

5-YEAR REVIEW

Short Form Summary

Species Reviewed: Fanihi (Mariana fruit bat, *Pteropus mariannus mariannus*)

Current Classification: Threatened

FR Notice announcing initiation of this review:

[USFWS] U.S. Fish and Wildlife Service. 2023. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status Reviews for 133 Species in Oregon, Washington, Idaho, Montana, California, Nevada, Hawaii, Guam, and the Commonwealth of the Northern Mariana Islands. Federal Register 88(56):17611–17614.

Lead Region/Field Office: Region 1/Pacific Islands Fish and Wildlife Office (PIFWO), Honolulu, Hawai'i

Name of Reviewer(s):

Bronson Curry, Fish and Wildlife Biologist, PIFWO

John Vetter, Animal Recovery Coordinator, PIFWO

Megan Laut, Recovery Team Manager, PIFWO

Methodology used to complete this 5-year review: This review was conducted by staff of the PIFWO of the U.S. Fish and Wildlife Service (USFWS), beginning in January 2025. The review was based on a review of current, available information since the last 5-year review for the fanihi (Mariana fruit bat, *Pteropus mariannus mariannus*) (USFWS 2020, entire). The evaluation by Bronson Curry, Fish and Wildlife Biologist, was reviewed by John Vetter, the Animal Recovery Coordinator, and Megan Laut, the Recovery Program Manager.

Background:

For information regarding the species' listing history and other facts, please refer to the USFWS Environmental Conservation Online System database for threatened and endangered species at <https://ecos.fws.gov/ecp/species/2415>.

Review Analysis:

Please refer to the Draft Revised Recovery Plan (USFWS 2010, entire) and the previous 5-year reviews for the fanihi, published in 2007, 2014, and 2020 (available at <https://ecos.fws.gov/ecp/species/2415>), for a complete review of the species' status, threats, and management efforts. No new threats and no new information regarding the species' biological status have come to light since listing to warrant a change in the Federal listing status of the fanihi as endangered.

The fanihi is a frugivorous bat belonging to the family Pteropodidae, commonly known as flying foxes, that is endemic to the Mariana Islands. Historically believed to occur on all of the Mariana Islands, fanihi have declined significantly throughout their range. Fanihi populations may shift their location within each island or move between islands, complicating estimates of population on a per-island basis.

New status information:

- The most recent minimum population estimate of fanihi on Rota is 1,357 bats (CNMI DFW 2024, p. 10); on Saipan, 66 bats (CNMI DFW 2024, p. 10); on Tinian, 58 bats (CNMI DFW 2024, p. 10); on Aguiguan, 38–200 bats (CNMI DFW 2022, p. 7; Roark et al. 2022, p. 6); in the Northern Islands as a whole, 3,400 bats (no change from the previous five-year review [USFWS 2020, p. 4]); and on Guam, 525 bats (Mildenstein 2025, in litt., entire; Volsteadt 2025, in litt., entire). However, because these sources are not contemporaneous and because bats may move between islands, a sum of individual count data on each island does not provide an accurate picture of the total bat population at any given time. For this reason, CNMI DFW and Guam DAWR recently began to implement coordinated monthly counts on all islands where fanihi are regularly monitored (see “New management information”, below, for more details).
- CNMI DFW carried out a project to study the movements of fanihi on Rota using GPS-enabled radio transmitters attached using surgical cement. Two bats were tagged with transmitters in 2020, and five days of tracking data were collected from one bat (CNMI DFW 2020, p. 5). This individual returned to the same colony each day and did not seem to have a preferred roost tree. It spent most nights foraging in the vicinity of the roosting area, except for one night in which it traveled over 7 kilometers (4.4 miles) to forage near another major colony (CNMI DFW 2020, p. 5).
- In February 2022, a decline in colony counts on Rota coincided with an increase in the number of fanihi reported on Guam (CNMI DFW 2022, p. 5). The Rota fanihi population was likely underestimated in 2022 because not all colonies were surveyed monthly and a new colony formed that was not surveyed (CNMI DFW 2022, p. 6). Extreme weather events continue to have significant impacts on Rota fanihi, with a postulated movement of bats from Rota to Guam following major typhoons: increases in the Guam fanihi population were noted following Typhoon Dolphin (May 2015) and Typhoon Mangkhut (September 2018) (CNMI DFW 2022, p. 6).
- CNMI DFW biologists visited Aguiguan twice in 2021, for four days in February and five days in July, and opportunistically observed small groups of fewer than five fanihi in flight during both trips (Roark et al. 2022, p. 6). In February, a colony numbering 100-200 individuals was seen, but the colony was abandoned in July and shotgun shells were found nearby, suggesting a possible poaching event (Roark et al. 2022, p. 6).
- CNMI DFW biologists visited Aguiguan twice in 2022, for five days in April and ten days in June, and opportunistically searched for fanihi roosts while conducting surveys for other species (CNMI DFW 2022, p. 7). A few solitary fanihi were observed flying in April 2022, and a small colony of approximately 38 individuals was seen in June 2022 (CNMI DFW 2022, p. 7).

- In an effort to identify potential fanihi colonies in Saipan and Tinian, CNMI DFW began organizing coordinated, volunteer-based fanihi counts on these islands in July 2022 (CNMI DFW 2022, pp. 8–9). Modeled on Guam’s island-wide bat counts, these counts take place once per year and involve personnel stationed at various points around the island looking for bats in flight just before dawn. A total of 10–15 bats were observed on Saipan in 2022 (CNMI DFW 2022, p. 9).
- The CNMI Division of Fish and Wildlife (CNMI DFW) conducted monthly counts on Rota beginning in October 2023 and on Saipan and Tinian beginning in June 2024 (CNMI DFW 2025, p. 7). While monitoring of fanihi colonies on Rota has been ongoing for many years, Saipan and Tinian have not been regularly monitored in the past due to the relative absence of bats on these islands. With the 2023 discovery of a resident bat colony on Tinian, and a general awareness of increasing numbers of bats on Saipan, CNMI DFW began regular monitoring of bats on all three islands in FY24. As a result, the number of bat surveys CNMI DFW conducted within a year increased from 34 surveys in FY23 to 77 surveys in FY24, due to the inclusion of Saipan and Tinian.
- CNMI DFW conducted several interviews with Rota residents to better understand local attitudes toward hunting of fanihi, although a planned partnership with a university did not materialize (CNMI DFW 2022, p. 11).

New threats:

- There are no new threats known at this time.

New management actions:

- Threat Management – Fanihi have traditionally been hunted as a food source in the Mariana Islands. Although harvest of fanihi has been illegal since the species was listed, poaching continues to be a major threat to the species’ recovery. In 2023, CNMI DFW initiated a study of poaching pressure using automated recording units (ARUs) to detect gunshots, in partnership with Rainforest Connections, LLC. Deployment of ARUs began in March 2024, but for unknown reasons, Rainforest Connections ceased communications with CNMI DFW in mid-2024 and it soon became apparent that the company had gone out of business (CNMI DFW 2024, p. 13). The future status of the project is unknown at this time.
- Rehabilitation of injured bats – CNMI DFW has taken a number of injured or orphaned fanihi into care over the years. Six bats were taken into CNMI DFW’s custody during FY24 (CNMI DFW 2024, p. 15). Two were successfully released, with a third expected to be released soon; two died from injuries or illness sustained before their arrival; one is unable to fly and considered unreleasable at this time (CNMI DFW 2024, p. 15).

Table 1. Status and trends of the fanihi from listing through current 5-year review.

Date	No. Adult Wild Individuals	Delisting Criteria Identified in Recovery Plan	Delisting Criteria Completed?
1984 (listing as Endangered on Guam)	8761–9036	No recovery plan developed yet	N/A
2004 (critical habitat); 2005 (listing as Threatened on Guam and CNMI); 2007 (5-year review)	Insufficient data	1. Total population increased: stable or increasing populations on 3/5 southern islands and 6/8 northern islands	No
		2. Post-delisting monitoring program ready for implementation	No
		3. Habitat loss and degradation no longer endangers the survival of the species	No
		4. Illegal hunting no longer endangers the survival of the species	No
		5. Control brown treesnake on Saipan and prevent introduction to other CNMI islands	Partially; control and prevention on Saipan and Guam; limited prevention on Rota
		6. Negative impacts from urban development and military training are avoided, minimized, or mitigated	Partially
2010 (draft revised recovery plan); 2014 (5-year review)	Insufficient data	1. Total population increased: stable or increasing populations on 3/5 southern islands and 6/8 northern islands	Partially; Rota population increasing
		2. Post-delisting monitoring program ready for implementation	Partially; monitoring protocols developed for Rota and Northern Islands

		3. Habitat loss and degradation no longer endangers the survival of the species	No
		4. Illegal hunting no longer endangers the survival of the species	Partially; law enforcement efforts increased on Rota resulting in decrease of illegal hunting
		5. Control brown treesnake on Saipan and prevent introduction to other CNMI islands	Partially; control and prevention on Saipan and Guam; limited prevention on Rota
		6. Negative impacts from urban development and military training are avoided, minimized, or mitigated	Partially
2020 (5-year review)	Population stable on Rota, and Alamagan and Guguan. Other islands not surveyed.	1. Total population increased: stable or increasing populations on 3/5 southern islands and 6/8 northern islands	Partially; Alamagan and Rota population but not to necessary numbers or with adequate survey frequency
		2. Post-delisting monitoring program ready for implementation	Partially; monitoring protocols developed for Rota and Northern Islands
		3. Habitat loss and degradation no longer endangers the survival of the species	No
		4. Illegal hunting no longer endangers the survival of the species	Partially; law enforcement efforts increased on Rota resulting in decrease of illegal hunting
		5. Control brown treesnake on Saipan and prevent introduction to other CNMI islands	Partially; control and prevention on Saipan and Guam; limited

			prevention on Rota
		6. Negative impacts from urban development and military training are avoided, minimized, or mitigated	Partially
2025 (five-year review)	5,444	1. Total population increased: stable or increasing populations on 3/5 southern islands and 6/8 northern islands	Partially; Rota population appears stable but declining
		2. Post-delisting monitoring program ready for implementation	Partially; monitoring protocols developed for Rota and Northern Islands
		3. Habitat loss and degradation no longer endangers the survival of the species	No
		4. Illegal hunting no longer endangers the survival of the species	Partially; law enforcement efforts have increased throughout the CNMI
		5. Control brown treesnake on Saipan and prevent introduction to other CNMI islands	Partially; cargo inspection and interdiction efforts are in place in Guam and the CNMI
		6. Negative impacts from urban development and military training are avoided, minimized, or mitigated	Partially; avoidance and mitigation measures have been implemented in Guam and the CNMI

Table 2. Threats to the fanihi and ongoing conservation efforts.

Threat	Listing Factor	Current Status	Conservation/Management Efforts
Hunting	B	Ongoing	Partially; law enforcement efforts on Rota have decreased illegal hunting
Habitat loss and degradation	A	Ongoing	Partially; ESA Section 7 consultations for Guam and CNMI for federally funded development and military training
Ungulates – degradation of habitat and herbivory	A, C, E	Ongoing	Partially; some habitat areas fenced
Predation (brown treesnake)	C	Ongoing	Partially; control and prevention on Saipan and Guam; limited prevention on Rota
Development, and military training activities	E	Ongoing	Partially; ESA Section 7 consultations for Guam and CNMI for federally funded development and military training
Climate change	A, E	Increasing	
Inadequate regulation and enforcement	D	Ongoing	There is a lack of consequences for poaching events.

Syntheses:

The current global population of the species is 5,444 individuals, with at least 13 populations recorded on 13 of the Mariana Islands since 2010. Data from the northernmost Mariana Islands are sparse, and population estimates for several of these islands are based on a small number of surveys conducted between 2010 and 2020. The Rota fanihi population, the most numerous and well-documented population on any single island, has declined to less than half of its 2020 estimate. Whether this is the result of an increase in mortality events or dispersal to nearby islands is unclear; fanihi populations are somewhat fluid and may shift in response to disturbance, severe weather events, or changes in resource availability. The key threats to the species are hunting, loss or degradation of roosting and foraging habitats, and disturbance of roosting bat colonies, which can cause abandonment and juvenile mortality. These threats are being partially managed in Guam and the inhabited islands of the CNMI, but the rangewide population continues to decline, and delisting objectives have not been realized for any known population of fanihi. Therefore, this species continues to meet the definition of threatened, as it remains in danger of extinction throughout its range.

Delisting objectives are provided in the Draft Revised Recovery Plan for the fanihi (USFWS 2009, pp. viii–x). To be delisted, the total fanihi population must be shown to have increased, with stable or increasing subpopulations of adequate size distributed throughout the Mariana Islands such that the probability of the fanihi’s persistence over 100 years is at least 90 percent. It is suggested that these subpopulations include at least three of the five southern islands and six of the eight northern islands, including at least two of the following: Pagan, Anatahan, or Agrihan. A post-delisting monitoring program for the species that can reliably detect population trends must be ready for implementation. Specific actions to restore habitat must have been identified and appropriate management plans developed, and these actions and plans must be successfully implemented such that habitat loss and degradation no longer endanger the survival of the fanihi. Specific actions to reduce illegal hunting must have been identified and appropriate management plans developed, and these actions and plans must be successfully implemented such that illegal hunting no longer endangers the survival of the fanihi. Long-term measures must be successfully implemented to control incipient populations of the brown treesnake and prevent its introduction to other islands in the CNMI. Finally, the impacts of urban development and military training on the fanihi must be successfully avoided, minimized, or mitigated such that they do not endanger the survival of the fanihi. If all criteria have been met, delisting may occur by 2030.

Although the island of Rota has a well-established monitoring program that CNMI DFW biologists are working to improve through inter-island coordination of surveys, including coordination with fellow resource managers on Guam, regular monitoring of fanihi populations in the northern islands of the CNMI remains logistically infeasible. Although monitoring of the Rota subpopulation has generally been sufficient to detect trends, the Rota subpopulation has declined overall since its peak in September 2015 and currently numbers at or below the level seen in 2011 (CNMI DFW 2022, p. 7). However, irregularities in survey effort and inadequate coverage of smaller colonies and extra-colonial roost sites make robust inference of population trends from existing data challenging. Another confounding factor that has not been adequately addressed is movement of fanihi subpopulations between islands; however, coordination of survey schedules between islands (beginning in November 2024) and the initiation of regular surveys on Saipan and Tinian (beginning in June 2024) is a step toward addressing this problem (CNMI DFW 2024, pp. 9–10). Subpopulations of fanihi on Saipan, Tinian, and Guam appear to have increased in recent years, but there is insufficient data to determine whether these are long-term trends (CNMI DFW 2024, pp. 9–10). Funding and staffing limitations continue to challenge the implementation of monitoring and management programs that would satisfy the requirements of the recovery plan, although progress has been made toward reducing illegal hunting through law enforcement patrols and avoidance, minimization, and mitigation of impacts from urban development and military activity through Endangered Species Act consultations.

Recommendations for Future Actions:

- Outreach and education – Decrease illegal hunting by developing and supporting outreach and education programs that emphasize the value of and need to protect Mariana fruit bats and other native plant and wildlife species in the Marianas.

- Law enforcement and compliance – Decrease illegal hunting by continuing to provide technical and financial assistance to DFW enforcement officers to facilitate apprehension and prosecution of poachers.
- Ungulate monitoring and control
 - Decrease habitat loss by eradicating feral ungulates on Guam and Pagan and by preventing their introduction on other islands where fruit bat recovery is desired.
 - Decrease habitat loss by controlling deer in areas of high-quality fruit bat habitat.
- Habitat and natural process management and restoration
 - Improve habitat through support of native forest restoration; especially on Guam, Saipan, and Tinian.
 - Set aside enough high-quality fruit bat habitat in conservation areas to support the recovery of Mariana fruit bat populations on three of the five southern islands.
- Human interaction monitoring and management
 - Limit military training in areas occupied by Mariana fruit bats to activities that will not disturb bats or their habitat.
 - Limit urban development in areas occupied by or potentially used for roosting and foraging by Mariana fruit bats.
- Population monitoring and viability analysis – Continue monitoring fruit bat numbers on Anatahan to understand the fluctuation of numbers in response to volcanic activity.
- Surveys/inventories – Survey all islands annually hopefully in a short time frame to reduce potential migration or displacement from storms.
- Management action effectiveness monitoring – Continue monitoring vegetation recovery on Sarigan to assess the spread of alien plants and the threat that invasive species may pose to the reestablishment of native forest.
- Predator / herbivore monitoring and control – Continue and increase efforts to control brown treesnake on Guam and prevent introduction of brown treesnake populations on other Mariana Islands.

References:

See previous 5-year reviews for additional references.

[CNMI DFW] Commonwealth of the Northern Mariana Islands (CNMI) Division of Fish and Wildlife (DFW). 2020. Fruit Bat Landscape Use in Response to Perturbations (F19AF00972). Saipan, CNMI. 6 pp.

[CNMI DFW] Commonwealth of the Northern Mariana Islands (CNMI) Division of Fish and Wildlife (DFW). 2022. Wildlife Restoration Grant Program, Final Performance Report: Mariana Fruit Bat Monitoring and Management (F21AF03862). Saipan, CNMI. 13 pp.

[CNMI DFW] Commonwealth of the Northern Mariana Islands (CNMI) Division of Fish and Wildlife (DFW). 2024. Final Performance Report - CNMI Mariana Fruit Bat Monitoring and Management FY 2024 (F23AF03008). Saipan, CNMI. 19 pp.

Roark, E., J. Guilbert, E. Kohler, J. Atalig, L.R. Sablan, C. Mendiola, B.A. Eichelberger, and S. Mullin. 2022. A rapid assessment of cave occupancy for Pacific sheath-tailed bats (fanihin ganas, *Emballonura semicaudata rotensis*) and Mariana swiftlets (chachaguak, *Aerodramus bartschi*) on Aguiguan, Mariana Islands. *Micronesica* 2022:1–10.

[USFWS] U.S. Fish and Wildlife Service. 2020. Five-year review of Mariana fruit bat, fanihi (*Pteropus mariannus mariannus*). Pacific Islands Fish and Wildlife Office, Honolulu, HI. 10 pp.

[USFWS] U.S. Fish and Wildlife Service. 2023. Endangered and Threatened Wildlife and Plants; Initiation of 5-Year Status Reviews for 133 Species in Oregon, Washington, Idaho, Montana, California, Nevada, Hawaii, Guam, and the Commonwealth of the Northern Mariana Islands. *Federal Register* 88(56):17611–17614.

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Mildenstein, T. 2025. Email with the most recent (2024) minimum population estimate of 185 bats at Anderson Air Force Base, Guam. August 18, 2025.

Volsteadt, M. 2025. Email with minimum population estimates for two roost sites on Guam, based on counts conducted between October 2024 and May 2025. The average minimum population estimate during this period was 340 bats. June 27, 2025.

U.S. FISH AND WILDLIFE SERVICE
SIGNATURE PAGE for 5-YEAR REVIEW on fanihi (Mariana fruit bat, *Pteropus mariannus mariannus*)

Pre-1996 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
- No Change in listing status

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