Guam Bridled White-eye
(*Zosterops conspicillatus conspicillatus*)

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: Guam Bridled White-eye (*Zosterops conspicillatus conspicillatus*)

TABLE OF CONTENTS

5-YEAR REVIEW
Guam Bridled White-eye/ *Zosterops conspicillatus conspicillatus*

1.0 GENERAL INFORMATION

1.1 Reviewers

Lead Regional Office:
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Lead Field Office:
Pacific Islands Fish and Wildlife Office, Gina Shultz, Deputy 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) beginning on March 8, 2007. The Native Forest Birds of Guam and Rota of the Commonwealth of the Northern Mariana Islands Recovery Plan was the primary source of information for this five-year review. However, updates on the status and biology of the subspecies were also obtained from other sources. The evaluation of the status of the species was prepared by the lead PIFWO biologist and reviewed by the Vertebrate Recovery Coordinator. The document was then reviewed by the Recovery Program Leader and acting Assistant Field Supervisor for Endangered Species, and Deputy Field Supervisor, before submission to the Field Supervisor for approval.

1.3 Background:

1.3.1 FR Notice citation announcing initiation of this review:

USFWS. 2007. Endangered and threatened wildlife and plants; initiation of 5-year reviews of 71 species in Oregon, Hawaii, Commonwealth of the Northern Mariana Islands, and Territory of Guam. Federal Register 72(45):10547-10550.

1.3.2 Listing history

Original Listing
FR notice: USFWS. 1984. Endangered and threatened wildlife and plants; determination of endangered status for seven birds and two bats on Guam and the Northern Mariana Islands. Federal Register 49:33881-33885.
Date listed: August 27, 1984
Entity listed: Subspecies
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:

USFWS. 2002. Endangered and threatened wildlife and plants; determinations of prudency for two mammal and four bird species in Guam and the Commonwealth of the Northern Mariana Islands and proposed designations for one mammal and two bird species; proposed rule. Federal Register 67:63737-63772.

Designation of critical habitat for the Guam bridled white-eye was not found to be prudent because the subspecies was believed extinct.

1.3.4 Review History:

Species status [FY 2008 Recovery Data Call (September 2008)]:
Presumed extinct

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

3

1.3.6 Current Recovery Plan or Outline

Name of plan or outline: Native Forest Birds of Guam and Rota of the Commonwealth of the Northern Mariana Islands Recovery Plan
Date issued: September 28, 1990
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?

__X__ ***Yes***

_____ ***No***

2.1.2 Is the species under review listed as a DPS?

____ ***Yes***

_X__ ***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***

_X__ ***No***

2.2 Recovery Criteria

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

___ ***Yes***

_X_ ***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***

_*X*_ ***No***

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

___ ***Yes***
_X_ ***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:

A synthesis of the threats which affected this subspecies (Factors A, C, and E) is presented in section 2.4. Factors B and D (overutilization for commercial, recreational, scientific, or educational purposes; inadequacy of existing regulatory mechanisms) were not known to be threats.

The 1990 recovery plan called only for the control and/or eradication of brown treesnakes (*Boiga irregularis*) (Factor C) on Guam and establishing a captive breeding and translocation for the Guam bridled white-eye (Factor E), if possible, as interim recovery criteria for the subspecies. The subspecies was presumed to be extinct at the time the recovery plan was finalized and more specific criteria were determined to be unnecessary.

At this time none of the recovery criteria from the 1990 recovery plan have been met. First, the Guam bridled white-eye has not been observed on Guam since 1983 and is believed to be extinct. Attempts to capture and establish a captive breeding program for the subspecies prior to its extirpation were not successful due to the small number of birds available. Therefore, the criteria for establishing a captive population were not, and likely cannot, be achieved. Second, brown treesnakes, the primary factor in the extirpation, are still abundant and widespread on Guam (G. Rodda, U.S. Geological Survey, pers. comm., 2007).

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 Guam bridled white-eye was recorded historically in virtually all habitats at all elevations on Guam (Jenkins 1983). By the mid 1940s, however, the subspecies was considered rare in southern Guam (Stophet 1946), and was last observed in central Guam in the early 1960s (Jenkins

1983). By 1983 the population was restricted to northern Guam and was thought to have dropped below 50 individuals (Beck 1984). The last family group, including a fledgling, was observed in the Pajon Basin in 1982, and the last individual was observed at this site in 1983 (Beck 1984). Since 1983, spring bird surveys and other ornithological activities in areas where this species would likely occur have yielded no observations (Wiles *et al.* 1995; C. Aguon, Guam Division of Aquatic and Wildlife Resources, pers. comm. 2008).

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:

The Guam bridled white-eye was classified as a subspecies of the bridled white-eye (*Zosterops conspicillatus*) in the Mariana Islands (Pratt *et al*. 1987). Taxonomic work completed by Slikas *et al*. (2000) also indicates that the Guam population belonged to the same species currently found on Saipan, Tinian, and Aguiguan in the Commonwealth of the Northern Mariana Islands.

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.):

The Guam bridled white-eye has been extirpated in the wild since 1983 (Wiles *et al*. 1995). Therefore, no changes in its spatial distribution have occurred.

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

The quantity and quality of potential Guam bridled white-eye habitat on Guam is believed to be declining. However, the extent of these changes is unknown at this time. The U.S. Air Force is in the process of removing approximately 46 hectares (114 acres) of potential habitat from the Northwest Field area of Andersen Air Force Base (U.S. Air Force 2006a; N. Mitton, pers. comm. 2007) and has proposed clearing an additional 74 hectares (183 acres; U.S. Air Force 2006b). In addition, feral pigs and deer are believed to be inhibiting the regeneration of native forest species and thus degrading the remaining habitat. These impacts have not been quantified; however, surveys indicate that ungulate populations are extremely high (Knutson and Vogt, unpubl. manuscript 2003) and

ungulate impacts on native species regeneration have been noted (Wiles *et al*. 1999, Wiles 2005). Therefore, we expect that degradation of potential habitat will continue as long as ungulate populations remain high.

2.3.1.7 Other:

No new information.

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:

While large stands of relatively intact native forest can still be found on military lands and in the rugged interior areas of northern and southern Guam, some of these areas may be further fragmented and degraded by development activities and road building in the coming years (U.S. Air Force 2006b; Daleno 2007; U.S. Navy 2007a, b). Much of the remaining forest also has been severely degraded by introduced Philippine deer (*Cervus mariannus*), feral pigs (*Sus scrofa*), and feral Asiatic water buffalo (*Bubalus bubalis*), all of which were introduced to Guam in the 1600s and 1700s (Conry 1988a, Wiles *et al.* 1999). These introduced ungulates significantly affect native vegetation on Guam by consuming seeds, fruits, and foliage, ingesting or trampling seedlings, and promoting the spread of introduced weeds (Wiles *et al.* 1999, Wiles 2005). Philippine deer and feral pigs are found throughout Guam. On Andersen Air Force Base, densities of Philippine deer and feral pigs were estimated at 1.8 deer per hectare (0.8 deer per acre) and 0.4 pigs per hectare (0.2 pigs per acre), some of the highest densities recorded in the world (Knutson and Vogt, unpubl. manuscript 2003). Feral Asiatic water buffalo are found predominately on the Ordnance Annex and surrounding non-Navy lands in southern Guam, where the population is estimated to be fewer than 100 animals (A. Brooke, U.S. Navy, pers. comm. 2008).

Efforts to control Asiatic water buffalo on Navy lands have been underway since 1996 and the population has been reduced from approximately 300 animals to 100 animals (A. Brooke, pers. comm. 2008). The Navy has also been working on developing an ungulate management plan for deer and pigs (A. Brooke, pers. comm. 2008). In addition, the Air Force is proposing to fence approximately 254 hectares (628 acres) from pig and deer incursions and to remove ungulates from these areas to offset impacts associated with two projects on Andersen Air Force Base (U.S. Air Force 2006a, b). However, additional work is needed to help offset the impact of these species on the remaining forests.

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

No new information.

2.3.2.3 Disease or predation:

By 1988, the brown treesnake had eliminated most of the native birds on the island (Wiles *et al*. 2003), as well as many other native and exotic animal species (Fritts and Rodda 1998). All but two of Guam's native bird species (the yellow bittern [*Ixobrychus sinensis*] and Mariana swiftlet [*Collocalia bartschi*]) have shown patterns of decline coinciding with the expansion of the snake's range across the island. These patterns of decline indicated an inverse relationship between populations of snakes and birds (Savidge 1987), presumably due to nest predation by brown treesnakes. Conry (1988b) recorded daily egg and nestling mortality by brown treesnakes as high as 21.5 percent in island collared-doves (*Streptopelia bitorquata*) on Guam. The Guam bridled white-eye's decline followed the same pattern as other forest birds on Guam, white-eyes having been first extirpated in the southern and central portions of the island, where the snake first colonized. The last wild Guam bridled white-eyes were observed in June 1983 on Andersen Air Force Base in northern Guam (Wiles *et al*. 1995).

In addition to the brown treesnake, other potential white-eye predators persist on Guam and include feral cats, Polynesian rats (*Rattus exulans*), roof rats (*Rattus rattus*), Norway rats (*Rattus norvegicus*), and monitor lizards. The impact of each of these species on the Guam bridled white-eye and their current status on Guam is unknown.

2.3.2.4 Inadequacy of existing regulatory mechanisms:

No new information.

2.3.2.5 Other natural or manmade factors affecting its continued existence:

No new information.

2.4 Synthesis

The Guam bridled white-eye was endemic to the island of Guam and was last observed in the wild in 1983. Since this sighting, spring bird surveys and other ornithological activities in areas where this subspecies would likely occur have yielded no observations. In addition, the primary threat to this subspecies, the brown treesnake, is still well

established on Guam and any individuals remaining after 1983 are expected to have been predated by snakes. Therefore, the Guam bridled white-eye is presumed to be extinct.

3.0 RESULTS

3.1 Recommended Classification:

____ Downlist to Threatened
____ Uplist to Endangered
__X_ Delist
__X_ *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: _TBD__

Brief Rationale: The delisting priority number is to be determined.

4.0 RECOMMENDATIONS FOR FUTURE ACTIONS

The Guam bridled white-eye is presumed to be extinct. However, the successful recovery of the other listed species on Guam requires that the following efforts be undertaken:

- Continue efforts to develop and refine brown treesnake control techniques to support large-scale control and/or eradication efforts.
- Implement large-scale brown treesnake control and/or eradication efforts.
- Initiate efforts for large-scale ungulate control on Guam to support native forest regeneration.

5.0 REFERENCES

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Signature Page
U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of Guam Bridled White-eye (*Zosterops conspicillatus conspicillatus*)

Current Classification: _____E_____

Recommendation resulting from the 5-Year Review:

____ Downlist to Threatened
____ Uplist to Endangered
__X_ Delist
____ No change needed

Appropriate Listing/Reclassification Priority Number, if applicable:_____

Review Conducted By:
Fred Amidon, Fish and Wildlife Biologist
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Gina Shultz, Deputy Field Supervisor

Approved: _____ Date 31 July 2009
Acting Field Supervisor, Pacific Islands Fish and Wildlife Office