CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

Twenty-seventh meeting of the Animals Committee
Veracruz (Mexico), 28 April – 3 May 2014

Interpretation and implementation of the Convention

Periodic review of species included in Appendices I and II [Resolution Conf. 14.8 (Rev. CoP16)]

REVIEW OF *PTEROPUS TOKUDAE*

1. This document has been submitted by the United States of America[1].

Review of *Pteropus tokudae* Tate, 1934 in the Periodic Review of Species Included in Appendices I and II [Resolution Conf. 14.8 (Rev. CoP16)]

INTRODUCTION

2. After the 25th meeting of the Animals Committee (Geneva, Switzerland, July 2011) and in response to Notification No. 2011/038, the United States of America committed to the evaluation of *Pteropus tokudae* as part of the Periodic review of the species included in the CITES Appendices.

3. This species occurred in Guam, in the western Pacific, and is possibly extinct. During our review, we consulted with species experts, as well as current and former representatives of the Government of Guam (Department of Agriculture, Director); Government of Guam (Division of Aquatic and Wildlife Resources); U.S. Fish and Wildlife Service (Office of Law Enforcement); U.S. Fish and Wildlife Service (Pacific Islands Fish and Wildlife Office; Guam National Wildlife Refuge; Andersen Air Force Base, Guam; U.S. Navy; and the Government of the Commonwealth of the Northern Mariana Islands (Division of Fish and Wildlife), but not all responded. Those comments that were received provided information that was incorporated into this review.

[1] *The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat or the United Nations Environment Programme concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.*

DRAFT PROPOSAL TO AMEND THE APPENDICES

(in accordance with Annex 6 to Resolution Conf. 9.24 (Rev. CoP16), as amended)

Seventeenth meeting of the Conference of the Parties

Cape Town (South Africa), XX–XX --- 2016

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CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

Retain *Pteropus tokudae* in Appendix II of CITES in accordance with Article II 2 (b) of the Convention and Annex 2b [Criteria for inclusion of species in Appendix II in accordance with Article II, paragraph 2 (b), of the Convention] of Resolution Conf. 9.24 (Rev. CoP16), with the annotation "possibly extinct" for information purposes only in accordance with the "possibly extinct" criterion of Annex 5 (Definitions, explanations and guidelines) of Resolution Conf. 9.24 (Rev. CoP16).

B. Proponent

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C. Supporting statement

1. Taxonomy

1.1 Class: Mammalia

1.2 Order: Chiroptera

1.3 Family: Pteropodidae

1.4 Genus, species or subspecies, including author and year: *Pteropus tokudae* Tate, 1934

1.5 Scientific synonyms: None

1.6 Common names:
English: Guam Flying-fox, Guam Fruit Bat, Little Mariana Fruit Bat
French: Roussette de Guam
Spanish: Zorro Volador de Tokuda
Local name: Fanihi (Chamorro name [Note: Fanihi now also refers to *Pteropus mariannu*])

1.7 Code numbers: None

2. Overview

Pteropus tokudae, an Old World Fruit Bat (Family Pteropodidae), is poorly known biologically and is possibly extinct. The species was described in 1934 (Tate 1934) on the basis of two specimens from Guam. In 1968, hunters shot and killed another specimen (Perez 1972; Wiles 1987). Based on high levels of trade of fruit bats for human consumption by local residents in the western Pacific, the species was included in CITES Appendix II as *Pteropus tokudae* in 1987 (CITES 1987). While remaining in Appendix II, the species in 1989 was re-categorized under a higher taxon listing as *Pteropus* spp. (CITES 1989). While numerous biological surveys and human diet analyses have been conducted throughout the western Pacific region over the past 50–75 years, since 1968 (about 36 years ago), except for an unconfirmed observation in 1979 (Wheeler 1979), there is no scientific evidence that the species is extant (Wiles and Brooke 2009:406 and 440). According to UNEP-WCMC (2013a), the only reported trade was 8 *tokudae* bodies exported from the former Pacific Trust Territory to the United States in 1994 (additional information is not available) and 1 skin piece exported from the United States to Canada in 2012 (purpose = scientific). [Note: We were unable to confirm the details of this reported -- but highly unlikely -- trade of 8 *tokudae* bodies and suspect that is may be an error.] *Tokudae* is possibly extinct.

In order to inform this analysis, we have provided comparative information for *Pteropus mariannus*, a relatively-well-known and similar species of fruit bat that also occurs on Guam. While *mariannus* is included in CITES Appendix I, and not subject to international commercial trade, it is biologically similar to *tokudae* and is subject to similar conservation threats. [For the rest of this document, *tokudae* will refer to *Pteropus tokudae* and *mariannus* will refer to *Pteropus mariannus*.]

Mariannus is an herbivore/frugivore that consumes fruits, flowers, and leaves of tropical trees, forms colonies of up to 2,000 individuals (Wiles et al. 1989), and occupies forested areas in the Marianas. The population trend is decreasing due to overharvest by local hunters and depredation by the brown treesnake, and to a lesser extent due to habitat loss and degradation. Until the 1980s, fruit bats (*Pteropus* spp.), including *mariannus*, were subjected to high levels of international trade throughout the western portion of the Pacific Ocean. *Mariannus* in 1984 was classified as endangered under the Endangered Species Act of 1973, as amended (Act or ESA). The Act prohibits take and many other activities with listed species. *Mariannus* (CITES listed since 1987) is also protected as an endangered species by the Government of Guam and the Commonwealth of the Northern Mariana Islands. According to UNEP-WCMC (2013b), approximately 150 *mariannus* specimens (mostly bodies and mostly illegal shipments) since 1980 have been reported in international trade. *Mariannus* (an Appendix I species) is uncommon and infrequently traded.

For *tokudae*, given the absence of international trade, as well as the existing CITES protections and other domestic measures for the remaining members of the Family Pteropodidae, it would appear logical to delist this species. According to Service law enforcement officials, however, delisting would present a serious challenge to wildlife inspectors and weaken enforcement capacity by creating loopholes and exemptions for traders that likely would be used to facilitate the transport of poached specimens. This matter is exacerbated given the potential for trade that would not be subject to border or customs inspections if between any of the several U.S. territories in that region. Despite recent bat identification guides and new forensic tools, "in the hand" identification at a port of *Pteropus* specimens by wildlife inspectors, as well as species experts, remains difficult. Therefore, as a precautionary measure in response to potential look-alike problems, we propose to retain the current Appendix II listing with the addition of the annotation of "possibly extinct."

3. Species characteristics

Pteropus tokudae is an Old World Fruit Bat (Family Pteropodidae) and is likely or possibly extinct (Bonaccorso et al. 2008; Helgen et al. 2009). This family of bats includes about 40 genera and 170 species. The genus *Pteropus* includes about 65 species. Little is known about the biology or ecology of *tokudae* (Rebitzke 2002). Except for the original species description (Tate 1934), there are no published scientific studies about the biology, ecology, behavior, or conservation status this species. A closely related species, the Marianas Flying Fox (*Pteropus mariannus*), occurs on Guam, as did *tokudae*, but is larger and is a part of a different *Pteropus* species sub-group. Given the lack of information about *tokudae*, information about the better-known *mariannus* will be substituted in this account, as appropriate (see: Allison et al. 2008; GNWR and Service 2009; Perez 1972:145; Service 2009a, 2013; Winter 2007).

3.1 Distribution

Tokudae is known only from Guam (549 km^2), in the western portion of the Pacific Ocean. Three individuals were collected in 1931 (Tate 1934), while another individual was killed at Tarague Point, Guam, by hunters in 1968 (Perez 1972; Wiles 1987). Wheeler (1979) reported a possible sighting of another individual in 1979 at Ritidian Point, Guam. Both Tarague and Ritidian Points are in the extreme northern portion of Guam. Historically, *mariannus* was probably common in Guam and continues to be observed – although in substantially reduced numbers -- in both the northern and southern portions of the island (e^2M 2008; GNWR and Service 2009; Morton and Wiles 2002; Service 2013a; Wheeler 1979; Wiles 1987).

3.2 Habitat

The climate in the Mariana Islands archipelago is tropical (GDAWR 2006; Service 2009a:4). The natural vegetation of the islands is primarily low-stature tropical and coastal forest (Service 2009a:14). *Tokudae* occupied forest canopies and adjacent coconut (*Cocos nucifera*) groves. Approximately 47% of Guam is forested and potentially suitable for *tokudae*. For *mariannus*, *Ficus* spp. trees were used as roosting sites (Service 2009a:14; UNData 2013).

3.3 Biological characteristics

The biology of *tokudae* is poorly known. *Mariannus* has been observed to feed on the fruits, flowers, and leaves of 39 plant species (Service 2009a:15). *Mariannus* is sedentary, strongly colonial, and forms harems and bachelor groups (Winter 2007). Reproduction occurs throughout the year, typically with one offspring per year and with no consistent seasonal peak in births (Perez 1972,1973; Service 2009a:17; and Wiles 1987).

The only information on reproductive behavior for *tokudae* is that a single female on June 5, 1968, was accompanied by a single juvenile (Perez 1972,1973). The adult was shot by hunters, but the juvenile was able to fly away, which may suggest that mothers care for their young for at least several months (Maas 2011).

3.4 Morphological characteristics

Tokudae is a small member of the genus *Pteropus* and is smaller than *mariannus*. *Tokudae*: head-body length = 140–151 mm; forearm length = 94–95 mm; wingspan = 650–709 mm; and body weight = 152 g (Perez 1972; Service 1990:4; Tate 1934). The overall coloration is dark, with a sprinkling of whitish hairs: black, brown, dark brown, and bright golden brown (Service 2009a:4; Figure 1). The well-formed and rounded ears, as well as the large eyes, suggest a canine appearance (hence the common name of "flying fox").

The closest relative of *tokudae* is *Pteropus pelagicus* (Buden et al. 2013). Norberg and Rayner (1987) analyzed the morphology of *tokudae* wings in the context of bat flight.

3.5 Role of the species in its ecosystem

Through pollination and the dispersal of plant seeds, m*ariannus* – as are all *Pteropus* -- is an important component of tropical forest ecosystems and thereby helps maintain forest diversity and contributes to plant regeneration following typhoons and other catastrophic events (Fujita and Tuttle 1991; Service 2009:15: Winter 2007).

4. Status and trends

4.1 Habitat trends

The surface area of Guam is 549 km^2 (est. human population ≈ 160,000; CIA 2013; GDAWR 2006). Approximately 258 km^2 (~47% of land area) are forested and potentially available to *mariannus* (Service 2009a:28). Localized habitat loss and degradation have been identified as conservation threats for *mariannus* on Guam, but widespread deforestation has not been reported (Service 2009a:20; UNData 2013).

4.2 Population size

The historical population size of *tokudae* is unknown, but the species probably never was common. Hunters and old timers on Guam considered the species to be extremely rare or extinct (Perez 1972:145). Last confirmed report occurred in 1968 (Perez 1972).

4.3 Population structure

For *tokudae*: unknown. For *mariannus*, the average estimated sex ratio in a single colony was 37.5–72.7 males per 100 females (Service 2009a:15; Wiles 1982).

4.4 Population trends

No known historical records exist to document the status of *tokudae* or *mariannus* prior to the 20th century (Service 2009a:6–7). The overall population trend over the past century, however, is declining (Cruz et al. 2000a-f; e^2M 2008:1-10; Wiles et al. 1989). *Mariannus*, for example, was relatively common ("not an uncommon sight") in 1920, but uncommon ("not common") in 1931 (Wiles 1987).

Since the 1970s, bat surveys have been conducted on various islands and at various intervals by the Guam Division of Aquatic and Wildlife Resources (DAWR) and CNMI DFW (Commonwealth of the

Northern Mariana Islands, Department of Fish and Wildlife). No specimens of *tokudae* have been collected and no confirmed sightings have been made since 1968 (Service 2009a:35). Recent bat surveys include: Air Force Center for Engineering and the Environment 2008; Andersen Air Force Base and Air Force Center for Engineering and the Environment 2008; Brooke 2008; Janeke 2006; Shaw Environmental and Infrastructure Group. 2008; U.S. Navy JRM/NFECM & AAFB 2012; U.S. Navy JRMNFEC & AAFB 2013; U.S. Navy 2013).

While a recent paper suggests the possibility that *tokudae* may be rediscovered (Fisher and Blomberg 2011), the general consensus among species experts is that *tokudae* is possibly extinct (for example: Bonaccorso et al. 2008; Helgen et al. 2009).

4.5 Geographic trends

Tokudae was endemic to Guam and was rare when initially described (Bonaccorso et al. 2008; Perez 1972; Tate 1934). There is no suggestion in the literature that the species occurred elsewhere, but widespread surveys were not implemented until well after World War II.

5. Threats

Conservation threats to *tokudae* are poorly known, but overhunting has been suggested as the primary cause for low population levels leading to its extinction (Perez 1972; Service 2009b; Wiles and Payne 1986). For *mariannus*, historical factors, as well as known and potential threats, consist of hunting, habitat loss (due to development, agriculture, introduced ungulates, and invasive non-native plants), and predation by brown treesnakes (*Boiga irregularis*; O'Shea and Bogan 2003; O'Shea et al. 2003:22–23; Service 2009a:20 & 30). While hunting of *mariannus* presently is illegal, the Chamorro people, the local culture indigenous to the Mariana Islands, traditionally consumed the species as a prized delicacy (GNWR and Service 2009a:5-13; Service 2009a:23; Sheeline 1991).

6. Utilization and trade

6.1 National utilization

Mariannus was hunted and consumed by the Chamorro people on Guam (Sheeline 1991). There is no mention of other forms of use. No information exists on the extent of hunting of *tokudae*, but presumably it was also taken by hunters on Guam.

6.2 Legal trade

Legal trade in *tokudae* is difficult to quantify or characterize. According to Wiles (1992), bats have not been exported (shipped) from Guam to other islands. Internally on Guam, however, local bats, perhaps including *tokudae*, have been subject to commerce.

Until 1966, the harvest and trade of *tokudae* was not regulated on Guam and trade data are not readily available (Wheeler 1979). Recent trade summaries are also difficult to interpret because results from several taxa and sites typically are combined (see: Sheeline 1991; Wiles and Payne 1986).

6.3 Parts and derivatives in trade

According to UNEP-WCMC (2013a) for the period 1975–2012: 8 *tokudae* bodies (source = W wild) were exported from PC (former Pacific Trust Territory) to US (United States) in 1994 and 1 skin piece (source = W wild and Purpose = S scientific) was exported from US (United States) to CA (Canada) in 2012. [Note: as mentioned earlier, this report of 8 bodies could not be confirmed and as suggested by the outside reviewers is likely an error.]

According to UNEP-WCMC (2013b) for the period 1975–2012: 5 *mariannus* specimens, 6 meat, and about 135 bodies were reported in international trade. Of the 22 instances, 13 were characterized as Source code = I (confiscated or seized specimens).

6.4 Illegal trade

As mentioned above (section 6.2), illegal trade in *tokudae* is difficult to quantify or characterize. According to Wiles (1992), bats have not been exported (shipped) from Guam to other islands. Internally, however, local bats have been subject to commerce on Guam. Some of this commerce may have included *tokudae*.

Up to 1966, *mariannus* (and incidentally *tokudae*) was considered an unprotected animal on Guam and was hunted for human consumption throughout the year without restriction (Wheeler 1979:160). Hunting seasons and bag limits were established for several years following this reclassification, but were poorly enforced. In 1973, hunting was prohibited, but by then poaching had become a major problem on Guam. Enforcement of wildlife hunting regulations improved in 1987 after nine species of *Pteropus* were listed in CITES Appendix II (CITES 1987; Wiles 1990). Enforcement was further enhanced in 1989 when seven species of *Pteropus* were listed in CITES Appendix I, with the remaining *Pteropus* spp. and similar species of *Acerodon* were listed in CITES Appendix II (CITES 1989). Whether any specimens of *tokudae* were included in any illegal trade, while likely, is unclear.

6.5 Actual or potential trade impacts

If extant, the impacts of any trade on *tokudae* likely would be severe. The likelihood of any such trade, however, is minimal. Furthermore, recent trade is mainly in *P. giganteus* and *P. vampyrus* (see: AC25 Doc. 9.6 – pp. 19–20). To date, only nine [this may be a reporting error] *tokudae* specimens have entered trade in over 25 years. Furthermore, consumption of *Pteropus* apparently has decreased. A recent study of 400 adults over 2 years, for example, documented that none had consumed *Pteropus* as part of a meal (Pobocik et al. 2008).

7. Legal instruments

7.1 National

The hunting of bats in 1973 was banned on Guam through the enactment of Public Law 5-21, September 1977 (Service 2009a:34). In 1981, *Pteropus* was placed on Guam's territorial Endangered Species list and in 1984 the Guam population was classified as endangered under the U.S. Endangered Species Act of 1973, as amended (e^2M 2008:1–8; Service 1984). The status of *tokudae* as Endangered was recently reaffirmed by the Government of Guam (2009; Endangered Species Regulation No. 9).

7.2 International

Guam since 1989 is a territory of the United States, with policy relations between Guam and the United States under the jurisdiction of the Office of Insular Affairs, U.S. Department of the Interior (CIA 2013). Residents of Guam are subject to measures of the U.S. Endangered Species Act of 1973, as amended, as well as the Lacey Act/Injurious Wildlife Act (see Section 8.3.2, below). These measures -- in part -- regulate some international activities by people subject to the jurisdiction of the United States of America. No other international measures regulate *tokudae*.

The Commonwealth of the Northern Mariana Islands (CNMI) since the 1977 constitutional referendum is a commonwealth in political union with the United States. Prior to 1977, the commonwealth was administered by the United States as a component of the Trust Territory of the Pacific Islands under an agreement with the United Nations. Current CNMI hunting regulations (Northern Mariana Islands Administrative Code § 85-30.1-110) prohibit the harvest, capture, harassment or propagation of threatened or endangered species except under the terms of a special permit in the CNMI.

8. Species management

8.1 Management measures

Given that *tokudae* is possibly extinct, the species is not actively managed by the Government of Guam or the United States of America. The species, however, if extant, would benefit from management activities undertaken within the context of several measures, including: Guam National Wildlife Refuge Comprehensive Conservation Plan (GNWR and Service 2009); Final Mariana Fruit

Bat Management Plan for Andersen Air Force Base, Guam (e^2M 2008); Draft Revised Recovery Plan for the Mariana Fruit Bat or Fahini (*Pteropus marianus marianus*) (Service 2009a); and U.S. Navy 2013. While these plans focus on *mariannus*, they include provisions that would enable management of and provide conservation benefits to *tokudae*.

8.2 Population monitoring

Given that *tokudae* is likely extinct, populations are not actively monitored by the Government of Guam or the United States of America. The plans referred to in Section 8.1 (above) include provisions that would enable population monitoring of *tokudae*, as well, if encountered.

8.3 Control measures

8.3.1 International

(i) CITES Appendix II (18/01/1990; as *Pteropus*); (There are no current quotas or suspensions in place for this species.) (ii) EU Wildlife Trade Regulations: Annex B [10/08/2013; as *Pteropus*; Commission Reg. (EU) No 750/2013 of 29 July 2013]; (There are no current suspensions or opinions for this species.)

8.3.2 Domestic

United States of America: Classified as endangered under the Endangered Species Act of 1973, as amended (Service 1984,2009b,2013b); Lacey Act (18 USC 42-42 and 16 USC 3371-3378) (regulates importation and possession of *Pteropus* in the United States under the Injurious Wildlife Act)

Government of Guam (see: GDAWR 2006:24): Guam Endangered Species Act, 5 GCA 63208, PL 15-36 (Law allows for the adjudication of an endangered species list for Guam); Game, Forestry and Conservation, 5 GCA, Chapter 63, PL 6-85 (Law describing the authority of the Department of Agriculture); Protection of Wild Animals, 5 GCA 63121 (Lists species that are considered protected)

8.4 Captive breeding and artificial propagation

No programs are underway at this time.

8.5 Habitat conservation

Several projects on Guam and elsewhere indirectly promote *tokudae* and *mariannus* conservation (see: Service 2009a:35–36,2009b; e^2M 2008).

8.6 Safeguards

Tokudae is protected domestically by the Government of Guam, as well as by the United States of America (see: Section 8.3.2, above).

9. Information on similar species

Of the Pteropodidae (Fruit bats, Flying foxes): *Acerodon jubatus* and *Pteropus insularis, P. loochoensis, P. mariannus, P. molossinus, P. pelewensis, P. pilosus, P. samoensis, P. tonganus, P. ualanus*, and *P. yapensis* are listed in CITES Appendix I (CITES 2013b). There are also approximately 4 species of *Acerodon* and 55 species of *Pteropus* in CITES Appendix II. Overall, this family includes about 40 genera and 170 species. These taxa -- to a non-species expert -- are superficially similar to one another in that they are large, brown-colored bats. Only one other species of bat is listed in the CITES Appendices: *Platyrrhinus lineatus* (Phyllostomidae/Broad-nosed bat; Appendix III; Uruguay). There are approximately 900 species of bats that are not listed in the CITES Appendices (Wilson and Reeder 2005).

10. Consultations

Earlier drafts of this document were shared with the following offices and comments were incorporated into this text: Government of Guam, Department of Agriculture (Mariquita F. Taitague, Director), Mangilao,

Guam; Commonwealth of the Northern Mariana Islands, Division of Fish and Wildlife (Russell Benford, Ph.D., Supervisory Wildlife Biologist); U.S. Navy, Joint Region Marianas (Anne Brooke, Ph.D., Conservation Program Officer); Washington Department of Fish and Wildlife (Gary J. Wiles; formerly with Government of Guam, Department of Aquatic and Wildlife Resources); U.S. Fish and Wildlife Service (Office of Law Enforcement: George Phocas, Kenneth Endress, and others).

Copies were also sent to these offices, but comments were not received in time to be included here: Andersen Air Force Base, Andersen AFB, Guam; Government of Guam, Division of Aquatic and Wildlife Resources, Mangilao, Guam; Guam National Wildlife Refuge, Dededo, Guam; U.S. Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office, Honolulu, Hawaii.

11. Additional remarks

11.1 *Pteropus tokudae* has been the subject of several CITES proposals over the years: CoP3 (CITES 1981; CoP3 Prop. 1 and CoP3 Prop. 2); CoP6 (CITES 1987; CoP6 Prop. 5 and CoP6 Prop. 10); and CoP7 [CITES 1989; CoP7 Prop. 2 (Sweden), CoP7 Prop. 3 (United States of America), and CoP7 Prop. 10 (Sweden)]. Ultimately, *Pteropus tokudae* remained on CITES Appendix II as *Pteropus* spp. (see: Plen. 7.7 – p. 114).

Within the context of Periodic Review of the Appendices, *tokudae* was highlighted as an Appendix II species with minimal or no trade over the period 1999–2009 [CITES 2011a; AC25 Doc. 15.6 Annex 3 (page 2)]. The matter was reviewed by a working group (AC25 WG3 Doc. 1). Ultimately, the Animals Committee (see: Output 4, including *tokudae*; CITES 2011b) requested that range States undertake the corresponding reviews (see: AC25 summary record – p. 27). By Notification to the Parties No. 2011/038 (page 1; Annex 2, page 5; CITES 2011c), the Secretariat transmitted this request. Through document AC26 Doc. 13.3 – p. 2, the Secretariat informed the Animals Committee that the United States of America had agreed to conduct the periodic review for *Pteropus tokudae* (see also: AC26 summary record – p. 88; CITES 2013a).

11.2 One of the external reviewers strongly suggested that the term “possibly extinct” as an annotation perhaps was ambiguous and might also be interpreted as “not possibly extinct.” As an alternative, “likely extinct” was suggested.

11.3 In accordance with Annex 6 *Format for proposals to amend the Appendices* of Resolution Conf. 9.24 (Rev. Cop16) *Criteria for amendment of Appendices I and II*, there are look-alike problems (criterion A of Annex 2b) between *tokudae* and potentially all other *Pteropus* species (about 65 species) in that the main differences between the species are size and geographic distribution.

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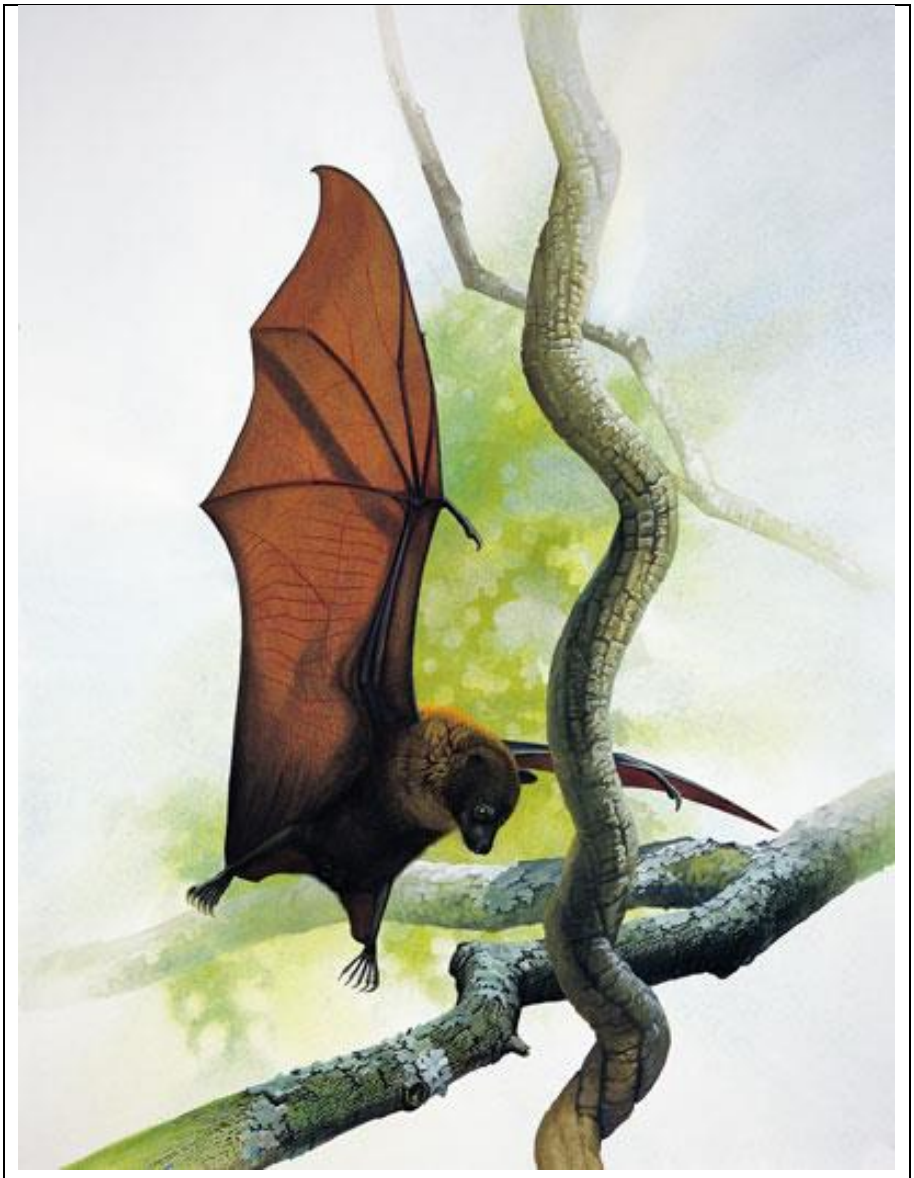

Figure 1. Guam Flying-fox *Pteropus tokudae*. Original artwork from A Gap in Nature. Peter Schouten (1998).

Andrew Isles, Natural History Books, Prahran, Australia.

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