RESULTS OF THE ALCOA FOUNDATION-SURINAME EXPEDITIONS. XII.
FIRST RECORD OF THE GIANT FRUIT-EATING BAT, *ARTIBEUS AMPULS*,
(MAMMALIA: CHIROPTERA) FROM SURINAME
WITH A REVIEW OF THE SPECIES

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Abstract

Herein, we report new distributional records of *Artibeus amplus*, including its first documentation from Suriname, the southern-most records from Guyana, and the confirmation of its occurrence in the llanos savannahs of central Venezuela. This uncommon species is endemic to northern South America, and is one of the least known bats in the Neotropics. Additional ecological data are included in a review of information on natural history of this species. With the addition of *A. amplus* to the fauna, 104 species of bats are now known from Suriname.

Key Words: *Artibeus amplus, Artibeus planirostris*, fruit-eating bats, Guyana, Suriname, Venezuela

Introduction

The giant fruit-eating bat (*Artibeus amplus*) is one of the most poorly known bats in the northern Neotropics. It is of particular interest, however, as one of the few species of bats endemic to northern South America, north of the Amazon River drainage basin. In his original description of the species, Handley (1987) reported 55 specimens from 10 localities in Venezuela and one locality in Colombia. Four of these were listed as “Artibeus sp. D.” in an annotated checklist of mammals from the Smithsonian Venezuelan Project (Handley, 1976:33).

There have been few subsequent reports of this species in the scientific literature. The exceptions, however, include 38 individuals of *A. amplus* netted between 28 March and 5 August 1987 from Los Pijiguaos in a montane forested area within the llanos savannahs of central Venezuela (Ochoa G. et al., 1988). Unfortunately, these authors did not specify the number of voucher specimens prepared and the museum of deposition in Venezuela. More recently, Lim and Wilson (1993) reported 10 specimens from six localities in Guyana and quantified morphometric differences between *A. amplus* and other large species of *Artibeus*. In a monograph on the mammals of Venezuela (Linares, 1998), 12 collection localities were mapped for *A. amplus*. There was, however, no specimens examined list or gazetteer to cross-reference these localities. In that monograph, there were three localities in addition to those mentioned in Handley (1987), including an additional record for the state of Bolivar and what appear to be the first records for the states of Áchira and

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Submitted 5 April 2002.
Fig. 1.—Map of northern South America with known locality records for *Artibeus amplus* from Colombia, Venezuela, Guyana, and Suriname. See “Specimens Examined” and Appendix 1 for locality details.

Portuguesa. We expand the known distributional range of *A. amplus* by documenting its first occurrence in Suriname, the southern-most record from the upper Essequibo River region of Guyana, and confirm its presence in the llanos of Venezuela. We also summarize the natural history of this species and provide information on its identification.

**MATERIALS AND METHODS**

Eleven cranial measurements were taken with digital callipers to the nearest 0.1 mm for the 10 new specimens of *A. amplus* reported in this study. The measurements were described in Lim and Wilson (1993) and include cranial length, palatal length, length of maxillary toothrow, breadth of zygomatic arch, mastoid breadth, width across upper molars, postorbital constriction, rostral length, interorbital width, width across upper canines, and coronoid height. External measurements were those recorded by the original collectors and included total length of body, length of hindfoot, length of ear, length of tragus, length of forearm, and mass (in g).

**SPECIMENS EXAMINED**

Locality information for the new specimen records, including country, region, locality, latitude, longitude, elevation (when known), and museum catalog number, is given below. Abbreviations are ROM, Royal Ontario Museum, and CM, Carnegie Museum of Natural History.

**GUYANA. Upper Takutu-Upper Essequibo:** Essequibo River, 7 km S Gunn’s Strip, 240 m, 1°35’N, 58°38’W (ROM 106748, 106761). Kamo River, 50 km SWW Gunn’s Strip, 1°32’N, 58°50’W (ROM 106679, 106697, 106722). Sand Creek Village, 32 to 48 km down river, approximately 3°00’N, 59°31’W (ROM 70125). Weri More, Quash Wau area, 19 km NE Dadanawa, 2°56’N, 59°29’W (ROM 67311).

**SURINAME. Saramacca:** Center of Arrowhead Basin, Augustus Creek, Tafelberg, 600 m, 3°54’N, 56°10’W (CM 76795).

**VENEZUELA. Amazonas:** Pozon, 50 km NE Puerto Ayacucho, 6°03’N, 67°25’W (ROM 107847, 107904).

**RESULTS AND DISCUSSION**

The first specimen of *Artibeus amplus* from Suriname was obtained by Stephen L. Williams on 3 November 1981. It was a pregnant adult female with an embryo having a crown-rump length of 16 mm. This record is the eastern-most currently known for the species (Fig. 1). The collecting site was in the center of a large basin on the top of Tafelberg...
Fig. 2.—External differences between *Artibeus planirostris* and *A. amplus*. A. The white wing tip in *A. planirostris* contrasts with the brown color of the remainder of the wing; B. The wing tip in *A. amplus* is the same brown color as the remainder of the wing; C. The noseleaf in *A. planirostris* forms a complete margin of skin at the base, separating it from the upper lip; D. The base of the noseleaf in *A. amplus* merges continuously with the upper lip. Illustrations by Fiona A. Reid.

(600 m), which is the eastern-most tepui, or flat-topped, Cretaceous sandstone mountain overlaying the ancient pre-Cambrian Guayana Crystalline Shield (Maguire, 1970).

Tafelberg is almost completely rimmed by vertical cliffs that rise over 300 m above the surrounding lowland tropical forest. Only in one area of the northwestern rim is there a breakdown area, allowing overland access to the mountaintop. The mountain is a tilted triangular block of sandstone that is highest at the narrow southern end and lowest along the broad northern escarpment. The principal topographic feature of the mountain is the Arrowhead Basin, which also is triangular in shape, but its orientation is the reverse of that of the mountain. At its broad southern end there is an escarpment wall about 180 m in
height over which several small streams form waterfalls that collect in the basin to form Augustus Creek.

Maguire (1945a, 1945b, 1970) and Maguire et al. (1953) described the vegetation of Tafelberg as complex and related to the flora of the Guayana Highlands. Most of the top of the mountain is dominated by intermediate tropical bush; however, low areas including the Arrowhead Basin are dominated by high forest. In the basin, the forest is dominated by dakama (*Dimorphandra* sp.) with large buttressed roots and forming a dense canopy that allowed only filtered light to reach the ground.

On the evening that the specimen of *A. amplus* was captured, mist nets were placed across Augustus Creek in an area with a dakama forest canopy and over a seasonally dry pond in a forest opening. Over 90 linear meters of mist nets were used during the night. Only three other species were taken during the night, with each represented by a single specimen—*Pteronotus parnelli*, *Rhinophylla pumilio*, and a small species of *Eptesicus*. On the previous evening in this same area, two specimens of *Artibeus obscurus* were netted.

Specimens representing the southern-most records for the species were collected by Burton K. Lim, Eamon O’Toole, and Charles J. Robertson in the vicinity of the Wai-Wai village of Gunn’s Strip in southern Guyana. The general habitat was tall evergreen non-flooded hill-land forest (Huber et al., 1995). Three were caught near a landing on the Kamoa River about 2 km from the base of the Kamoa Mountains. An adult male with testes measuring 3 by 2 mm was taken around 2130 h on 9 November 1996 in a mist net.
Table 1.—External measurements (mm) of 10 new specimens and previously reported samples of Artibeus amplus from northern South America.

| Catalog number and/or country | Total length | Hind foot length | Ear length | Tragus length | Forearm length | Mass (g) |
|-------------------------------|--------------|------------------|------------|---------------|---------------|----------|
| CM 76795 Suriname              | 96           | 21               | 26         | –             | 69            | 60       |
| ROM 67311 Guyana               | 90           | –                | 23         | 9             | 67            | –        |
| ROM 70125 Guyana               | 86           | –                | 25         | 9             | 71            | –        |
| ROM 106679 Guyana              | 91           | 20               | 22         | 7             | 71            | 50       |
| ROM 106697 Guyana              | 93           | 19               | 23         | 8             | 65            | 47       |
| ROM 106722 Guyana              | 99           | 20               | 21         | 7             | 72            | 56       |
| ROM 106748 Guyana              | 92           | 20               | 22         | 7             | 68            | 46       |
| ROM 106761 Guyana              | 93           | 19               | 23         | 7             | 68            | 52       |
| ROM 107847 Amazonas, Venezuela | 97           | 20               | 23         | 8             | 72            | 57       |
| ROM 107904 Amazonas, Venezuela | –            | –                | 23         | 8             | 68            | 58       |
| Colombia, Guyana, and Venezuela | –            | –                | –          | –             | –             | –        |
| Zulia, Venezuela, and Colombia  | 100.4        | 18.4             | 23.7       | –             | –             | (64.9–73.4) |
| Colombia                       | (93–104)     | (17–19)          | (22–26)    | –             | –             | (68.6–75.3) |
| T. F. Amazonas and Bolivar,     | 89.9         | 18.3             | 23.0       | –             | 69.1          | –        |
| Venezuela                       | (80–100)     | (17–20)          | (18–26)    | –             | –             | (65.0–73.2) |

1 Lim and Wilson, 1993.
2 Handley, 1987.

set across a newly cut trail in the forest understory (<3 m above the ground) within 200 m of the landing. A non-reproductive adult female was captured early in the morning on 14 November 1996 in a mist net placed further along the trail near the base of the mountain. An adult male, with testes measuring 9 by 5 mm, was obtained at approximately 2030 h on 11 November 1996 in a net set along a tree fall into the Kamo River. Two additional specimens were collected near a landing on the Essequibo River at a point 7 km south of Gunn’s Strip (240 m elevation). A non-pregnant adult female was caught around 2030 h on 16 November 1996 and an adult male with testes measuring 10 by 7 mm was caught in the early morning on 20 November 1996. Both were captured in the same mist net placed across a newly cut forest trail near a stream crossing.

Two additional specimens recently were discovered in the Guyana collections amassed from 1961 to 1975 by Randolph L. Peterson at the Royal Ontario Museum (ROM), and not reported in Lim and Wilson (1993). Both were collected by Jerome Marques in the southern Rupununi region. An adult female was obtained between 20 October and 15 November 1972 in forest edge at the foot of the Kanuku Mountains. An adult male was netted in primary rainforest at Weri More in 1973 sometime prior to its deposition at the ROM in November of that year.

Two specimens were collected in the llanos region of central Venezuela near the Orinoco River and the Colombian border by Burton K. Lim, Thomas E. Lee, Jr., and John
Table 2.—Cranial measurements (mm) of 10 new specimens and previously reported samples of *Artibeus amplus* from northern South America.

| Catalog number and/or country | Cranial length | Palatal length | Maxillary toothrow length | Zygomatic breadth | Mastoid breadth | Breadth across upper molars | Postorbital constriction | Rostal length | Interorbital width | Width across upper canines | Coronoid height |
|-------------------------------|----------------|----------------|---------------------------|------------------|----------------|----------------------------|------------------------|--------------|------------------|----------------------------|---------------|
| CM 76795 Suriname             | 31.2           | 12.2           | 11.1                      | 18.2             | 15.5           | 13.5                      | 7.9                    | 14.6         | 9.0              | 8.4                        | 7.7           |
| ROM 67311 Guyana             | 30.2           | 12.0           | 10.7                      | 18.5             | 15.9           | 13.4                      | 7.5                    | 13.4         | 9.1              | 8.5                        | 7.7           |
| ROM 70125 Guyana             | 31.3           | 12.4           | 10.8                      | 18.6             | 16.6           | 13.2                      | 7.7                    | 14.4         | 9.5              | 8.7                        | 8.4           |
| ROM 106679 Guyana            | 31.5           | 12.4           | 11.0                      | 18.3             | 16.4           | 12.9                      | 7.7                    | 14.6         | 9.1              | 8.6                        | 8.5           |
| ROM 106697 Guyana            | 30.9           | 12.5           | 11.0                      | 17.7             | 15.8           | 13.3                      | 7.9                    | 14.2         | 9.4              | 8.9                        | 8.2           |
| ROM 106722 Guyana            | 31.1           | 12.0           | 10.9                      | 18.2             | 16.3           | 13.1                      | 7.7                    | 14.3         | 9.2              | 8.6                        | 8.6           |
| ROM 106748 Guyana            | 30.7           | 12.2           | 10.8                      | 17.3             | 16.1           | 12.6                      | 7.8                    | 14.0         | 8.5              | 8.2                        | 8.2           |
| ROM 106761 Guyana            | 31.3           | 12.5           | 11.5                      | 18.5             | 15.6           | 13.7                      | 8.3                    | 14.1         | 9.5              | 9.1                        | 8.8           |
| ROM 107847 Amazonas, Venezuela| 31.4           | 12.6           | 10.8                      | 18.8             | 15.9           | 13.4                      | 7.7                    | 14.8         | 9.2              | 8.8                        | 8.8           |
| ROM 107904 Amazonas, Venezuela| 30.7           | 12.9           | 10.9                      | 17.8             | 16.2           | 13.2                      | 7.9                    | 14.2         | 9.5              | 8.8                        | 8.5           |
| Colombia, Guyana, and Venezuela¹ | (30.5–33.2) | (11.8–13.4) | (10.8–11.9) | (17.9–19.1) | (15.4–17.1) | (12.9–13.9) | (7.4–8.4) | (13.6–15.8) | (8.4–10.2) | (8.4–9.6) | (7.7–9.0) |
| Zulia, Venezuela, and Colombia² | 31.4          | –              | 11.2                      | 18.6             | –              | 13.2                      | 7.9                    | –            | –                | –                         | –             |
| T. F. Amazonas and Boilvar, Venezuela² | 31.2          | –              | 11.2                      | 18.4             | –              | 13.3                      | 7.8                    | –            | –                | –                         | –             |

¹ Lim and Wilson, 1993.
² Handley, 1987.
D. Hanson. The general habitat was savannah with granite outcrops, forested hills, gallery forest, and other scattered patches of forest (bush islands). An adult non-reproductive female was taken on 21 July 1997 in a mist net placed in the forest near an intermittent creek at the base of a hill. An adult male with testes measuring 5 by 3 mm was caught in a mist net set across a dirt road passing through a stand of trees on 25 July 1997.

Although not widely distributed or relatively abundant, the ecological range of *A. amplus* is quite varied. Originally, it seemed to be closely associated with forested montane habitats. Only four specimens from two localities (Nulita and Tamatama) in the type description were lowland rainforest sites (Handley, 1987). The species subsequently was caught in the llanos savannah of Venezuela but still in close association with montane forest (Ochoa G. et al., 1988). However, in the first report of *A. amplus* from Guyana, the species was found in more typical dry savannah habitats at Dadanawa and Shea Village (Lim and Wilson, 1993). In this study, we also caught this bat during the wet season from gallery forest and bush islands in the llanos savannah of Venezuela. *Artibeus amplus* now has been taken in montane forest (1200 m), lowland forest (24 m), and savannah, with gallery forest or bush islands. The only known roosts for *A. amplus* are caves (Handley, 1987), but it probably also roosts in trees like other larger species of *Artibeus* (Emmons, 1997).

As outlined by Handley (1987), there are several external and cranial characters that distinguish *A. amplus* from the similar-sized *A. planirostris*. The tips of the wings of *A. amplus* are brown, and not white as seen in *A. planirostris*, and the noseleaf in *A. amplus* does not form a complete margin of skin at the base as does *A. planirostris*, but instead merges continuously with the upper lip (Fig. 2). In addition, the orbitorostral region of the skull in *A. amplus* is more robust with the lateral edges nearly parallel from the rostrum posteriorly towards the postorbital processes, as opposed to converging (Fig. 3). The skull is also proportionally longer and narrower (see Lim and Wilson, 1993).

The external and cranial measurements of the 10 new specimens from six localities are presented in Tables 1 and 2. The new specimens compare favorably in their measurements with those reported in Handley (1987) and Lim and Wilson (1993). The specimen from Suriname, however, had a relatively long hind foot and the highest recorded mass, although it was a pregnant female. One noteworthy observation about the mensural data for *A. amplus* is their relative uniformity across a broad geographic range from Colombia to Suriname in northern South America.

*Artibeus amplus* is now known by approximately 116 specimens from 27 localities in northern Colombia, Venezuela, Guyana, and central Suriname (Fig. 1). This distribution is unique in that it includes the Guianan subregion of Amazonas, eastern slopes of the northern Andes, and North Coast faunal provinces for bats (Koopman, 1976, 1982). The only other species of bat that has a similar distributional range is the even more enigmatic *Micronycteris homezi* (see Simmons and Voss, 1998; Lim and Engstrom, 2001). The distribution and abundance of these two previously unrecognized cryptic species may be underestimated in museum collections, or have gone undetected in trap-and-release ecological studies. Based on our current knowledge, however, each is restricted to non-Amazonian drainage to the north Atlantic coast of South America. The addition of *A. amplus* to the fauna of Suriname brings the known bat diversity in this country to 104 species (see Lim and Engstrom, 2001).

**Acknowledgments**

We thank Suzanne B. McLaren at the Carnegie Museum of Natural History for her assistance during a visit to Pittsburgh, which was funded by Conservation International, Center for Applied Biological Sciences with the help of Jensen Montambault. Fieldwork in Suriname was generously supported by the Alcoa Foundation.
through a grant to the Section of Mammals of the Carnegie Museum of Natural History. Mr. Henry A. Reichart, STINASU, assisted our research in many ways and made facilities of STINASU available for our use. Ferdinand L. J. Baal, Department of Forestry, issued our collecting permits. Fieldwork in Guyana was funded by the Biological Diversity of the Guianas program at the Smithsonian Institution, and the Centre for Biodiversity and Conservation Biology, Royal Ontario Museum. Research and export permits were facilitated by the Centre for the Study of Biological Diversity at the University of Guyana, Ministry of Amerindian Affairs, and the Environmental Protection Agency. Funding for research in Venezuela was made possible with the generous assistance of the Peterson Memorial Fund of the ROM Foundation, and the Centre for Biodiversity and Conservation Biology, ROM. Daniel Lew, Museo de Historia Natural La Salle, assisted with the permits issued by Servicio Autónomo Profauna. Thanks to Fiona Reid for the illustrations of the external characters and to James Knowles for the photographs of the skulls. This is contribution number 256 from the Centre for Biodiversity and Conservation Biology at the Royal Ontario Museum.

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**Appendix 1—Additional Locality Records for Artibeus amplus**

Specimens from Colombia and Venezuela were records reported in Handley (1987), unless noted with *n* (Ochoa G. et al., 1988), and those from Guyana were reported in Lim and Wilson (1993). Three Venezuelan localities plotted by Linares (1998) were not included because specimens, exact localities, and latitude and longitude were not presented.

**COLOMBIA. Antioquia:** La Tirana. 33 km SW Zaragoza, 520 m. 7°30’N, 74°52’W.

**GYANA. Potaro-Siparuni:** Kaieteur Falls, 5°10’N, 59°29’W. Kato, Ching River, 4°40’N, 59°49’W. Upper Takutu-Upper Essequibo: Dadanawa, 2°50’N, 59°31’W. Kuitaro River, 48 km E Dadanawa, approximately 2°50’N, 58°57’W. Nappi Creek, Kanuku Mountains, 40 km E Lethem, 3°23’N, 59°28’W. Shea Village, Kumakwiri River, 2°49’N, 59°09’W.
VENEZUELA. Amazonas: Belén, Río Cunucunuma, 56 km NNW Esmeralda, 150 m, 3°39'N, 65°46'W. Cabecera del Caño Culebra, Cerro Duida, 40 km NNW Esmeralda, 1140–1200 m, 3°30'N, 65°43'W. Caño Culebra, Cerro Duida, 50 km NNW Esmeralda, 800 m, 3°37'N, 65°41'W. Tamatama, Río Orinoco, 2 km above Boca del Casiquiare, 135 m, 3°10'N, 65°49'W. Apure: Nulita, Selvas de San Camilo, 29 km SSW Santo Domingo, 24 m, 7°19'N, 71°57'W. Bolivar: 21 to 33 km NE Icaború, 775–851 m, 4°35'N, 61°19'W. Km 125, 85 km SSE El Dorado, 826–1165 m, 5°59'N, 61°26'W. *Serranía de Los Pijiguaos, approximately 140 km SW Caicara del Orinoco, approximately 6°29'N, 66°43'W. Zulia: Kasmera, 21 km SW Machiques, 270 m, 9°59'N, 72°43'W. 15 km W Machiques, approximately 10°05'N, 72°43'W. Novito, 19 km WSW Machiques, 1135 m, 10°02'N, 72°43'W.
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DOI: https://doi.org/10.5962/p.316085
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