

Little Mariana Fruit Bat
(Pteropus tokudae)

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: Little Mariana Fruit Bat (*Pteropus tokudae*)

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5-YEAR REVIEW
Little Mariana Fruit Bat/ *Pteropus tokudae*

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, 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 Mariana Fruit Bat (Guam Population) and Little Mariana Fruit Bat Recovery Plan (USFWS 1990) was the primary source of information for this five-year review. However, the Draft Revised Recovery Plan for the Mariana Fruit Bat or Fanihi (*Pteropus mariannus mariannus*) was consulted, and other updates on the status and biology of the species were obtained from other sources. The evaluation of the status of the species was prepared by the lead PIFWO biologist/ 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: 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:

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 little Mariana fruit bat was not found to be prudent because the species 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: Mariana Fruit Bat (Guam Population) and Little Mariana Fruit Bat Recovery Plan

Date issued: November 2, 1990

Dates of previous revisions, if applicable: N/A

Indicate if plan is being used: Yes. This is the current recovery plan. Since the final rule reclassifying the Mariana fruit bat on Guam as threatened and listing the Mariana fruit bat as threatened in the Commonwealth of the Northern Mariana Islands, we have drafted a revised recovery plan for the Mariana fruit bat. This draft revision is undergoing regional review at the time of this writing.

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:

Because the little Mariana fruit bat was thought likely to be extinct at the time the recovery plan was written, no recovery objectives or criteria were provided for this 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:

The little Mariana fruit is only known from a small number of specimens and anecdotal observation. This species was always considered rare by Guam residents (Baker 1948, Perez 1972). Insufficient information exists with which to generalize about the species' population characteristics or the process of its decline and extinction.

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 little Mariana fruit bat was first described as the species *Pteropus tokudae* by Tate (1934).

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.):

At the time it was listed, the little Mariana fruit bat had last been observed in the 1960s, and the species has been considered as likely extinct since the time of the recovery plan's publication in 1990. 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 habitat for the little Mariana fruit bat on Guam can be considered similar to the native forest habitat available on the island for the Mariana fruit bat. This habitat is limited largely to Department of Defense lands in the northernmost part of the island and in southern Guam. The extent of native forests in northern Guam, where the last known roost of fruit bats on the island occurs, is diminishing as areas are cleared. 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 (Air Force 2006a; N. Mitton, Air Force, pers. comm. 2007) and has proposed clearing an additional 74 hectares (183 acres; Air Force 2006b). In addition, feral pigs and deer inhibit the regeneration of native forest species and thus the quality of the remaining habitat is degrading. These impacts have not been quantified, but 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)

The documented threats to the Mariana fruit bat were considered likely to have affected the little Mariana fruit bat similarly.

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 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 1988; Wiles *et al.* 1999). These introduced ungulates cause significant damage to 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 ungulate 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 number 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 still 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. Brown treesnakes are thought to prey on non-volant young Mariana fruit bats (*Pteropus mariannus mariannus*) (Wiles 1987, Wiles *et al.* 1995; Wiles 1996); treesnakes may have played a role in the decline of the little Mariana fruit bat.

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 little Mariana fruit bat was endemic to the island of Guam and was last observed in the 1960s. Unabated threats on Guam include hunting and predation by alien species such as the brown treesnake, and loss and degradation of the species' habitat continues. This species is presumed to be extinct.

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: N/A

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

The little Mariana fruit bat is presumed to be extinct. However, the successful recovery of the Mariana fruit bat and other listed species on Guam requires that the following efforts be undertaken:

- Reduce incidence of illegal hunting of bats through outreach, education, and enforcement of federal and territorial laws.

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

5.0 REFERENCES

Conry, P.J. 1988. Management of feral and exotic game species on Guam. *Transactions of the Western Section of the Wildlife Society* 24:26-30.

Daleno, G.D. 2007. \$1.25B road project detailed: Proposed highway would cut through Manengon. *Guam Pacific Daily News*, 31 May 2007.

Fritts, T.H. and G.H. Rodda. 1998. The role of introduced species in the degradation of island ecosystems: a case history of Guam. *Annual Review of Ecology and Systematics* 29:113-140.

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U.S. Air Force. 2006b. Draft Environmental Impact Statement: Establishment and Operation of an Intelligence, Surveillance, Reconnaissance, and Strike Capability, Andersen Air Force Base, Guam, April 2006. Department of the Air Force, Pacific Air Forces, Hickam Air Force Base, Hawaii. 309 pages.

[USFWS] U.S. Fish and Wildlife Service. 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.

[USFWS] U.S. Fish and Wildlife Service. 1990. Guam Mariana Fruit Bat and Little Mariana Fruit Bat Recovery Plan. U.S. Fish and Wildlife Service, Portland, OR. 57 pages + appendix.

- [USFWS] U.S. Fish and Wildlife Service. 2002. Endangered and threatened wildlife and plants; determinations of prudence 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.
- [USFWS] U.S. Fish and Wildlife Service. 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; Notice of Review. Federal Register 72(45):10547-10550.
- U.S. Navy. 2007a. Notice of intent to prepare an Environmental Impact Statement (EIS)/Overseas Environmental Impact Statement (OEIS) for the relocation of U.S. Marine Corps forces to Guam, enhancement of infrastructure and logistic capabilities, improvement of pier/waterfront infrastructure for transient U.S. Navy Nuclear Aircraft Carrier (CVN) at Naval Base Guam, and placement of a U.S. Army Ballistic Missile Defense (BMD) Task Force in Guam; Notice. Federal Register 72:10186-10187.
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- 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 avifauna. Conservation Biology 17:1350-1360.

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Signature Page
U.S. FISH AND WILDLIFE SERVICE
5-YEAR REVIEW of the Little Mariana Fruit Bat (*Pteropus tokudae*)

Current Classification: E

Recommendation resulting from the 5-Year Review:

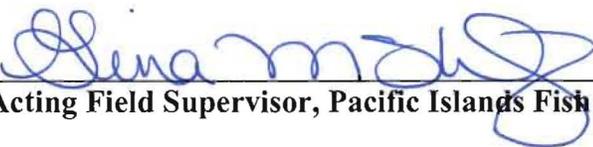
- Downlist to Threatened
- Uplist to Endangered
- Delist
- No change needed

Appropriate Listing/Reclassification Priority Number, if applicable: _____

Review Conducted By:

Holly Freifeld, Fish and Wildlife Biologist/ Vertebrate Recovery Coordinator
Marilet A. Zablan, Recovery Program Leader and acting Assistant Field Supervisor for
Endangered Species
Gina Shultz, Deputy Field Supervisor

Approved: _____



Date 31 July 2009

Acting Field Supervisor, Pacific Islands Fish and Wildlife Office