

Marianas Expedition Wildlife Surveys 2010



Terrestrial Resource Surveys of Pagan, Commonwealth of the Northern Mariana Islands

United States Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
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EXECUTIVE SUMMARY

The “Mariana Expedition Wildlife Surveys 2010 (MEWS 2010)” was a United States Fish and Wildlife Service (USFWS) lead project funded by the United States Marine Corps (USMC). Data collected during these surveys could be used, in the future, to assist in the assessment of potential natural resource impacts of proposed Department of Defense (DoD) activities in the Northern Islands of the Commonwealth of the Northern Mariana Islands (CNMI).

The CNMI is composed of 14 islands. The ten northern most islands in the CNMI are part of the Northern Islands Municipality. All islands are volcanic in origin with varying levels of recent volcanic activity. Larger islands have been inhabited historically. Currently, 10 - 25 people inhabit the three largest islands (Alamagan, Pagan, and Agrihan) on a semi-permanent basis. There is a substantial group of CNMI citizens living on Saipan, and elsewhere, who are residents of the Northern Islands Municipality. Most Northern Islands Municipality citizens are unable to live on the islands due to volcanic activity and economics. The Northern Islands of the CNMI are represented by the Northern Islands Mayor’s Office (NIMO).

The Northern Islands of the CNMI are remote and contain challenging topography and dense forests. These features have hindered detailed biological survey. The Marianas Expedition Wildlife Surveys had two primary objectives: 1) to gather baseline data on native and introduced vegetation, snails, insects, coconut crabs, reptiles, birds, and mammals found on Pagan Island as well as the marine habitat surrounding Pagan and 2) to determine the relative abundance of Micronesian megapodes (*Megapodius laperouse*) and Mariana fruit bats (*Pteropus mariannus*) in the Northern Islands.

The islands surveyed span an area 375 miles north of the Island of Saipan, which was used as the logistical headquarters of the survey operation. These islands vary in distance from 30 to 60 miles from the nearest adjacent island. No infrastructure exists on any of the Northern Islands and all supplies, including water, were brought in to support the surveys. Mobilization of field camps, and subsequently field work was, initiated in April when winter seas became calmer. All field work needed to be completed by mid-August prior to the on-set of typhoon season. During the five months of field work (April – August), an estimated 75 tons of fuel, equipment, and supplies were transported to and subsequently removed from the islands as well as 115 biologists, technicians, and support staff. Staging of field work posed significant logistical challenges. These challenges included the emergency evacuation and redeployment of 40+ individuals during a two week period in late May / early June due to the volcanic eruption of a large steam and ash cloud from a submarine vent seven miles south of Sarigan. The status of volcanic activity on northern Pagan and the need to ensure project participant safety related to both Sarigan and Pagan contributed to the timing of redeployment and ability of survey participants to complete specific aspects of surveys.

Surveys were conducted through interagency and cooperative agreements with several organizations including: the NIMO, the CNMI Department of Lands and Natural Resources (DLNR) and Division of Fish & Wildlife (DFW), the University of Guam, the University of Hawaii, the University of Washington, the University of Montana, the United States Department of Agriculture -Wildlife Services, the National Oceanic and Atmospheric Administration (NOAA), the United States Geological Survey (USGS), and the Bishop Museum. USMC and Navy staff provided assistance throughout the surveys. Transportation to the Northern Islands was provided through contracts with: 1) a locally-owned commercial helicopter

company and 2) a Guam-based vendor who provides regional tug & barge service and owns a Saipan-based commercial vessel.

General findings on Pagan Island

- The northern end of Pagan Island has low species diversity and is heavily degraded due to ungulates and recent volcanic activity. The southern end of the island has higher species richness and greater habitat diversity. Southern Pagan has many areas of native forest in good condition that provide habitat for the majority of T & E species found on the island.
- Vegetation –Northern Pagan has low species richness, while the south end still has some native forest and higher species richness. Vegetation on Northern Pagan is degraded, with little ground cover and low recruitment of new trees. This is undoubtedly a result of overgrazing by feral ungulates (cows, goats, and pigs). *Coccinia grandis* (scarlet gourd), an invasive species in the southern Mariana Islands and Hawaii, was recorded on the island near the base camp and there are at least three invasive vine species (*Antigonun leptopus*, *Cardiospermum halicacabum*, and *Ipomoea triloba*) with expanding ranges on the island.
- Snails – Native partulid snails (candidate species for federal listing) exist in limited populations on the southern end of Pagan. These populations could be unique to Pagan and as such they and their habitat should be preserved intact. Native habitat, in good condition, is paramount for the continued existence of these species
- Insects – Over 200 new species records were documented for the Island of Pagan and at least 3 have not been described previously. These surveys documented the establishment and expansion of the highly invasive crazy ant (*Anoplolepis gracilipes*) on Pagan. This species is of significant conservation concern and has caused significant impacts to a range of native species globally.
- Coconut Crabs – Populations of this valuable resource are declining on Pagan. Reasons are unknown but could be related to overharvesting by humans and direct and indirect effects of invasive species.
- Wetlands – The two lakes on Pagan are unique in the Mariana Islands. They support high insect species richness and are worthy of protection and restoration as they are currently heavily impacted by feral ungulates. No aquatic vegetation was observed in these lakes during the survey project.
- Lizards – populations are low on Pagan with some species limited or absent as compared to other Mariana Islands. The endemic Slevin’s skink, a “species of concern,” was not observed on Pagan though it had previously been documented on the island.
- Terrestrial birds – Forest bird densities on Pagan fell within the range of densities reported on other islands in the archipelago (e.g., Saipan, Sarigan, etc.). Wetlands could be restored to support reintroduction of the endangered Mariana moorhen.
- Rodents –The Oriental house rat (*Rattus tanezumi*) was the only rodent recorded on the island during surveys of the northern half of the island. The Oriental house rat was believed to have been replaced by the Malayan house rat (*Rattus cf. diardii*) on the southern islands of Guam, Rota, Tinian, and Saipan.
- Feral ungulates – Cows, goats, and pigs are abundant on Pagan and overgrazing is prevalent, particularly on the northern end of the island. High ungulate abundance negatively impacts forest structure, regeneration and native plant diversity. Vegetation in many sites on Pagan, where ungulates are present, are heavily degraded. High ungulate abundance contributes to

significant local erosion. Removal or control of ungulates should be considered a high priority to prevent further degradation of forest ecosystems on Pagan.

- No observations of sea turtle nesting were recorded on Pagan beaches although there appears to be suitable nesting habitat.

General observations related to megapodes and fruit bats in the Northern Islands:

- Megapodes – The total numbers throughout the archipelago were much higher than previously estimated and the species appears to be doing well on some islands. On Pagan, the largest of the Northern Islands, the population is doing very poorly, likely as a result of predation by introduced species, habitat loss from ungulate overgrazing, volcanic activity and potential hunting. Currently, the species appears to be limited to the southern end of Pagan. The megapode population on the island of Agrihan, in particular, appears to have experienced a severe population decline.
- Fruit bats – Numbers are declining throughout the archipelago with the largest islands having the lowest bat numbers. Bat numbers on Pagan are down significantly from only a few years prior. This, unfortunately, appears to be the trend throughout the islands. Urgent management is needed to prevent the extinction of this species.