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Marianas Fruit Bats Near Extinction
Lemke, Dr. Thomas O.

by Dr. Thomas O. Lemke

The Marianas Fruit Bat (*Pteropus mariannus*) is in serious danger of extinction if its population decline is not halted in the near future. With a 3 foot wingspan and a weight of a pound or more, this flying fox is the largest native mammal in the Mariana Islands, a 15 island archipelago located in the western Pacific 1500 miles southeast of Japan and 3800 miles west of Hawaii. The southernmost island, Guam, is a U.S. Territory and the rest of the islands form the U.S. Commonwealth of the Northern Marianas Islands (CNMI).

Recent wildlife surveys in the CNMI have verified that Marianas Fruit Bats are close to extinction on three islands (including Saipan, the Commonwealth capitol), declining rapidly on a fourth island and are subject to illegal hunting throughout the Commonwealth, including the remote islands north of Saipan. The Marianas Fruit Bat was listed as an endangered species on Guam by the U.S. Fish and Wildlife Service in 1984 and has been protected by CNMI law since 1977

History of Decline

Prior to the early 1970's these fruit bats were common on most islands in the CNMI and on Guam. In 1957 there was an estimated population of 3000 on Guam. Today there are approximately 400-500 remaining. The undeniable reason for the decline in fruit bats is over-hunting for personal consumption and commercial exploitation by market hunters. Fruit bats, or "fanihi" as they are known locally, are a delicacy in the native Chamorro culture, and recipes for fruit bats appear in modern day cookbooks. The bats are boiled in a mixture of water, coconut milk, spices and onions and eaten whole, including fur, wings and internal organs. The uncontrolled harvest of any species can endanger its existence, and the decline of fruit bats in the Marianas is a classic case of over-exploitation with no regard for conservation or management of the resource.

The story of the decline of fruit bats in the CNMI is as complicated as the Commonwealth's political history. Since the islands were discovered in the 1600's they have been controlled by the Spanish, Germans, Japanese and Americans. Each one has had a major influence on the indigenous culture, and the result is an interesting mix of customs and values.

Archeological evidence shows that Chamorros have eaten fruit bats for over a thousand years. They probably captured them with sling stones, primitive traps and various types of nets. Owing to the primitive means of hunting and the relatively large number of bats compared to the human population, early Chamorros probably had little impact on fruit bat populations. Chamorros continued to harvest bats by rather primitive means under Spanish, German and Japanese governments. Foreign rulers kept strict control of modern weapons and none of the outsiders developed a serious taste for fruit bats.

Following World War II and liberation from the Japanese, local islanders gained new freedoms and an improved standard of living. Subsistence life styles gave way to a money

earning income. As rifles and shotguns became available, hunters were able to kill large numbers of bats with ease. Fruit bats are particularly vulnerable because of their conspicuous roosts in large colonies in trees. Eventually many Chamorros, especially on Guam, could afford to buy fruit bats rather than have to hunt for them. Fanihi was in demand as a desirable local food with a great deal of cultural prestige. Fruit bats are usually reserved for special family occasions such as weddings, baptisms and religious holidays.

Commercial Bat Hunting

By the 1970's a lucrative commercial fruit bat business had begun. Entrepreneurs from Guam and Saipan provided local hunters with guns, ammunition, money and in some cases gas powered freezers in exchange for regular supplies of fruit bats. Buyers flew to Saipan and the remote island of Pagan to collect shipments of bats. In the 1970's when commercial hunting was legal, fruit bats sold for \$10-\$15 apiece. Now that it is illegal, local "black market" bats may bring \$25 each. It is legal, however, to import fruit bats into the Marianas from countries where they are not protected. An estimated 24,000 fruit bats were imported to Guam in 1980. Currently about 15,000 are imported annually, without adequate regard for the possible consequences of over-harvesting.

Present Status

As a result of marked declines in Marianas Fruit Bats, the CNMI passed a moratorium on fruit bat hunting in 1977. Unfortunately there were no funds or personnel to enforce this unpopular law until the CNMI Division of Fish and Wildlife was created in 1981. The Division is supported by federal funding administered by the U.S. Fish and Wildlife Service. In 1983 the Division hired its first biologists and conservation officers.

Studies conducted in the CNMI indicate that: (1) Fruit bat populations on Saipan have declined to less than 25 bats, while the number of bats on Tinian and Aguijan are less than 10 bats each. All three islands supported hundreds, if not thousands, of bats as recently as 10 years ago; (2) From 1983 to 1985 the number of fruit bats on the island of Rota declined in three out of four major bat colonies. The total number of bats observed during quarterly departure counts dropped from over 1200 to less than 300 bats; (3) Approximately 4000 fruit bats were counted on the remote islands north of Saipan in 1983. Even though three islands have relatively large fruit bat populations, the northern islands are receiving an alarming amount of illegal hunting pressure.

Critical Factors

Two critical factors in the decline of fruit bats are the seemingly insatiable cultural demand for them as food and a general unwillingness to limit the harvest of the remaining bat population. Law enforcement by local conservation officers and the police is made difficult due to the inter-relatedness of the extended small island families. It is simply unacceptable to arrest someone you are "related to" for breaking such an unpopular law.

The laws are also bent through local politics. An example is the special authorization of fruit bat hunts on Rota to accommodate the consumption of bats at two religious festivals each year. A small quota of 10-15 bats is set, but in fact dozens, if not hundreds, of bats are killed for these occasions. There also is evidence that bats harvested on Rota for the fiesta are sold or bartered to people from other islands.

To help improve this situation, conservation education efforts are beginning in CNMI schools and in the media to provide Chamorros with an understanding of conservation and wildlife management goals. Old ideas and ways will be slow to change. Unfortunately, it may be too late to save fruit bat populations on some islands where only a few remain.

Such losses could have serious consequences for the future of native forests which rely heavily on these bats for seed dispersal and pollination.

Need for More Protection

Since the CNMI is a U.S. Commonwealth, the federal Endangered Species Act of 1973 is applicable. If the Marianas Fruit Bat is listed as endangered in the CNMI, additional legal protection will apply and funds may be available to improve present enforcement and education efforts. Federal laws with stricter penalties and possible enforcement by federal agents may be a more effective deterrent against killing bats than existing laws. Federal listing is not a panacea for the problem; however, it could help. Lasting change will come only when conservation and resource management is understood and accepted by the local people. Given time, local acceptance and good management, fruit bats may again be legally hunted in the Marianas on a sustainable yield basis, but only if their population decline can be halted now.

You Can Help

In the near future, the U.S. Fish and Wildlife Service will be considering my petition to list the Marianas Fruit Bat as endangered on the southern islands of the CNMI. If you would like to support such a petition, you may write to the following address and express your concerns: Office of Endangered Species, U.S. Fish and Wildlife Service, Washington, DC 20240.

(Dr. Thomas O. Lemke is a biologist with the Montana Dept. of Fish, Wildlife and Parks. He has studied the behavior and ecology of bats for the past ten years, and from 1983 to 1985 he worked as the Wildlife Section Supervisor for the Division of Fish and Wildlife, Commonwealth of the Northern Mariana Islands.)



An endangered Marianas Fruit Bat eagerly feeds on the pollen of a Freycinetia inflorescence (Freycinetia reineckei) on the island of Guam. This liana plant is heavily dependent upon flying fox pollination, rewarding bats with fleshy, edible bracts as well as copious amounts of highly nutritious pollen containing 18 amino acids. Unlike many flowers, these produce no nectar. Pollen is carried from flower to flower on the bat's fur. Photo by Dr. Merlin Tuttle.



Bats stewed in coconut milk are a traditional Chamorro delicacy. Photo by Dr. Merlin Tuttle.



The Marianas Fruit Bat is the largest native mammal in the Mariana Islands. The bat is brownish-black with a distinct buff colored mantle. Photo by Dr. Merlin D. Tuttle

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