Laysan finch (honeycreeper) (*Telespiza cantans*)

5-Year Review:
Summary and Evaluation

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

5-YEAR REVIEW
Laysan finch (honeycreeper) (*Telespiza cantans*)

I. GENERAL INFORMATION

A. 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 2006 and June 2007. The review included evaluation of existing and new scientific information about the Laysan finch and threats to its continued existence. The evaluation and draft document provided by the lead PIFWO biologist were reviewed by the Recovery Program Leader and the Assistant Field Supervisor for Endangered Species before final approval.

B. Reviewers

Lead Region --Contact name(s) and phone numbers:
Region 1, Jesse D'Elia, Chief, Division of Recovery, (503) 231-2071

Lead Field Office -- Contact name(s) and phone numbers:
Pacific Islands Fish and Wildlife Office, Gina Shultz, Assistant Field Supervisor for Endangered Species, (808) 792-9400

Cooperating Field Office(s) -- Contact name(s) and phone numbers:
N/A

Cooperating Region(s) -- Contact name(s) and phone numbers:
N/A

C. Background

1. FR Notice citation announcing initiation of this review:

USFWS. 2006. Endangered and threatened wildlife and plants; initiation of 5-year reviews of 70 species in Idaho, Oregon, Washington, Hawaii, and Guam. Federal Register 71(69):18345-18348.

2. Species status:

Stable (FY 2006 Recovery Data Call)

3. Recovery achieved:

1 (0-25%) (FY 2006 Recovery Data Call)

4. Listing history

Original Listing

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

5. Associated actions:

None.

6. Review History:

Species status review (FY 2006 Recovery Data Call (September 2006))

7. Species' Recovery Priority Number at start of review: 8

8. Recovery Plan or Outline

Name of plan: Recovery plan for the Northwestern Hawaiian Islands Passerines. 1984. U.S. Fish and Wildlife Service, Portland, Oregon. 63 pp. + appendices.
Date issued: ctober 4, 1984
Dates of previous revisions: N/A
Indicate if plan is being used: Yes. Some of the actions outlined in the Recovery Plan have been initiated (*e.g.*, measures to prevent the establishment of alien species in the Northwestern Hawaiian Islands) and some have been initiated but not completed (*e.g.*, evaluating potential translocation sites and establishing additional populations) within the historical range of this species. Some recovery actions will require long-term commitments (*e.g.*, controlling/eradicating alien species; monitoring for new introductions of alien species) or may only be necessary intermittently (*e.g.*, implementing actions to eradicate newly introduced species).

II. REVIEW ANALYSIS

A. Application of the 1996 Distinct Population Segment (DPS) policy

1. **Is the species under review listed as a DPS?**

____ *Yes*
__X_ *No*

2. **Was the DPS listed prior to 1996?**

____ *Yes*
____ *No*

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

____ *Yes*
____ *No*

b. **Does the original listed entity meet the discreteness and significance elements of the 1996 DPS policy?**

____ *Yes*
____ *No*

3. **Is there relevant new information that would lead you to re-consider the classification of this species with regard to designation of DPSs (i.e., indicates that there was a problem with the original (post-1996) DPS listing, that there is a need for splitting out or combining DPSs, or that there is some other reason to consider a change in listing that involves DPSs)?**

____ **Yes**
__X_ *No*

B. **Recovery Criteria**

1. **Does the species have a final, approved recovery plan?**

__X_ *Yes*
____ *No*

2. **Does the recovery plan contain recovery (i.e., downlisting or delisting) criteria**

__X__ *Yes*
____ *No*

3. **Adequacy of recovery criteria.**

a. **Do the recovery criteria reflect the best available (i.e., most up-to-date) information on the biology of the species and its habitat?**

_X_ *Yes*
____ *No*

b. **Are all of the 5 listing factors that are relevant to the species addressed in the recovery criteria (and there is no new information to consider regarding existing or new threats)?**

_X_ *Yes*
____ *No*

c. **If you answered *yes* to both II.B.3.a. and II.B.3.b., go to section II.D.**

If you answered *no* to either II.B.3.a. or II.B.3.b, go to section II.C.

4. **List the recovery criteria as they appear in the recovery plan, and discuss how each criterion has or has not been met, citing information. For threats-related recovery criteria, please note which of the 5 listing factors* are addressed by that criterion. If any of the 5-listing factors are not relevant to this species, please note that here.**

A synthesis of the threats (Factors A, C, and E) affecting this species is presented in section II.D. Factors B and D are not known to be threats to this species.

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. Alien species such as herbivores or invasive plants can modify the Laysan 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 Laysan finches are susceptible (factor C; Warner 1968, Sincock and Kridler 1977); 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

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1) Present or threatened destruction, modification or curtailment of its habitat or range;
2) Overutilization for commercial, recreational, scientific, or educational purposes;
3) Disease or predation;
4) Inadqequacy of existing regulatory mechanisms;
5) Other natural or manmade factors affecting its continued existence.

environmental stochasticity, global climate change) by monitoring the population-level impacts of threats to the finch.

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 permitted visitors 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.

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

This recovery objective has not been met.

The third objective is to periodically verify the existence of reasonably stable populations of the Laysan finch and the other two NWHI passerines.

This recovery objective has been met (annually on Laysan Island and sporadically at Pearl and Hermes Reef) in that an ongoing monitoring effort takes place, but surveys do not in themselves change the status of the species.

C. Updated Information and Current Species Status

1. Improved Analyses:

__X__ ***Yes***
____ ***No***

Population viability models conducted by McClung (2005) suggest a relatively low intrinsic risk of extinction for the Laysan finch under current conditions, but a significant increase in extinction risk when the effects of projected sea-level rise were included in the models. The low abundance and variable quality of count data precluded modeling changes in extinction risk owing to habitat alteration by an invasive alien plant at Pearl and Hermes Reef. These modeling experiments also indicated that translocation is likely to be a successful and cost-effective tactic to reduce extinction risk for the Laysan finch.

2. Biology and Habitat:

a. 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 Laysan finch (*Telespiza cantans*) is a relatively large (body length = 19 centimeters [7.5 inches]; Pratt *et al.* 1987) and heavy-billed passerine endemic to the island of Laysan in the Northwestern Hawaiian Islands, where it is the only remaining passerine species (two others, a millerbird and an apapane, became extinct in the early 20th century). This species is sexually dimorphic, with adult males having a yellow head, breast, and back with otherwise gray-brown plumage while adult females have a duller yellow face, throat, and neck, and yellow- and brown-streaked crown. A small population of Laysan finches at Pearl and Hermes Reef was established by translocation in 1967 (Sincock and Kridler 1977). A successful translocation of Laysan finches to Midway Atoll took place in 1905, but the population dwindled and disappeared by 1944, after the introduction of black rats (*Rattus rattus*) to the atoll during World War II (Ely and Clapp 1973; Sincock and Kridler 1977).

Laysan finches are surveyed at Laysan Island each year, in July, and a population estimate is calculated from survey results (USFWS 2001). The current population estimate is 17,780 ± 2819 individuals (Bechaver *et al.* 2006), among the highest estimates since 1976 (Morin and Conant 2002). The small population at Pearl and Hermes, where 108 Laysan finches were released in 1967, was last surveyed in 2004, using the same methods, and the total number of finches there is estimated at 329 individuals (Sprague 2004), down from approximately 600-900 in 2003 (Sprague 2003), and from 1,105 in 2002 (Wegmann and Kropidlowski, 2002). In 2004, this population was characterized as "tenuous and variable" (Sprague 2004). The Laysan population, too, has fluctuated widely since regular monitoring began in 1968 (Morin and Conant 1994), but this may be typical population variation for the small, closed system of Laysan Island (Morin and Conant 2002).

No new information on vital rates or demography.

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

No new information.

c. Taxonomic classification or changes in nomenclature:

No new information.

d. 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 historical range, etc.):

No new information.

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

The spread of the invasive plant *Verbesina encelioides* at Pearl and Hermes Reef has led to the near-complete loss of native vegetation on Southeast Island, which harbors the largest population of Laysan finches. The birds nest and forage in habitat dominated by *V. encelioides* during its summer growing season, but when this annual plant dies back for the winter the finches are left with little or no food resources; population modeling experiments indicate that this habitat degradation substantially increases the extinction risk for the Pearl and Hermes population (McClung 2005).

No new information for Laysan Island.

f. Other:

None.

3. Five Factor Analysis (threats, conservation measures and regulatory mechanisms):

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

The invasive plant *Verbesina encelioides*, a New World composite, was first observed at Pearl and Hermes Reef in 1998 (McClung 2005). This plant forms dense stands that eventually can exclude all other vegetation. On Southeast Island at Pearl and Hermes, widespread, monotypic stands of *V. encelioides* have replaced much of the native vegetation (Sprague 2004), restricting the presence of vegetative cover, and thus of nesting and foraging resources for the finch, largely to the summer growing season. Laysan finches are opportunistic, omnivorous feeders; however, we believe the diverse seed bank, plant matter, and substrate for invertebrates that formerly was available to finches year-round likely is dwindling with the increasing loss of native vegetation (E. Flint, USFWS Pacific Remote National Wildlife Refuge Complex, pers. comm. 2007).

b. Overutilization for commercial, recreational, scientific, or educational purposes:

This factor is not applicable to this species.

c. Disease or predation:

No new information.

d. Inadequacy of existing regulatory mechanisms:

This factor is not applicable to this species.

e. Other natural or manmade factors affecting its continued existence:

Species that occur as small, isolated populations are inherently more vulnerable to extinction than widespread species because of the higher risks posed by genetic bottlenecks, random demographic fluctuations, and localized catastrophes such as hurricanes and epizootics. Although the Laysan finch currently occurs as two populations in the Northwestern Hawaiian Islands, the Pearl and Hermes population evidently is declining; we believe this is a result of severe habitat alteration by an invasive alien plant, as described above. Therefore, this population of the Laysan finch faces an increasing threat of extinction from environmental and demographic stochasticity, and its longevity as "insurance" against extinction is now in question.

Because Laysan is a low island (12 meters [40 feet] at its highest point), it is especially vulnerable to sea-level rise. Atmospheric temperatures are expected to increase between 1.4 and 5.8 degrees Celsius (2.5 and 10.4 degrees Fahrenheit) in the next century, with a concomitant rise in sea level of 21 centimeters (8.3 inches) by the year 2050 (IPCC [International Panel on Climate Change] 2001). An examination of topographic models of the Northwestern Hawaiian Islands under various scenarios of sea-level rise (Baker *et al.* 2006) suggests that some islets, such as those comprising Pearl and Hermes Reef and French Frigate Shoals, will lose considerable land area; some will disappear entirely. The elevation of Laysan is predicted to result in longer persistence relative to other low islands in the chain (Baker *et al.* 2006), but this analysis did not include secondary effects of sea-level rise, such as increased salinity of ground water, which could have significant negative effects on habitat for Laysan finches. Another anticipated effect of global climate change is increased frequency and severity of storms (IPCC 2001), which could reduce survival and nesting success and lead to long-term habitat loss and degradation. Population viability models that incorporated rising sea-level predicted a substantial increase in extinction risk for the Laysan finch over 100 years (McClung 2005).

D. Synthesis:

The Laysan finch currently exists in two populations in the Northwestern Hawaiian Islands: the natural population on Laysan Island and the translocation-founded population at Pearl and Hermes Reef. Both populations are relatively small, and population estimates based on survey data fluctuate widely between years. A year-round field camp on Laysan ensures regular monitoring surveys twice each year; visits to Pearl and Hermes are irregular and finch surveys are less frequent there. The most recent estimates are 17,780 ± 2819 individuals on Laysan Island (Bechaver *et al.* 2006) and 329 individuals at Pearl and Hermes Reef (Sprague 2004). Efforts currently are underway to evaluate potential future translocation sites for this species (C. Swenson and H. Freifeld, USFWS, pers. comm. 2007).

The Laysan finch is threatened by degradation and loss of habitat resulting from invasive alien species (particularly *V. encelioides* at Pearl and Hermes Reef) and sea-level rise associated with global climate change, and by the demographic and environmental stochasticity to which small populations are particularly vulnerable. For example, a chance vessel grounding or unauthorized landing on Laysan Island or Pearl and Hermes Reef that results in the introduction of rats could lead to the rapid demise of the Laysan finch.

The recovery objectives for this species have not been met, and new threats (*V. encelioides* at Pearl and Hermes Reef; sea-level rise) have surfaced since the recovery plan was published in 1984. Therefore, the Laysan finch meets the definition of endangered: it remains in danger of extinction throughout its range.

III. RESULTS

A. Recommended Classification:

____ Yes, downlist to Threatened
____ Yes, uplist to Endangered
____ Yes, delist
__X_ No, no change is needed

B. New Recovery Priority Number _2_

Brief Rationale: This priority ranking reflects that prospects for recovery are relatively higher than had been concluded previously. The existence of the Laysan finch population at Pearl and Hermes Reef points to translocation and establishment of additional populations on other predator-free islands as a strategy with high potential for success. Laysan finch populations could be established on Lisianski Island, Kure Atoll, and possibly Midway Atoll. Although the threat posed by disease currently precludes bringing the Laysan finch to the Main Hawaiian Islands, the ongoing restoration work on offshore islets, where mosquitoes may be effectively controlled, may provide more options for translocation and release of Laysan finches in the future.

C. If applicable, indicate the Listing and Reclassification Priority Number (FWS only): N/A

Reclassification (from Threatened to Endangered) Priority Number: ____

Reclassification (from Endangered to Threatened) Priority Number: ____

Delisting (Removal from list regardless of current classification) Priority Number: ____

IV. RECOMMENDATIONS FOR FUTURE ACTIONS:

- Continue restoration work and on Laysan Island.
- Continue finch monitoring surveys twice each year on Laysan Island.
- Restore habitat for population at Pearl and Hermes by eradicating *Verbesina encelioides* and fostering recovery of native vegetation.
- Pursue translocation to establish new populations in secure habitat on other islands.
- Improve monitoring for new introductions of alien species throughout the Northwestern Hawaiian Islands.

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U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of Laysan Finch (honeycreeper) (*Telespiza cantans*)

Current Classification ____E____

Recommendation resulting from the 5-Year Review

____ **Downlist to Threatened**
____ **Uplist to Endangered**
____ **Delist**
_X__ **No change is needed**

Appropriate Listing/Reclassification Priority Number _____

Review Conducted By
Marilet A. Zablan, Recovery Program Leader and Acting Assistant Field Supervisor for Endangered Species, June 28, 2007
Holly Freifeld, Fish and Wildlife Biologist and Vertebrate Recovery Coordinator, May 7, 2007

APPROVAL:

Lead Field Supervisor, Fish and Wildlife Service

Approve Patrick Leonard Date 1/15/08