

CANDIDATE ASSESSMENT AND LISTING PRIORITY ASSIGNMENT FORM

SCIENTIFIC NAME: Emballonura semicaudata rotensis  
Emballonura semicaudata semicaudata, American Samoa DPS

COMMON NAME: Pacific sheath-tailed bat

LEAD REGION: 1

INFORMATION CURRENT AS OF: 01/30/2003

STATUS/ACTION (Check all that apply):

- New candidate  
 Continuing candidate  
     Non-petitioned  
     Petitioned - Date petition received: \_\_\_\_\_  
         90-day positive - FR date: \_\_\_\_\_  
         12-month warranted but precluded - FR date: \_\_\_\_\_  
         Is the petition requesting a reclassification of a listed species?  
     Listing priority change  
        Former LP: \_\_\_\_\_  
        New LP: \_\_\_\_\_

Latest Date species became a Candidate: 06/13/2002

- Candidate removal: Former LP: \_\_\_\_\_ (Check only one reason)  
     A - Taxon more abundant or widespread than previously believed or not subject to a degree of threats sufficient to warrant issuance of a proposed listing or continuance of candidate status.  
     F - Range is no longer a U.S. territory.  
     I - Insufficient information on biological vulnerability and threats to support listing.  
     M - Taxon mistakenly included in past notice of review.  
     N - Taxon may not meet the Act's definition of "species."  
     X - Taxon believed to be extinct.

ANIMAL/PLANT GROUP AND FAMILY: Emballonuridae (bats)

HISTORICAL STATES/TERRITORIES/COUNTRIES OF OCCURRENCE:

American and Western Samoa, Guam, Commonwealth of the Northern Mariana Islands, Caroline Islands, Tonga, Fiji, and Vanuatu

CURRENT STATES/ COUNTIES/TERRITORIES/COUNTRIES OF OCCURRENCE:

In areas under the jurisdiction of the United States, this species currently occurs only on Aguiguan, Commonwealth of the Northern Mariana Islands (CNMI) and possibly on Tutuila, American Samoa. We currently consider this species as a candidate for listing only in these U.S. flag territories.

LEAD REGION CONTACT (Name, phone number): Wendi Weber, 503-231-6241

LEAD FIELD OFFICE CONTACT (Office, name, phone number): Pacific Islands Fish and Wildlife Office, Ecological Services, Marilet A. Zablan, 808-541-3441

## BIOLOGICAL INFORMATION:

### Species Description

The Pacific sheath-tailed bat (*Emballonura semicaudata*) is a small bat and is a member of the Emballonuridae, an Old World bat family that has an extensive distribution primarily in the tropics (Novak 1994). The Pacific sheath-tailed bat was once common and widespread in Polynesia and Micronesia and is the only insectivorous bat recorded from a large part of this area (Hutson et al. 2001). The biology of this species, including habitat use and diet, is largely unknown (Hutson et al. 2001, Wiles and Worthington 2002).

### Taxonomy

The classification of this species has received varied treatment, but the most thorough taxonomic evaluation of this species has been conducted by Koopman (Koopman 1997, Wiles and Worthington 2002). Koopman recognized four subspecies: *E. s. rotensis*, endemic to the Mariana Islands; *E. s. sulcata*, occurring in Chuuk and Pohnpei; *E. s. palauensis*, found in Palau; and *E. s. semicaudata*, occurring in American and Western Samoa, Tonga, Fiji, and Vanuatu.

This candidate assessment form addresses only the two subspecies that occur in U.S. flag territories: *E. s. rotensis*, endemic to the Commonwealth Nation of the Mariana Islands, and *E. s. semicaudata* in American Samoa.

### Habitat

The PSTB is a small bat that appears to be cave-dependent, roosting in a wide range of caves, including overhanging cliffs, crevices, and lava tubes (Grant 1993, Grant et al. 1994, Hutson et al. 2001). Large roosting colonies appear common in the Palau subspecies, but smaller aggregations may be more typical of at least the Mariana Island subspecies and perhaps other *Emballonura* (Flannery 1995, Nowak 1994, Wiles and Worthington 2002, Wiles et al. 1997). The PSTB is nocturnal and typically emerges around dusk to forage on insects (Hutson et al. 2001).

### Historical Range/Distribution

The PSTB is historically known from the Mariana Islands, several of the Caroline Islands (Palau, Chuuk, and Pohnpei), Samoa (Western and American), Tonga, Fiji, and Vanuatu (Flattery 1995, Koopman 1997).

### Current Range/Distribution

PSTB populations appear to be healthy in some locations, mainly in the Carolines, but have declined drastically in other areas, including Western and American Samoa, the Mariana Islands, and Fiji (Bruner and Pratt 1979, Grant et al. Wiles and Worthington 2002, Wiles et al. 1997).

Two of the four subspecies occur in areas under the jurisdiction of the United States: American Samoa and the Mariana Islands.

Emballonura semicaudata semicaudata occurs only on Tutuila Island and is probably extirpated from Western Samoa. The nearest population is in Tonga. Tutuila is within U.S. territory of American Samoa, thus this DPS is delimited by international government boundaries. In addition, the ecological setting of American Samoa is unique for the taxon in that Samoa is the easternmost periphery of the range of the species. We have no quantitative measures of the variation in E. semicaudata semicaudata, which occurs in Tonga, Fiji, and Vanuatu as well as in Samoa. However, the increase in isolation and decrease in total species richness from west to east across the Pacific, coupled with variation in island type, results in major ecological variation across the range of this subspecies.

#### Population Estimates/Status

The subspecies endemic to the Mariana Islands, E. semicaudata rotensis, formerly occurred on Guam, and in the CNMI, on Rota, Aguiguan, Tinian, Saipan, and possibly Anatahan and Maug (Lemke 1986, Steadman 1999, Wiles and Worthington 2002). The single remaining population occurs on Aguiguan and survey work in 1995 indicates a population of roughly only 150-250 animals (Wiles and Worthington 2002).

In American Samoa, Amerson *et al.* (1982) estimated a total population of around 11,000 E. semicaudata semicaudata in 1975-6, although this number may have been inflated somewhat by confusion of bats with the white-rumped swiftlet (Collocalia spodiopygia) which roost in the same caves as bats (R. Utzurrum, American Samoa Department of Marine and Wildlife Resources, pers. comm. 1998). Since then, far fewer animals have been observed. Knowles (1988) recorded about 200 in 1988, and in 1993, observers caught one bat and saw only 3 more (Grant *et al.* 1994). The species may already be extirpated from American and Western Samoa (Grant *et al.* 1994).

This species was considered a Distinct Population Segment candidate within the U.S. territories. We now recognize the subspecies descriptions (Koopman 1997). Therefore, we consider the candidate entities to be E. semicaudata rotensis and the American Samoa DPS of E. semicaudata semicaudata (see discussion in "PRELISTING" below).

#### THREATS:

A. The present or threatened destruction, modification, or curtailment of its habitat or range. The PSTB appears to be extirpated in Western and possibly American Samoa, from all but one island in the Marianas, and has been considerably reduced in Fiji (Grant *et al.* 1994, Hutson *et al.* 2001, Lovegrove *et al.* 1992, Park *et al.* 1992, Wiles and Worthington 2002). In spite of clear evidence of the reduced range of the PSTB, however, no single factor appears to be responsible for this. The loss of roosting caves (through various means), the loss of foraging habitat due to deforestation, disturbance by feral ungulates, and possibly pesticide use are believed to be primary factors (Grant *et al.* 1994, Hutson *et al.* 2001, Wiles and Worthington 2002). Many caves in the Mariana Islands were heavily affected by human occupation and warfare during World War II, during which time they were sometimes bombed or used as fortifications or habitation (Hutson *et al.* 2001, Wiles and Worthington 2002). After the war, and likely before,

caves were often used by hunters, vandals, hikers, and guano miners (Hutson et al. 2001, U.S. Fish and Wildlife Service 1992, Wiles and Worthington 2002). It would be difficult to quantify such an impact, and to date, no such efforts have been undertaken, but it is believed that PSTB are very sensitive to disturbance in their caves (Grant 1993). Middle Black Noddy Cave, which harbors the largest number of PSTB on Aguiguan, is also apparently inaccessible to humans (Wiles and Worthington 2002). Hutson et al. (2001) also suggest that disturbances to caves and burning of forests have contributed to the decline of bats in Fiji. Whatever the ultimate causes of the decline of the species in the CNMI, it is believed that preservation of this bat hinges on the maintenance of forested habitat and safe roosting sites (Wiles and Worthington 2002).

Current pesticide levels do not appear to be a threat in the Mariana Islands, however, further investigation of pesticide levels in guano accumulations should be conducted to study their role in past declines (Grue 1985, Wiles and Worthington 2002). Pesticides may have caused a reduction in insect prey base availability as well as poisoning animals (Wiles and Worthington 2002). The loss of the PSTB on Guam is likely explained by the presence of the brown treesnake which has clearly lead to the extinction and decline of many native species (Wiles et al. 1995).

In American Samoa, again, the reasons for the decline are unclear. Two caves at Anape'ape'a Cove were reported as roosting sites for most of the bats estimated in 1976-7. Both caves were severely damaged during several typhoons between 1987 and 1992 and no bats were reported there during 1993 surveys (Grant 1993, Grant et al. 1994). Only small numbers of bats have been observed in other caves during past surveys but there is no information on how many other caves there are or how many bats they could support (Grant 1993, Grant et al. 1994).

#### B. Overutilization for commercial, recreational, scientific, or educational purposes.

It is not known that intentional take is a threat to the Pacific sheath-tailed bat, but they may be threatened by human recreational use of caves (Wiles and Worthington 2002).

#### C. Disease or predation.

On Guam, the brown treesnake (Boiga irregularis) was accidentally introduced after World War II and has caused the decline and extinction of most of the native birds as well as having been involved in significant declines of the Mariana fruit bat (Pteropus mariannus) and various species of herps and invertebrates and is highly likely to be the primary cause of the loss of the PSTB on Guam (Wiles et al. 1995). Introduced monitor lizards (Varanus spp.) and rats (Rattus spp.) also are potential predators of sheath-tailed bats on Aguiguan, but the extent of this possibility has not been studied (Wiles and Worthington 2002). The role of disease in the species' decline is not known.

#### D. The inadequacy of existing regulatory mechanisms.

Currently, no formal or informal protection is afforded to the sheath-tailed bat by Federal agencies or by private individuals or groups. The Government of Guam has listed the species as endangered (5 GCA, Section 63205.(c), "The Endangered Species Act of Guam"). The sheath-tailed bat, locally known as *payesyeyes*, was placed on the 1991 CNMI Endangered Species List pursuant to Public Law 2-51, 2 CMC 5108. In 1981, the acting Governor of Guam petitioned to

list the Mariana Islands population of the Sheath-tailed bat though the petition was denied due to lack of information (Lemke 1986a, USFWS 1983). A biologist from the CNMI also petitioned the Service to list the species as endangered in the Mariana Islands but the Service subsequently determined that listing was not warranted as there was only sketchy evidence of a decline in the petitioned population and that it represented an outlier of a widespread species in the western Pacific (Lemke 1986b, USFWS 1988).

E. Other natural or manmade factors affecting its continued existence.

The low numbers of individual in these populations and the few numbers of populations place these candidates at great risk of extinction from inbreeding, stochastic events, and storms. A series of severe typhoons has been identified as a possible contributing factor to declines underway for other, probably anthropogenic reasons (Grant 1993, Grant et al. 1994, Hutson et al. 2001, Wiles and Worthington 2002). These storms inundated the caves with water, and coral and other types of rubble filled entrances to caves, and it is suspected that the majority of sheath-tailed bat in those caves were killed (Grant 1993, Grant et al. 1994). In addition, sheath-tailed bat generally do not fly or feed in severe weather, and because of their high metabolism, bats may easily starve during typhoons of long duration (Grant 1993, Grant et al. 1994, Macdonald 1993). For example, the 1990 and 1991 typhoons in American Samoa were responsible for significant declines in the bat (Pepper Trail, Senior Forensic Scientist/Bird Unit Coordinator, U.S. Fish and Wildlife Forensics Laboratory, pers. commun. 2002), but unfortunately these declines cannot be quantified due to a lack of baseline survey information.

FOR RECYCLED PETITIONS:

- a. Is listing still warranted? \_\_\_
- b. To date, has publication of a proposal to list been precluded by other higher priority listing actions? \_\_\_
- c. Is a proposal to list the species as threatened or endangered in preparation? \_\_\_
- d. If the answer to c. above is no, provide an explanation of why the action is still precluded:

LAND OWNERSHIP: The last known major roosting caves on Tutuila, American Samoa, are part of customary lands belonging to the village of Afono. Aguiquan Island (7 km<sup>2</sup>), CNMI is public land.

PRELISTING:

We were petitioned to list the Marianas population of E. semicaudata by the acting governor of Guam. This petition was found to not be substantial in 1983 (48 FR 6752). The Service was subsequently petitioned by Dr. Thomas O. Lemke in 1986 to list the sheath-tailed bat in the Marianas. In 1987, the Service found that the petition contained substantial information that indicated that listing may be warranted but that a status review was already underway. Subsequently, the Service found that the petitioned action was not warranted (53 FR 25511). As a result, the Service does not have any pending action on this petition. However, a DPS of this species remained on the candidate list as a category 2 candidate and in 1994, it was classified as a category 1 candidate. In 1997, Koopman describe 4 subspecies to the E. semicaudata and the now-wide acceptance of the subspecies of E. semicaudata has substantially altered our perception of this species' status since 1988. The populations of sheath-tailed bat that continue

to warrant candidacy are within two described subspecies. Therefore, with this candidate form and the 2003 CNOR, we are renaming the candidate entity to be two entities: the subspecies historically found in the Mariana Islands (*E.s. rotensis*) and the American Samoan DPS of *E.s. semicaudata* that was historically found in Samoa, Fiji, Tonga, and Vanuatu. We are retaining the original listing priority number for both the candidate entities.

The Government of American Samoa and the Commonwealth of the Northern Mariana Islands have been monitoring the status of the remaining populations. However, there is no management plan or standardized monitoring program in effect for either location.

#### REFERENCES:

Background information may be found in the following bibliography. \*Starred references are cited in the text. The Pacific Islands Fish and Wildlife Office is currently funding a consultant to update the bibliography for this species in the Mariana Islands and American Samoa.

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- \*Grue, C.E. 1985. Pesticides and the decline of Guam's native birds. *Nature* 316: 301.
- \*Hutson, A.M., S.P. Mickleburgh, and P.A. Racey (compilers). 2001. Microchiropteran bats: global status survey and conservation action plan. IUCN/SSC Chiroptera Specialist Group, International Union for the Conservation of Nature and Natural Resources, Gland, Switzerland and Cambridge, United Kingdom.
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- \*Lemke, Thomas O. 1986b. Petition to list the sheath-tailed bat (Emballonura semicaudata) as an endangered species in the Mariana Islands. U.S. Fish and Wildlife Service files.
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LISTING PRIORITY (\* after number)

THREAT
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Magnitude	Immediacy	Taxonomy	Priority
High	Imminent	Monotypic genus	1
		Species	2
		Subspecies/population	3 *
	Non-imminent	Monotypic genus	4
		Species	5
		Subspecies/population	6
Moderate to Low	Imminent	Monotypic genus	7
		Species	8
		Subspecies/population	9
	Non-imminent	Monotypic genus	10
		Species	11
		Subspecies/population	12

**Rationale for listing priority number:**

*Magnitude:* The magnitude of the threat is High. The small size and extremely restricted distributions of the sheath-tailed bat in American Samoa and the CNMI make them highly susceptible to stochastic natural disturbances, such as typhoons and disease outbreaks, and to human disturbance of their roosting caves.

*Imminence:* The Threat is imminent. These small populations are documented to be declining. The population in American Samoa may already be extirpated. The species' colonial roosting behavior may make them especially vulnerable to predators such as rats and snakes.

APPROVAL/CONCURRENCE: Lead Regions must obtain written concurrence from all other Regions within the range of the species before recommending changes to the candidate list, including listing priority changes; the Regional Director must approve all such recommendations. The Director must concur on all additions of species to the candidate list, removal of candidates, and listing priority changes.

Approve: Rowan Gould March 6, 2003  
Regional Director, Fish and Wildlife Service Date

Concur: Steve Williams April 5, 2004  
Director, Fish and Wildlife Service Date

Do not concur: \_\_\_\_\_  
Director, Fish and Wildlife Service Date

Director's Remarks:

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Date of annual review: 01/30/2003  
Conducted by: Dr. Holly B. Freifeld

Comments:

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