu may pose a risk to the Nihoa millerbird if these diseases reach Hawai'i and the Northwestern Hawaiian Islands. The susceptibility of the Nihoa millerbird to avian malaria and avian poxvirus is unknown. Both diseases are known to be severe threats to the Laysan finch 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. See synthesis below.

2.3.2.5 Other natural or manmade factors affecting its continued existence:

The Nihoa millerbird 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, and/or direct mortality. Single, small populations such as the millerbird'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 millerbird, 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 millerbird currently exists as a single, small population on Nihoa Island. The population is relatively small (the most recent estimate is 641 ± 295 [95% CI; Kohley *et al.* 2009]). 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 finch) to improve the quality of data for estimation of population size and trend (Banko *in litt* 2010).

The millerbird is threatened by degradation and loss of habitat resulting from invasive alien species (the alien grasshopper *S. nitens*), 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 millerbird.

Although plans for establishing a second population of millerbird on Laysan Island are proceeding apace, the recovery objectives for this species have not been met. Therefore, the Nihoa millerbird 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:

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

1. Ensure adherence to access restrictions and quarantine protocols in the Northwestern Hawaiian Islands (Factors A and C; introduction of alien species)
2. Field research to inform development of translocation methods (Factor E – single, small, and fluctuating population)
3. Translocation; first to Laysan Island in 2011 (Factor E – single, small, and fluctuating population)
4. Millerbird population and demographic monitoring on Nihoa and improve methods (Factor E – increased extinction risk for single, small, and fluctuating population)
5. Post-release monitoring (Factor E – single, small, and fluctuating population)
6. Determine second translocation site and restoration work needed (Factor C – risk of disease and predation; Factor E – single, small, and fluctuating population)
7. Determine disease susceptibility of millerbirds (Factor C – risk of disease)

5.0 REFERENCES

Addison, J.A. and A.W. Diamond. In review. Population genetics and effective population size of the critically endangered Nihoa Millerbird (*Acrocephalus familiaris kingi*). Conservation Genetics.

Banko, P. 2010. Developing accurate survey methods for estimating population sizes and trends of the critically endangered Nihoa Millerbird and Nihoa Finch. Proposal to USGS 2011 Science Support Partnership program. 5 pp.

Kohley R., P. Luscomb, M. MacDonald, D. Tsukayama. 2009. Nihoa Millerbird Pre-translocation and Nihoa Biological Monitoring Expedition, September 6-18, 2009. Nihoa Island, Northwest Hawaiian Islands, Papahānaumokuākea Marine National Monument, USFWS, Honolulu, Hawaii. 18 pp.

U.S. Fish and Wildlife Service. 1967. Endangered species list. Federal Register 32:4001.

U.S. Fish and Wildlife Service. 1984. Recovery Plan for the Northwestern Hawaiian Islands Passerines. U.S. Fish and Wildlife Service, Portland, OR. iv + 67 pp.

U.S. Fish and Wildlife Service. 2008. Endangered and threatened wildlife and plants; initiation of 5-year status reviews for 70 species in Idaho, Montana, Oregon, Washington, and the Pacific Islands. Federal Register 73(83):23264-23266.

