5-YEAR REVIEW

Short Form Summary

Species Reviewed: *Todiramphus cinnamominus cinnamominus* (Sihek, Guam Micronesian kingfisher)

Current Classification: Endangered

Federal Register Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2012. Endangered and threatened wildlife and plants; 5-year status reviews of 46 Species in Idaho, Oregon, Washington, Nevada, Montana, Hawaii, Guam, and the Commonwealth of the Northern Mariana Islands. Federal Register 77(44):13248-13251.

Lead Region/Field Office:

Region 1/Pacific Islands Fish and Wildlife Office (PIFWO), Honolulu, Hawaii

Name of Reviewer(s):

Megan Laut, Vertebrate Recovery Coordinator PIFWO
Marie Bruegmann, Acting Recovery Program Lead, PIFWO
Kristi Young, Programmatic Deputy Field Supervisor, PIFWO

Methodology used to complete this 5-year review:

This review was conducted by staff of the Pacific Islands Fish and Wildlife Office of the U.S. Fish and Wildlife Service (USFWS), beginning on March 6, 2012. The review was based on a review of current, available information since the last 5-year review for *Todiramphus cinnamominus cinnamominus* (USFWS 2008). The evaluation by Megan Laut, Vertebrate Recovery Coordinator, was reviewed by Acting Recovery Program Lead. It was subsequently reviewed and approved by the Programmatic Deputy Field Supervisor.

Background:

For information regarding the species listing history and other facts, please refer to the Fish and Wildlife Service's Environmental Conservation On-line System (ECOS) database for threatened and endangered species (http://ecos.fws.gov/tess_public).

The sihek or Guam Micronesian kingfisher is endemic to the island of Guam and was extirpated from the wild in 1988.

Review Analysis:

Please refer to the previous 5-year review for *Todiramphus cinnamominus cinnamominus* published on January 18, 2008 (available at http://ecos.fws.gov/docs/five_year_review/doc1766.pdf), for a complete review of the species' status, threats, and management efforts. No significant information regarding the species biological status has come to light since listing to warrant a change in the Federal listing status of *T. cinnamominus cinnamominus*.

New status information:

The sihek is believed to have been extirpated in the wild by 1988 (Wiles *et al*. 2003) and is now found only in captivity (Bahner and Bier 2007). Between 1984 and 1986, 29 sihek were translocated to several zoological institutions in the mainland United States to begin a captive propagation program. By 1990, the captive population reached 61 individuals and hovered around this number of individuals until 2003 ($\lambda = 1.00$) due to high mortality and poor reproductive success. However, increased population growth ($\lambda = 1.14$) since 2003 brought the population up to 155 individuals distributed among 22 Association of Zoos and Aquaria accredited institutions in the mainland United States and a breeding facility on Guam (Bahner and Groome 2011; B. Bahner, Philadelphia Zoo, pers. comm. 2014). The sihek is still only found in captivity and there are no immediate plans for reintroducing the subspecies to Guam.

New threats:

- Nonnative snake predations – One prominent barrier to reintroduction efforts is the lack of large-scale control of brown treesnakes (*Boiga irregularis*).
- Agricultural and urban development loss or degradation of habitat – Another factor which is increasingly threatening the long-term conservation of the sihek is the continued loss and degradation of potential recovery habitat on Guam. Ongoing and proposed plans by the Navy and Air Force to expand operations on Guam are threatening much of the remaining sihek habitat.
- Ungulate degradation of habitat – The maintenance of large feral ungulate populations is likely further degrading the remaining forests, thus lowering their value for sihek recovery.

Synthesis:

Because sihek are only found in captivity, the remaining sihek habitat on Guam is still threatened by development and ungulate impacts, and the large-scale control of brown treesnakes has not been undertaken, the recovery goals for this species have not been met. Therefore, the sihek meets the definition of endangered as it remains in danger of extinction throughout its range.

Recommendations for Future Actions:

The recovery strategy for the sihek focuses on increasing the captive population, and releasing the birds back into the wild.

- Captive propagation for genetic storage and reintroduction – Continue efforts to increase the size of the captive population to initiate and maintain an active reintroduction program.

- Threat – predator / herbivore control research – Continue efforts to develop and refine brown treesnake control techniques to support large-scale control and/or eradication efforts.

- Predator / herbivore monitoring and control – Implement large-scale brown treesnake control and/or eradication efforts.

- Ungulate monitoring and control – Initiate efforts for large-scale ungulate control on Guam to support native forest regeneration.

- Reintroduction / translocation – Develop reintroduction plan for sihek.

- Reintroduction / translocation – Reintroduce sihek to Guam or other suitable sites.

Table 1. Status and trends of *Todiramphus cinnamominus cinnamominus* from listing through current 5-year review.

Date	Information Source	Estimated Number	Population Trend
1984	Listing (USFWS 1984)	Unknown	Unknown
1986	29 sihek brought into zoos for captive propagation	29	Declining, presumed extirpated by 1988 (Wiles *et al*. 2003)
2007 (5-year review)	Bahner and Bier (2007)	95	Stable
2014 (5-year review)	Bahner, Philadelphia Zoo (pers. comm. 2014)	155	Improvements in husbandry have resulted in an increased population but lack of space at zoos limits further growth.

Table 2. Threats to *Todiramphus cinnamominus cinnamominus* and ongoing conservation efforts..

Threat	Listing factor	Current Status	Conservation/ Management Efforts
Nonnative snake predation – Brown treesnake	C	Ongoing	Ongoing research by USDA Wildlife Services and USGS-BRD to control brown treesnakes on Guam
Habitat and natural process management and restoration	A, E	Declining	Military development threatens remaining suitable habitat for sihek, and feral animal populations further degrade existing habitat.
Reduced viability due to low numbers – Low population size and inbreeding	E	Ongoing	Capacity of existing zoos is limited, and further increases in the population are limited unless more space is available at existing institutions or new institutions join the Species Survival Plan.
Climate change degradation of habitat	A, E	Increasing	Research

References:
See previous 5-year review for a full list of references.

Bahner, B., and L. Bier. 2007. Micronesian kingfisher Species survival plan population analysis and breeding plan, 28 February 2007. Association of Zoos and Aquariums Association Population Management Center, Chicago, Illinois. 22 pages.

Bahnner, B., and C. Groome. 2011. Micronesian kingfisher species survival plan population analysis and breeding plan, 11 August 2011. Association of Zoos and Aquariums Association Population Management Center, Chicago, Illinois. 27 pages.

[USFWS] U.S. Fish and Wildlife Service. 2008. Guam Micronesian kingfisher (*Halcyon cinnamomina cinnamomina*) 5-year review summary and evaluation. Pacific Islands Fish and Wildlife Office, Honolulu, Hawaii. 17 pages.

Wiles, G.J., J. Bart, R.E. Beck, Jr., and C.F. Aguon. 2003. Impacts of the brown tree snake: patterns of decline and species persistence in Guam's avifuana. Conservation Biology 17:1350-1360.

Personal Communications

Bahner, Beth. 2014. SSP Coordinator, Philadelphia Zoo, Philadelphia, Pennsylvania. Email to Guam Micronesian kingfisher recovery committee and Megan Laut, U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, dated February 12, 2014. Subject: MK Population update presentation.

U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW of
Todiramphus cinnamominus cinnamominus
(Sihek, Guam Micronesian Kingfisher)

Pre-1992 DPS listing still considered a listable entity? N/A

Recommendation resulting from the 5-year review:

_____	Delisting
_____	Reclassify from Endangered to Threatened status
_____	Reclassify from Threatened to Endangered status
X	No Change in listing status

for **Programmatic Deputy Field Supervisor, Pacific Islands Fish and Wildlife Office**

Maine M Bluegman

Date 2014-07-24