Laysan duck
(Anas laysanensis)

5-Year Review
Summary and Evaluation

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

5-YEAR REVIEW
common name/*scientific name*

I. GENERAL INFORMATION

A. Methodology used to complete the review:

The Service's Pacific Islands Fish and Wildlife Office (PIFWO) conducted this review. Information in this review was compiled by the lead biologist, and the draft review was evaluated by the Recovery Program Leader and the Assistant Field Supervisor for Endangered Species before PIFWO submission to the Regional Office. The documents used for this review were the Draft Revised Recovery Plan for the Laysan Duck (*Anas laysanensis*) published in August 2004 and the draft final Revised Recovery plan for the species (currently in review). These two documents represent the most comprehensive synthesis of current information about the species. Supplementary information from files and correspondence related to the 2005 translocation of Laysan ducks to Midway was used to provide the most recent information about population size on Laysan Island and at Midway.

B. Reviewers

Lead Region: Region 1

Lead Field Office: Pacific Islands Fish and Wildlife Office

C. Background

1. FR Notice citation announcing initiation of this review:

U.S. Fish and Wildlife Service. July 6, 2005. Endangered and Threatened Wildlife and Plants; Initiation of 5-year Reviews (of 33 species in Region 1). 70 FR 38972-38975.

2. Species status:

Stable (FY 2006 Recovery Data Call)

3. Recovery achieved:

1, meaning 0 - 25 percent of the identified recovery objectives for the Laysan duck have been achieved (FY 2006 Recovery Data Call)

4. Listing history

Original Listing

FR notice: 32 FR 4001
Date listed: 11 March 1967
Entity listed: Species
Classification: Endangered

Revised Listing, if applicable
N/A

5. Associated actions: N/A

6. Review History:

a. May 21, 1979 (44 FR 29566) – review of all species listed prior to 1975

b. July 22, 1985 (50 FR 29901) – review of all species listed before 1976 and in 1979-80, resulting in a 1987 notice of completion (no change) on July 7, 1987 (52 FR 25522)

c. November 6, 1991 (56 FR 56882) – review of all species listed before 1991

7. Species' Recovery Priority Number at start of review: The recovery priority number for the Laysan duck is 2, reflecting a high degree of threat, high potential for recovery, and its status as a full species.

8. Recovery Plan or Outline

Name of plan: Draft Revised Recovery Plan for the Laysan Duck (*Anas laysanensis*)
Date issued: August 2004
Dates of previous revisions: 1982 (original recovery plan)
The plan is guiding recovery implementation, and actions described in the plan are cited in funding proposals.

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. 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***

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.

Downlisting criteria:

Criterion 1. The Laysan Island population is stable or increasing (finite rate of population growth or λ greater than or equal to 1.0) when averaged over a continuous period of at least 15 years (Factor E).

Although monitoring indicates that the species is stable, we have not yet had a continuous monitoring period (using standardized methods) of 15 years.

Criterion 2. A total of at least 920 potentially breeding adult birds exist in at least 5 stable or increasing populations on a combination of predator-free Northwestern Hawaiian Islands (including Laysan) and predator-controlled sites on Main Hawaiian Islands. The population on Laysan Island should remain at a level of

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A)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) Inadqequacy of existing regulatory mechanisms;
E) Other natural or manmade factors affecting its continued existence.

from 400 to 500 birds; the remaining 4 or more newly established populations should occur on a combination of predator-free Northwestern Hawaiian Islands and predator-controlled sites on the Main Hawaiian Islands, and should number approximately 130 breeding adult birds each (depending on the size of the habitat available on each island) (Factors C and E).

This criterion has not been met but a strong start has been made with the establishment of a nascent population of ducks at Midway Atoll National Wildlife Refuge through translocations in 2004 and 2005.

Criterion 3. A successful captive or semi-captive breeding program is established using wild source eggs. These captive populations are managed primarily for reintroductions to the Main Hawaiian Islands.

This criterion has not been met; moreover, based on peer-reviewer comments on the draft revised recovery plan, the final revised recovery plan will not include this criterion.

Criterion 4. A plan for achieving gene flow between wild source populations through long-term inter-island translocations is developed and implemented (Factor E).

This criterion has not been met because we do not yet have new populations that have been established for a sufficient period to warrant immigration translocations for gene flow. However, the reintroduction protocols developed by USGS-BRD include a first immigration translocation to Midway in 2009 (Reynolds *et al.* 2004).

Criterion 5. Island-specific management plans for each population are created that identify actions (such as supplementation, habitat improvement, and predator control) sufficient to reduce threats and increase the populations to recovery levels (Factors A and C).

This criterion has not been met fully; a management plan exists for Laysan Island, but the management plan for Midway Atoll is not yet completed. The next translocation site, when determined, will necessitate another management plan.

C. Synthesis

The Laysan duck currently has the most restricted range of any duck in the world, with a single naturally occurring population on Laysan Island in the Northwestern Hawaiian Islands, and a nascent population at Midway Atoll founded by birds translocated from Laysan in 2004 and 2005. The species was extirpated from most other islands in the Hawaiian Archipelago after the arrival of humans about 1,500 years ago. To date, Laysan duck bones from extirpated populations have been found on the islands of

Hawai`i, Maui, Moloka`i, O`ahu, Kaua`i, and Lisianski. Prehistoric populations of the Laysan duck on the Main Hawaiian Islands were most likely extirpated by a combination of predation by introduced mammals, especially rats (*Rattus exulans*), hunting by humans, and habitat destruction or degradation. The total estimated population size on Laysan Island has fluctuated from 7 to more than 600 adult birds in the last century. The most recent (2005) population estimate of adult birds is 576 individuals 95% CI 503-682; (USGS unpublished data). The population at Midway was founded with a total of 42 wild birds translocated from Laysan in 2004 and 2005. After a successful first breeding season in 2005, the Midway population increased to 51 animals (40 of 42 total translocated from Laysan and 11 fledged from nests laid at Midway in 2005; John Klavitter, Midway Atoll National Wildlife Refuge, pers. comm. 2006). In addition, at this writing, Midway has five dependent ducklings hatched in April, 2006, and at least seven hens incubating eggs. Wetland development, invasive plant control, propagation and outplanting of native plants, including food plants for Laysan ducks, and other habitat restoration projects are ongoing at Midway Atoll.

Although we have taken a substantive first step toward recovery of the Laysan duck, we have a long way to go. The species still meets the definition of endangered because of threats posed to the species that can be described in terms of the five listing factors. Alien species indirectly harmful to Laysan ducks through habitat alteration include rabbits, mice, invasive weeds, and possibly predatory insects (Factor A). High duckling mortality from 1999 through 2004 suggests a lack of sufficient brood rearing habitat on Laysan Island (Factor A). Long-term threats include the accelerated filling of Laysan's freshwater seeps and lake (Factor A); these changes result from 20th century devegetation of the islands by rabbits and may be intensified by sea level rise and increased storm frequency caused by global warming (Factor E). Introduced mammalian predators would pose the most severe threat to new populations of Laysan ducks established in the Main Hawaiian Islands as described in the recovery criteria (Factor C). Storms, drought-related food reduction, disease, and limited carrying capacity are among the factors limiting the population on Laysan Island today (Factors C and E). Inbreeding depression may be a limiting factor, but additional information is required to evaluate this possibility (Factor E). Sea level rise resulting from global climate change may result in the loss of terrestrial habitat (Factor E). Finally, viability models for small populations of isolated species such as the Laysan duck predict a high risk of extinction due to catastrophic, environmental, genetic, and demographic stochasticity (Factor E).

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 __N/A___

IV. RECOMMENDATIONS FOR FUTURE ACTIONS

- Continue population and reproductive monitoring on Laysan Island to determine trends, identify limiting factors that can be addressed through management, and monitor numbers and condition of juvenile ducks in years when translocations are planned.
- In 2009 conduct an "immigration translocation" of five individuals from Laysan to Midway to supplement genetic diversity in new population.
- Draft emergency contingency plans for Laysan ducks to address the potential threat of catastrophes such as hurricanes, tsunamis, and epizootics.
- Choose second and third sites for Laysan duck translocation, conduct habitat restoration necessary to support ducks at these sites.
- Assess feasibility of predator fencing or intensive predator control at one potential release site in the Main Hawaiian Islands.
- Within the next 5 years, conduct translocations to at least one new site.
- Monitor survival and reproduction in new population at Midway (and any other populations initiated through translocation) to determine vital rates for comparison with Laysan and identify limiting factors that can be addressed through management.
- Study diet, foraging, range size, and other aspects of Laysan duck ecology at Midway (and any future release sites) to compare with data from Laysan Island and assess amplitude of habitat requirements. This information will provide a basis for adaptive management of Laysan ducks in new environments as well as add to our baseline knowledge of the species.
- Finalize revised recovery plan.

V. REFERENCES

Reynolds, M. H., M. Veksay, and J. Klavitter. 2004. Draft Laysan teal re-introduction plan: translocation to Midway Atoll. Part 1: preparation, transport, and release. Unpublished study plan. 47 pp.

U.S. Fish and Wildlife Service. 2004. Draft Revised Recovery Plan for the Laysan Duck (*Anas laysanensis*). U.S. Fish and Wildlife Service, Portland, Oregon. vii + 94 pp.

U.S. Fish and Wildlife Service. *In review.* Revised Recovery Plan for the Laysan Duck (*Anas laysanensis*). U.S. Fish and Wildlife Service, Portland, Oregon. viii + 109 pp.

John Klavitter, Wildlife Biologist, Midway Atoll National Wildlife Refuge (provided information)

U.S. Geological Survey - Biological Resources Discipline (USGS-BRD), unpublished data from current research on the Laysan duck (Michelle Reynolds, Principal Investigator)

U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of Laysan Duck (*Anas laysanensis)*

Current Classification __Endangered__

Recommendation resulting from the 5-Year Review

Downlist to Threatened
Uplist to Endangered
____ Delist
__X__ No change is needed

Appropriate Listing/Reclassification Priority Number __N/A__

Review Conducted By:
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_____ Date JUL - 3 2007
Field Supervisor, Fish and Wildlife Service

Approve _____ Date Aug 2 2007
Regional Director, Fish and Wildlife Service