

Observations of Mariana Fruit Bats on Tinian

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Abstract—From November 1994 to August 1995 the U.S. Fish and Wildlife Service (USFWS) conducted a survey for the Mariana fruit bat on the island of Tinian. Spotting scopes and binoculars were used to survey the forest canopy and skyline at five bat observation stations. Each station was surveyed once a month for a total of 76 hr. No bats were observed during the study period, however, two incidental sightings were reported. Illegal harvesting of fruit bats remains the major threat to the reestablishment of this species on Tinian.

Introduction

The Mariana fruit bat (*Pteropus mariannus*) is locally protected by the Commonwealth of the Northern Mariana Islands (CNMI) government (U.S. Fish & Wildlife Service 1996). The island of Tinian (15°N, 145°38') once held a large number of fruit bats (Fritz 1901), however, by 1979, Wheeler (1980) estimated the population declined to 25-100 individuals. The population continued to decline with fewer than 25 bats remaining in the 1980s (Wiles et al. 1989, Stinson et al. 1992). By 1994 the status of the fruit bat on the island was uncertain, being rare or extinct (Stinson 1994). This downward trend is not unique to Tinian; it has also occurred on other populated islands in the Marianas, including Guam, Rota, and Saipan (Wheeler 1980, Wiles et al. 1989, Stinson et al. 1992).

In June 1994, the U.S. Navy contracted with the USFWS to investigate the status of the Mariana fruit bat on Tinian. This paper discusses the results of the study, which was conducted from November 1994 to August 1995.

Study Area and Methods

Tinian is the second largest island of the CNMI, with a land area of 100 km² and a human population of 2,000 (USFWS 1996). Approximately two-thirds of the island is leased to the U.S. Navy for military exercises. The primary habitats are tangantangan (*Leucaena leucocephala*) forest, 38.3%; open fields, 30.9%; secondary forest, 19.2%; native limestone forest, 4.9%; strand vegetation, 3.6%; cultivated fields, 1.9%; urban areas, 0.8%; and marshland, 0.1%

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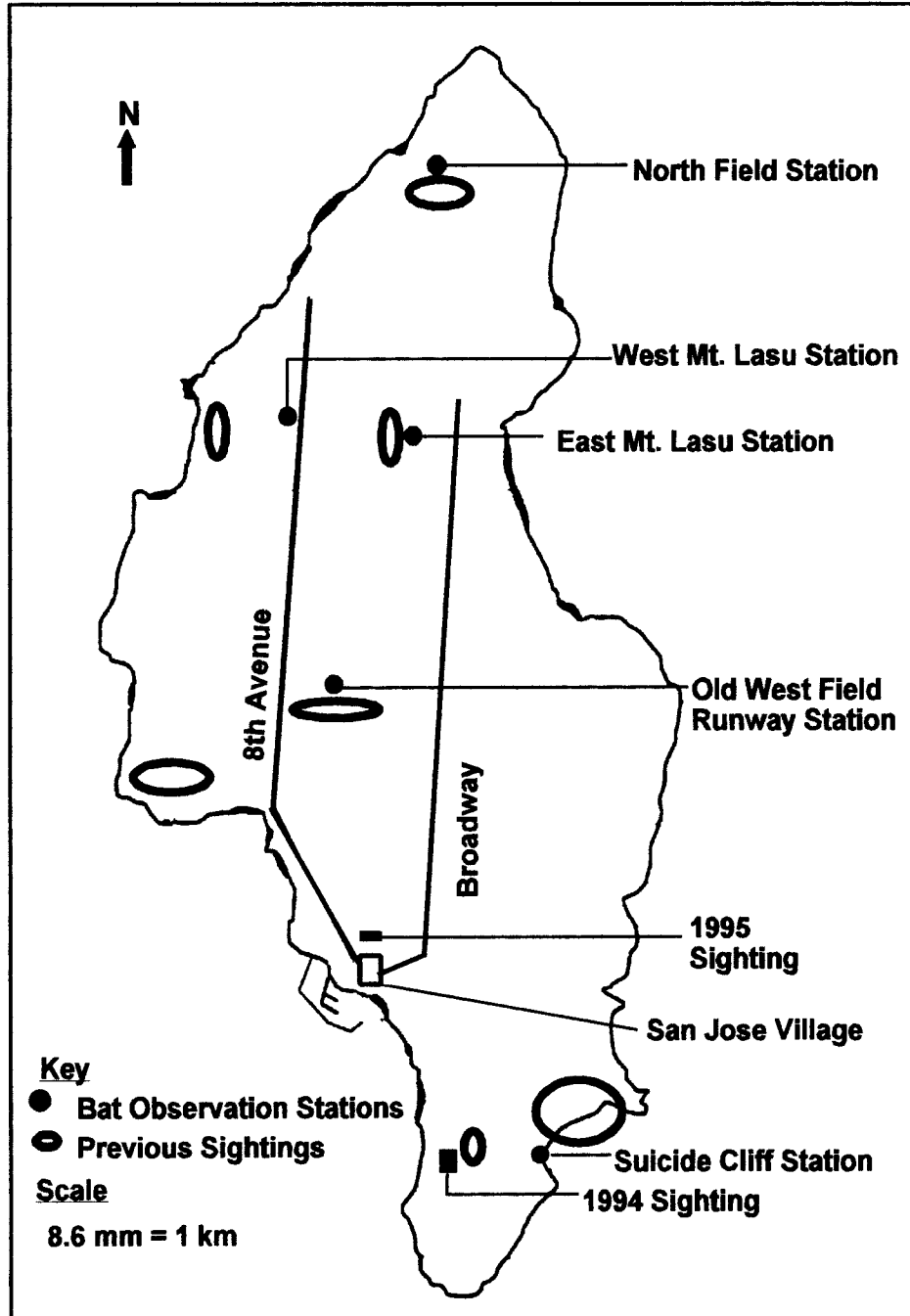


Figure 1. Map of Tinian indicating general locations of fruit bat observation stations and reported bat sightings from the last 10-20 years.

(Engbring et al. 1986). The nearest neighboring islands are Saipan (4.5 km northeast) and Aguiguan (9 km southwest) (Wiles et al. 1990).

Five bat observation stations were established in November 1994 (Fig. 1). The stations were located in areas where local residents and previous literature reported bats being seen. Two of the stations, Suicide Cliff and East Mt. Lasu, overlooked native limestone forests. The North Field and Old West Field Runway stations overlooked *Casuarina* trees. The West Mt. Lasu station had views of both native limestone forest and *Casuarina* trees. A more detailed description of each station appears in USFWS (1996).

Once a month at dusk the forest canopy and skyline at each station was observed with binoculars and spotting scopes for flying bats. The average time spent at each station was 92 min per night. The surveys started as early as 1715 h and finished no later than 2000 h.

Results

During the 10-month survey, 76 hr were spent searching for fruit bats. No bats were observed, however, two incidental sightings of single flying bats were reported by others (Fig. 1). These occurred at the southern end of the island on 30 November 1994 at 0850 hr (A. Marshall, pers. comm.) and on 4 June 1995 at 2330 hr near a long row of mature *Casuarina* trees on the north edge of San Jose Village (R. Young, pers. comm.).

Discussion

Although no fruit bats were observed during the survey, the two incidental sightings indicate that fruit bats still occur on Tinian. Our findings support the results of other recent surveys (Wheeler 1980, Wiles et al. 1989, 1990) that the island's population continues to be very small. Wiles et al. (1990) believed that Tinian had adequate food resources to support a population of fruit bats. We believe that illegal hunting continues to be the primary reason for the island's small bat population, although loss of habitat, particularly native limestone forest, and human disturbances probably contribute as well.

Densities of Mariana fruit bats are highest on islands where few people live and there is little hunting (Wiles et al. 1989). This is largely because fruit bats are illegally harvested for consumption as they are considered a delicacy by the native Chamorro population (Lemke 1992, Nowak & Paradiso 1983, Wiles & Payne 1986, Wiles et al. 1990). In the 1970's, the demand for fruit bats on Guam and within the CNMI was high. From 1975 to 1981 the CNMI exported 15,805 bats to Guam, with Tinian exporting an average of 210 bats annually (Wiles & Payne 1986), although no evidence currently exists that trade still occurs between Tinian and Guam. Today, the most important threat to the existence of this species is the illegal harvesting for personal consumption.

Sightings of fruit bats on Tinian over the last 10-20 years have occurred in habitats characterized by native limestone forests and *Casuarina* trees (Fig. 1). The two sightings reported during our study period occurred in those habitats as well. Previous literature addresses the importance of native forests for the continued existence of fruit bats in the CNMI (Stinson et al. 1992, Wiles et al. 1990). Although Tinian has little native limestone forest remaining (<5%), this habitat should be protected from human disturbances. Craig (1993) provided several management suggestions for regenerating native forests. Those methods should be actively pursued to help enhance fruit bat habitat on Tinian.

The possibility of bats emigrating from nearby islands (Saipan, Aguiguan, Rota) and establishing themselves on Tinian exists, as Mariana fruit bats are capable of flying between islands (Wiles & Glass 1990). In order for populations to increase on Tinian and other islands, improved law enforcement is needed in the CNMI. According to Wheeler (1980) and Wiles et al. (1989) the law enforcement should come from the U.S. federal government since there are many socio-cultural problems involved with local enforcement of the law against resident islanders (Wiles et al. 1989, Lemke 1992).

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