

## **5-YEAR REVIEW**

### Short Form Summary

**Species Reviewed:** Mariana Common Moorhen (*Gallinula chloropus guami*)

**Current Classification:** Endangered

#### **Federal Register Notice announcing initiation of this review:**

[USFWS] U.S. Fish and Wildlife Service. 2013. Endangered and threatened wildlife and plants; initiation of 5-year status reviews of 44 species in Oregon, Hawai`i, Guam, and the Northern Mariana Islands. Federal Register 78(24): 8185-8187.

#### **Lead Region/Field Office:**

Region 1/Pacific Islands Fish and Wildlife Office (PIFWO), Honolulu, Hawai`i

#### **Name of Reviewer(s):**

Annie Marshall, Fish and Wildlife Biologist, PIFWO

Leilani Takano, Fish and Wildlife Biologist, PIFWO

Marie Brueggemann, Recovery Plant Coordinator, 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, 2013. The review was based on a review of current, available information since the last 5-year review for the Mariana Common Moorhen (USFWS 2009) as well as information from the recovery plan (USFWS 1991) and updates obtained from biologists working in the Mariana Islands. The evaluation, coordinated by Annie Marshall, Fish and Wildlife Biologist, was reviewed by the Recovery Plant Coordinator before submission to the Programmatic Deputy Field Supervisor for approval.

#### **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](http://ecos.fws.gov/tess_public)).

#### **Review Analysis:**

Please refer to the Recovery Plan for the Mariana Common Moorhen (=Gallinule) (*Gallinula chloropus guami*) (USFWS 1991) and the previous 5-year review for the Mariana Common Moorhen published on July 29, 2009 ([http://ecos.fws.gov/docs/five\\_year\\_review/doc2537.pdf](http://ecos.fws.gov/docs/five_year_review/doc2537.pdf)) for a complete review of the species' status, threats, and management efforts. No new threats or 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 Mariana Common Moorhen as endangered.

Mariana Common Moorhen populations currently occur on Guam, Tinian, and Saipan, having been extirpated from Pagan (USFWS 1991). The destruction of vegetation by feral ungulates on the island may have also contributed to the loss of the small population

there (USFWS 1991). Only those four islands of the Mariana archipelago historically had permanent freshwater wetlands capable of supporting this species (USFWS 1991). The primary tasks in the recovery plan focus on providing stable and productive habitat for the species distributed throughout as much of its historic range as possible (see Table 1). An additional requirement to meet recovery goals is to minimize mortality resulting from predation, poaching, and other factors (USFWS 1991).

New status information:

- The most recent counts of the Mariana Common Moorhen estimated 90 adult birds on Guam, 41 on Tinian, and 154 on Saipan resulting in a population estimate of 287 birds (Takano 2003; Takano and Haig 2004). The current status for the Mariana Common Moorhen as known is provided in Table 1 below. Threats to the species continue to increase, including predation, loss and degradation of wetlands, human disturbance, military training, and recently, climate change (USFWS 2009). In addition, the condition of the wetlands on Guam and in the Commonwealth of the Northern Mariana Islands (CNMI) remain poor due to a variety of reasons, including filling, dredging, altered hydrology, invasive introduced plants, introduced vertebrate predators, ungulate disturbance, fires, erosion, and pollution (USFWS 2009).
- Focused surveys for the Mariana Common Moorhen were conducted at the wetlands on Pagan, however, no Mariana Common Moorhens were detected (Marshall and Amidon 2010). The two wetlands on Pagan are in need of restoration in order to support moorhens (Marshall and Amidon 2010; Pratt 2010). These lakes are the only significant wetlands in the archipelago north of Saipan, and are two of only four lakes in the CNMI (Stinson 1993). Therefore, it may be prudent to consider translocating moorhens to Pagan given the amount of habitat available on this island and the poor status of the species on Guam, Tinian, and Saipan (Marshall and Amidon 2010; USFWS 2009). The U.S. Navy is proposing training activities on Pagan (U.S. Department of Navy [DON] 2015), which could further degrade the wetland habitat if measures are not taken to protect it.
- There are no recent concurrent surveys of the three islands with populations of the Mariana Common Moorhen for an archipelago-wide population estimate since the 2001 surveys were made (Takano 2003; Takano and Haig 2004).
- In 2014, biologists evaluated wetlands on Navy properties on Guam for their potential to contain characteristics of moorhen habitat and determine population numbers on Navy wetlands. Call playback surveys were conducted at wetlands during the dry and wet seasons. The minimum estimated population of adult Mariana Common Moorhens is 23 on Navy wetlands on Guam. During surveys, Mariana Common Moorhens were absent from Fena Reservoir (Naval Facilities Engineering Command [NAVFAC] 2015). Since April 2013, there have been no moorhens observed at Fena Reservoir (NAVFAC, unpublished data). The number of birds observed at Fena Lake between 1987 and 2007 has drastically declined (Anne Brooke, U.S. Navy, *in litt.* 2007).

New threats:

- Human Disturbance - Military activities mortality and reduced viability – Department of the Navy’s (DON) CNMI Joint Military Training (CJMT) proposed live-fire training will be located adjacent to Lake Hagoi and increased overflights would generate noise levels that would negatively impact Mariana Common Moorhens using Lake Hagoi and seasonal wetlands on Tinian.
- Climate change degradation of habitat – Climate change is believed to pose a threat to this species. However, current climate change analyses in the Pacific Islands lack sufficient spatial resolution to make predictions on impacts to this species. The Pacific Islands Climate Change Cooperative (PICCC) has currently funded climate modeling that will help resolve these spatial limitations. We anticipate high spatial resolution climate outputs by 2015.

New management actions:

- Existing population management and restoration – In 2015, the DON placed ten nesting platforms at Fena Reservoir. A subset of the nesting platforms have been designed to include floating aquatic vegetation for cover (protection from predators) and to increase foraging opportunities.

**Synthesis:**

It is possible that the decline and lack of Mariana Common Moorhens on Fena Reservoir, a major refuge for moorhens during the dry season, represents a continued decline in the population on Guam. In the past, the number of moorhens would increase at Fena Reservoir during the dry season as other seasonal wetlands dried up (Takano and Haig 2004). Monthly counts conducted in the dry season resulted in a minimum of 57 adults in 1988 and 28 adults in 2000 (Guam Division of Aquatic and Wildlife Resources 1988). In 2001, over a third (35 of 90 adult moorhens) of the moorhens counted by Takano and Haig (2004) occurred on Fena Reservoir during the dry season. Over the past decade, moorhen numbers at Fena Reservoir have declined until only a single moorhen was occasionally observed at Fena Reservoir in the spillway, and subsequently no longer observed using the lake in 2013 (NAVFAC, unpublished data). While it is possible the Guam population is continuing to decline as discussed above, it is also possible birds may be moving to other wetlands that are not surveyed. Therefore, frequent and standardized surveys to assess population trends are needed to determine the status of Mariana Common Moorhens on Guam.

Downlisting objectives are provided in the recovery plan for the Mariana Common Moorhen (USFWS 1991). To be downlisted: 1) total of 240 ha (600 acres) of suitable wetland habitat on Guam, 120 ha (300 acres) on Saipan, and 30 ha (75 acres) on Tinian must be protected and managed; 2) population densities should be greater than 2.5 birds/ha (1 bird/acre) or 600 adult birds for Guam, 300 birds for Saipan, and 75 birds for Tinian, and; 3) population numbers and densities must be maintained for five consecutive years. These are considered interim recovery objectives due to a lack of information about the species when the recovery plan was written. There are no delisting criteria in the recovery plan (USFWS 1991).

The downlisting goals for this species have not been met (Table 1), almost none of the threats are being managed, and some threats may be increasing, including degradation of wetlands, as well as storms, tsunamis, and sea level rise due to climate change (Table 2). Therefore, the Mariana Common Moorhen meets the definition of endangered as it remains in danger of extinction throughout its range.

**Recommendations for Future Actions:**

- Surveys / inventories / Site / area / habitat protection – Determine which of the primary and secondary wetlands are needed on each island for recovery and develop a plan to prioritize efforts to work toward their protection and management. The rivers on Guam need to be incorporated into this determination.
- Population viability monitoring and analysis – Work with Guam Division of Aquatic and Wildlife Resources, CNMI Division of Fish and Wildlife, and the U.S. Navy to develop and implement plans to conduct frequent and standardized surveys of the wetlands on Guam, Tinian, and Saipan (and possibly Rota) to monitor the status of the Mariana Common Moorhen throughout the Mariana Islands.
- Alliance and partnership development – Develop cooperative agreements with private landowners for wetlands that occur on private lands and that are determined to be necessary for recovery.
- Strategic planning / Habitat and natural process management and restoration – Develop management plans for restoring wetlands, incorporating methodology for removing nonnative invasive plants, improving hydrology where possible, removing predators effectively, and removing grazing ungulates where necessary.
- Research recommendation implementation – Keep abreast of research on improvements in predator control and implement improved methodology.
- Predator / herbivore monitoring and control – Conduct brown treesnake (*Boiga irregularis*) control at Guam wetlands. Continue brown treesnake surveillance and interdiction strategies to reduce the possibility of the brown treesnake becoming established on other islands.
- Human interaction monitoring and management – Minimize human disturbance at primary and secondary wetlands determined essential for recovery.
- Habitat requirements research / Population viability monitoring and analysis – Research biological parameters needed to determine delisting criteria.
- Population viability monitoring and analysis – Conduct a population viability analysis to identify population numbers and time spans to serve as predictors of long-term recovery for this species.

**Table 1. Status and trends of Mariana Common Moorhen from listing through current 5-year review.**

| Date                        | No. adult wild individuals              | Downlisting Criteria identified in Recovery Plan                                | Downlisting Criteria Completed? |
|-----------------------------|---|---|---------------------------------|
| 1984 (listing)              | Unknown                                 | No recovery plan developed yet.   | N/A                             |
| 1991 (recovery plan, USFWS) | 300-400: 100-125 on Guam, 75 on Tinian, | 1. Protect and manage a total of 240 ha (600 acres) of suitable wetland habitat | No                              |

|                      |  |  |    |
|----------------------|--|--|----|
| 1991)                | and 100 on Saipan (0 on Pagan) (Stinson <i>et al.</i> 1991)                                | on Guam, 120 ha (300 acres) on Saipan, and 30 ha (75 acres) on Tinian.   |    |
|                      |  | 2. Population densities should be greater than 2.5 birds/ha (1 bird/acre) or 600 adult birds for Guam, 300 birds for Saipan, and 75 birds for Tinian.    | No |
|                      |  | 3. Population numbers and densities must be maintained for five consecutive years.   | No |
| 2009 (5-year review) | 287: 90 birds on Guam, 41 on Tinian, and 154 on Saipan (Takano 2003, Takano and Haig 2004) | 1. Protect and manage a total of 240 ha (600 acres) of suitable wetland habitat on Guam, 120 ha (300 acres) on Saipan, and 30 ha (75 acres) on Tinian.   | No |
|                      |  | 2. Population densities should be greater than 2.5 birds/ha (1 bird/acre) or 600 adult birds for Guam, 300 birds for Saipan, and 75 birds for Tinian.    | No |
|                      |  | 3. Population numbers and densities must be maintained for five consecutive years.   | No |
| 2015 (5-yr review)   | 287: 90 birds on Guam, 41 on Tinian, and 154 on Saipan (Takano 2003, Takano and Haig 2004) | 1. Protect and manage a total of 240 ha (600 acres) of suitable wetland habitat on Guam, 120 ha (300 acres) on Saipan, and 30 ha (75 acres) on Tinian.   | No |
|                      |  | 2. Population densities should be greater than 2.5 birds/ha (1 bird/acre) or 600 adult birds for Guam, 300 birds for Saipan, and 75 birds for Tinian.    | No |
|                      |  | 3. Population numbers and densities must be maintained for five consecutive years.   | No |
|                      |  | 4. There are multiple self-sustaining breeding populations, including multiple populations present on at least Kaua`i/Ni`ihau, O`ahu, Maui, and Hawai`i. | No |

**Table 2. Threats to the Mariana Common Moorhen and ongoing conservation efforts.**

| Threat                                   | Listing factor | Current Status               | Conservation/ Management Efforts   |
|--|----------------|------------------------------|--|
| Loss and degradation of wetland habitat  | A              | Ongoing, possibly increasing | Occasional: Restoration efforts conducted sometimes for only a few wetlands. |
| Alteration of hydrology                  | A              | Ongoing                      | No   |
| Invasion of habitat by non-native plants | A              | Ongoing                      | No   |
| Alien predators                          | C              | Ongoing                      | No   |
| Avian disease                            | C              | Unknown                      | No   |

|                                   |      |            |    |
|-----------------------------------|------|------------|----|
| Contaminants                      | E    | Ongoing    | No |
| Human disturbance                 | E    | Ongoing    | No |
| Climate change and sea level rise | A, E | Increasing | No |

**References:**

**See previous 5-year review for a full list of references (USFWS 2009). Only references not listed in that document are provided below.**

[DON] U.S. Department of Navy. 2015. Draft Environmental Impact Statement/ Overseas Environmental Statement for the Commonwealth of the Northern Mariana Islands Joint Military Training. 1388 pages + appendices.

Guam Division of Aquatics and Wildlife. 1988. Annual Report 1987-1988. Unpublished report. 142 pages.

Marshall, A.P. and F.A. Amidon 2010. Status of the land and wetland avifauna of Pagan, Mariana Islands. Unpublished U.S. Fish and Wildlife Report, December 2010. 30 pages.

Pratt, L.W. 2010. Vegetation assessment of the forests of Pagan Island, Commonwealth of the Northern Mariana Islands. Draft report by USGS-Pacific Island Ecosystems Research Center, Kilauea Field Station, Hawaii Volcanoes National Park, Hawaii. 87 pages.

[NAVFAC] Naval Facilities Engineering Command. 2015. Final Survey Report for the Mariana Common Moorhen Wetland Use and Population Survey. Prepared for the Naval Facilities Engineering Command Marianas, Environmental Program by Allied Pacific Environmental Consulting, Inc., Guam. Contract No. N40192-13-M-5000. 329 pages.

[USFWS] U.S. Fish and Wildlife Service. 2009. Mariana Common Moorhen (*Gallinula chloropus guami*) 5-year review summary and evaluation. U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, HI. 13 pages.

[USFWS] U.S. Fish and Wildlife Service. 2013. Endangered and threatened wildlife and plants; initiation of 5-year status reviews of 44 species in Oregon, Hawaii, Guam, and the Northern Mariana Islands. Federal Register 78(24): 8185-8187.

***In Litt.:***

Brooke, A. 2007. E-mail from Anne Brooke, U.S. Navy to Annie Marshall, USFWS. Subject: Mariana Common Moorhen numbers at Fena Reservoir FY1987-2007.

**Unpublished data:**

[NAVFAC] Naval Facilities Engineering Command. 2014. 2007-2014 Survey Results for the Mariana Common Moorhen on Fena Reservoir, Guam. Unpublished data.

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**U.S. FISH AND WILDLIFE SERVICE**  
**5-YEAR REVIEW of Mariana Common Moorhen (*Gallinula chloropus guami*)**

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

Appropriate Listing/Reclassification Priority Number, if applicable: \_\_\_\_\_

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