

## ABSTRACT

Because bats are often the only native terrestrial mammals on geographically isolated island systems, they are critical to the biodiversity of mammalian fauna. *Emballonura semicaudata* was once widespread and relatively common throughout its historic range in Micronesia and Polynesia, however, drastic declines and possible extinctions on some islands have been recorded in recent years. The objectives of the Pacific sheath-tailed bat inventory were to determine and document: (1) the occurrence of Pacific sheath-tailed bats in parks and selected areas of American Samoa; and (2) general habitat characteristics associated with Pacific sheath-tailed bat observations. Acoustic surveys were done in 2006 using Mini-3 bat detectors, while surveys in 2008 were done using Anabat II frequency division bat detectors. Literature reviews, interviews with local residents and park personnel, and discussions with other scientists working with insectivorous bats were also conducted to investigate possible locations of Pacific sheath-tailed bats in sample areas. Because *E. semicaudata* is rare in our survey areas, this inventory was highly exploratory and opportunistic in nature. Although we did not detect any Pacific sheath-tailed bats in American Samoa during acoustic surveys in 2006 and 2008, it is possible that these bats have moved into more remote areas of the islands. Future surveys should focus on use of passive monitoring bat detectors (e.g., Anabat detection systems), which allows for continued, long-term monitoring in the absence of researchers, while operating for long time periods on battery power. We also recommend additional interviews with residents, as well as thorough searches in remote areas of Ta'u, Tutuila, and Ofu/Olosega, particularly focusing on areas where sheath-tailed bats have been previously reported.

## INTRODUCTION

As one of only a few native terrestrial mammals found on the geographically isolated islands of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands (CNMI), Pacific sheath-tailed bats (*Emballonura semicaudata*) are a critical component of mammalian fauna biodiversity. *E. semicaudata* was once widespread and relatively common throughout its historic range in Micronesia and Polynesia. However, drastic declines and possible extinctions on some islands have been recorded over the last 20 years (Hutson et al. 2001). On Guam the disappearance of Pacific sheath-tailed bats has been largely attributed to degradation of cave habitats caused during WWII, use of pesticides (Hutson et al. 2001), and catastrophic tropical storms (Grant et al. 1994). Furthermore, the introduction of the brown tree snake (*Boiga irregularis*) on Guam (Wiles et al. 1995) may have also devastated the Pacific sheath-tailed bats. Although the last known sighting of a Pacific sheath-tailed bat on Guam occurred in May, 1972 (Kami et al. 1976), it was not until 1981 that the Acting Governor of Guam petitioned the U.S. Fish and Wildlife Service (USFWS) to place them on the U.S. List of Endangered and Threatened Wildlife. Due to a lack of information regarding presence and distribution, the petition was denied (Lemke 1986). However, the USFWS finally classified *E. semicaudata* as a candidate for listing with a priority number of 3 (Center for Biological Diversity 2004). Likewise, populations of *E. semicaudata* in American Samoa have also declined at an alarming rate, dropping from estimates in the thousands during the 1970s to possibly only a few individuals in the 1990s (Grant et al. 1994). It may be that Pacific sheath-tailed bats have already been extirpated from American Samoa (Grant et al. 1994). Nevertheless, searches in remote areas of the islands may yield new roosting information and should be explored (G. J. Wiles, pers. comm., Washington Department of Fish and Wildlife). At present, Pacific sheath-tailed bats are known to occur on Aguiguan, Commonwealth of the Northern Mariana Islands (Esselstyn et al. 2004), and conceivably in areas of Tinian, CNMI (G.J. Wiles, pers. comm., Washington Department of Fish and Wildlife), western Samoa (Tarburton 2002), and Tutuila, American Samoa (Hutson et al. 2001, Center for Biological Diversity 2004). Surveys for Pacific sheath-tailed bats in both volcanic and limestone caves and bluffs and surrounding forests in selected areas of American Samoa are necessary before monitoring or conservation strategies can be developed for this species. Approaches developed for the Pacific sheath-tailed bat may also benefit other cave dwelling species, such as cave swiftlets (*Collocalia* spp.) and various invertebrates (Hutson et al. 2001).

Although *E. semicaudata* is extant, it is extremely rare in our survey areas. Select areas of American Samoa in and within proximity to units of the National Park of American Samoa (NPSA) on Ta'u, Ofu, and Tutuila were identified for inventory of Pacific sheath-tailed bats. Inventory methods similar to those used for hoary bat (*Lasiurus cinereus semotus*) inventories in national parks in the Hawaiian Islands were implemented to determine and document: (1) the occurrence of Pacific sheath-tailed bats in parks and selected areas of American Samoa; and (2) general habitat characteristics associated with Pacific sheath-tailed bat observations.