

NOTES

New records of bats from Brazil with a list of additional species for the chiropteran fauna of the state of Acre, western Amazon basin

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Currently, at least 103 species of bats have been documented from Amazonian Brazil (Mok et al. 1982 ; Marques and Oren 1987 ; Gribel and Taddei 1989 ; Voss and Emmons 1996), which corresponds to about 71 % of the 144 known species for the entire country (Taddei 1996). In their recent assessment of the mammalian diversity of lowland Neotropical forests, Voss and Emmons (1996) concluded that the mammalian faunas of western Amazon are the most diverse in the Americas and perhaps in the world. Nonetheless, almost all of the information about this region comes from studies in the Peruvian Amazon, with few contributions from adjacent Brazil.

The Parque Nacional da Serra do Divisor (PNSD) is situated in northwestern Acre state, forming the westernmost extremity of Amazonian Brazil, along the Peruvian border. It encompasses approximately 605,000 ha, and comprises several distinct vegetational physiognomies (Brasil 1977) in which botanical and faunistic inventories were developed as part of the « Projeto para Conservação do Parque Nacional da Serra do Divisor ». The chiropteran survey was conducted from 8-28 July 1996 (dry season) in northern PNSD along the Rio Moa, and 11-29 March 1997 (wet season) in southern PNSD along the upper Rio Jurua. Among the species sampled, two, *Sturnira magna* (Phyllostomidae : Stenodermatinae) and *Promops centralis* (Molossidae), had not been recorded from Brazil previously ; our records of these poorly known species are discussed in detail below. We also report a list of additional species for the state of Acre.

Specimens of almost all species were collected with mist nets set near ground level ; a few individuals were taken at day-roosts with shotguns or captured by hand. Field weights were recorded with Pesola spring scales to the nearest 2 g. Forearm and cranial dimensions were obtained with calipers accurate to 0.05 mm, following DeBlase and Martin (1976). Unless otherwise indicated, all specimens were considered adults by completely fused phalangeal epiphyses. Voucher specimens, all preserved in 70 % alcohol, were deposited in the A.L. Peracchi collection (ALP), currently stored at the Universidade Federal Rural do Rio de Janeiro, state of Rio de Janeiro, Brazil.

Sturnira magna de la Torre, 1966

Five specimens were obtained. A subadult male, with phalangeal epiphyses not fused and abdominal testes (3.45×2.80 mm), was captured on 19 July over a waterhole in dense, hilly, primary forest (ca. $7^{\circ} 27' 39''$ S, $73^{\circ} 46' 24''$ W). Two lactating females, each of which weighed 44 g, were collected on 17 July over another waterhole in dense forest at the foot of the Serra da Jaquirana (ca. $7^{\circ} 27' 18''$ S, $73^{\circ} 41' 25''$ W). We collected the following additional species at these sites : *Rhynchonycteris naso*, *Tonatia silvicola*, *Carollia brevicauda*, *Carollia perspicillata*, *Artibeus anderseni*, *Artibeus lituratus*, *Artibeus obscurus*, *Artibeus planirostris*, *Chiroderma trinitatum*, *Chiroderma villosum*, *Mesophylla macconnelli*, *Platyrrhinus infuscus*, *Platyrrhinus helleri*, *Platyrrhinus brachycephalus*, *Sturnira lilium*, *Uroderma biloba turn*, *Vampyressa bidens*, *Vampyressa pusilla*, *Vampyroides caraccioli*, *Desmodus rotundus* and *Myotis riparia*. The presence of a great variety of stenodermatine bats near particular waterholes was noted by Tuttle (1974) in Amazonian Venezuela. In PNSD, nets over localized waterholes (« barreiros ») were extremely efficient for sampling bats of this subfamily, with 16 of the 18 species recorded being captured in this way.

Also in the Serra de Jaquirana, a female weighing 42 g and apparently not in reproductive activity was captured on 14 July at 2300 h in a cultivated clearing (*Musa* spp. and other fruit trees) surrounded by primary forest (ca. $7^{\circ} 23' 38''$ S, $73^{\circ} 41' 54''$ W). Other bats taken here were *Micronycteris minuta*, *Phyllostomus hastatus*, *Lonchophylla thomasi*, *Choeroniscus intermedius*, *Carollia castanea*, *C. perspicillata*, *Chiroderma villosum*, *Sturnira lilium* and *Diphylla ecaudata*. The fifth specimen of *S. magna*, a female weighing 44 g, was post-lactating (with a naked area around the nipples) and in the initial stage of pregnancy (evidenced by histological examination). It was captured on 25 July at about 0130 h over a pathway near another cultivated plot surrounded by open forest with many palms along the Rio Moa (ca. $7^{\circ} 26' 48''$ S, $73^{\circ} 36' 58''$ W). We also took specimens of *Micronycteris megalotis*, *Glossophaga soricina*, *Carollia castanea*, *Carollia* sp., *Rhinophylla pumilio*, *Artibeus anderseni*, *A. planirostris* and *Chiroderma trinitatum* at this locality. Our data on the reproduction of *S. magna*, including two lactating females and a female in initial stage of pregnancy, all sampled in July (middle of the dry season in PNSD June to August), are in agreement with Graham's (1987) conclusion that parturition in this species can occur in both dry and wet seasons. As adopted by Graham (1987) in respect to females of *Sturnira* sp. with very small embryos, we assumed that the parturition of the female found in initial stage of pregnancy would take place four months later (November), therefore, during the wet season.

External and some cranial measurements of the male and of the two females are reported in Table 1. All measurements agree with those presented by de la Torre (1966) and Gardner (1976) for Peruvian specimens, and by Tamsitt *et al.* (1986) for specimens from Colombia. These latter authors verified the occurrence of sexual dimorphism in cranial and dental characters of *S. magna*, with males being on the average larger than females. Although the male specimen cited here was subadult, its measurements support this tendency. With regard to dentition, we noted that the size of the lower canines, used by Peterson and Tamsitt (1968) to distinguish *S. magna* from *S. aratathomasi*, varied in our specimens, raising some doubt as to the taxonomic utility of this character.

Promops centralis Thomas, 1915

We captured a single individual of this species at about 2300 h on 16 July in a mist-net set over the Rio Moa, where it passes through the Serra da Jaquirana (ca. $7^{\circ} 26' 55''$ S,

73°39'41''W). The specimen was a male with scrotal testes (5.90 x 3.40 mm), weighing 22 g. Other species taken in these nets over the river were *Noctilio albiventris*, *Artibeus anderseni*, *Myotis albescens* and *Molossus molossus*. About 25 m from these nets, near where a small forest stream flowed into the river, we collected the following additional species: *Rhynchonycteris naso*, *Saccopteryx leptura*, *Carollia brevicauda* and *Rhinophylla fischeri*. Selected measurements of our specimen of *Promops centralis* are presented in Table 1. These agree with those reported by Thomas (1915) in his description of *P. occultus*, currently considered a subspecies of *P. centralis* (Koopman 1993). Measurements of a specimen from Bolivia presented by Ibañez and Ochoa (1989) also are close to ours. A rudimentary anterior upper premolar, cited for this species by Goodwin and Greenhall (1961) and Freeman (1981), was not observed in our specimen. This supports Miller's (1907) suggestion that this tooth is often deciduous.

TABLE 1. External and cranial measurements (in mm) of *Sturnira magna* and *Promops centralis* from Parque Nacional da Serra do Divisor, state of Acre, western Amazon Brazil.

	<i>Sturnira magna</i>		<i>Promops centralis</i>	
	7122	70%	7176	7110
Coll. No. (ALP)	7122	70%	7176	7110
Sex	♂	♀	♀	♂
Forearm length	57.25	59.10	60.75	5 1.25
Greatest length of skull	27.85	27.75	27.70	19.10
Condylbasal length	26.05	25.30	25.75	18.35
Zygomatic breadth	16.30	16.70	17.30	12.30
Postorbital constriction	7.45	7.45	6.95	4.05
Braincase breadth	12.50	12.50	12.45	9.95
Mastoid breadth	15.20	14.75	14.95	11.45
Maxillary toothrow length	7.60	7.80	7.60	7.55
Breadth across upper molars	9.45	9.45	9.15	9.20
Breadth across upper canines	8.00	7.65	7.70	5.20

All specimens of *Sturnira magna* and *Promops centralis* were collected during the dry season at localities at about 250 m elevation with mist-nets at ground level. Considering the known distribution of *S. magna*, throughout Colombia, Ecuador, Peru, and Bolivia, and of *P. centralis*, ranging from Mexico south to Peru and northern Argentina (Koopman 1993), the occurrence of these species in Brazil was expected. The absence of *S. magna* among the previous known Brazilian bats can be attributed to the scarcity of field collections in western Brazilian Amazon, particularly in the state of Acre. A brief review about the records of bats for this state was provided by Taddei *et al.* (1990), which increase the known list from 8 to 18 species. In our survey in PNSD we sampled 37 species, besides *S. magna* and *P. centralis*, that represent new records for the state of Acre (Table 2). The 57 bat species that are now documented for Acre constitute a base for a more realistic approach to the high diversity of the chiropteran fauna in this geographical unit.

TABLE 2. — Checklist of species known for the state of Acre, western Amazon Brazil 1, including the new records from Parque Nacional da Serra do Divisor (*).

Species	
EMBALLONURIDAE	STENODERMATINAE
<i>Rhynchonycteris naso</i> *	<i>Artibeus anderseni</i> ^d
<i>Saccopteryx bilineata</i> *	<i>Artibeus cinereus</i> ^b
<i>Saccopteryx leptura</i> *	<i>Artibeus lituratus</i> ^d
NOCTILIONIDAE	<i>Artibeus obscurus</i> ^c
<i>Noctilio albiventris</i> *	<i>Artibeus planirostris</i> ^d
<i>Noctilio leporinus</i> ^a	<i>Chiroderma trinitatum</i> ^d
PHYLLOSTOMINAE	<i>Chiroderma villosum</i> ^d
<i>Chrotopterus auritus</i> *	<i>Mesophylla macconnelli</i> *
<i>Lonchorhina</i> sp.*	<i>Platyrrhinus brachycephalus</i> ^{c, d}
<i>Macrophyllum macrophyllum</i> *	<i>Platyrrhinus helleri</i> ^d
<i>Micronycteris hirsuta</i> *	<i>Plathyrrhinus infuscus</i> ^d
<i>Micronycteris megalotis</i> *	<i>Stumira liliun</i> *
<i>Micronycteris minuta</i> *	<i>Stumira magna</i> †
<i>Micronycteris nicefori</i> *	<i>Stumira tildae</i> *
<i>Phyllostomus discolor</i> *	<i>Uroderma bilobatum</i> ^d
<i>Phyllostomus elongatus</i> *	<i>Uroderma magnirostrum</i> ^d
<i>Phyllostomus hastatus</i> ^b	<i>Vampyressa bidens</i> *
<i>Tonatia saurophila</i> *	<i>Vampyressa pusilla</i> *
<i>Tonatia silvicola</i> *	<i>Vampyrodes caraccioli</i> ^d
<i>Trachops cirrhosus</i> *	DESMODONTINAE
<i>Vampyrum spectrum</i> *	<i>Desmodus rotundus</i> *
LONCHOPHYLLINAE	<i>Diaemus youngi</i> *
<i>Lonchophylla thomasi</i> ^f	<i>Diphylla ecaudata</i> *
GLOSSOPHAGINAE	THYROPTERIDAE
<i>Anoura caudifera</i> *	<i>Thyroptera tricolor</i> *
<i>Choeromiscus intermedius</i> *	VESPERTILIONIDAE
<i>Glossophaga soricina</i> *	<i>Lasiurus ega</i> *
CAROLLINAE	<i>Myotis albescens</i> ⁿ
<i>Carollia breviceauda</i> *	<i>Myotis riparia</i> *
<i>Carollia castaneaf</i>	MOLOSSIDAE
<i>Carollia perspicillata</i> *	<i>Eumops auripendulus</i> ^e
<i>Rhinophylla fischeriae</i> *	<i>Molossus molossus</i> *
<i>Rhinophylla pumilio</i> *	<i>Promops centralis</i> †

^aDavis (1973); ^bVieira (1952); ^cMok et al. (1982); ^dTaddei et al. (1990); ^eVieira (1952) and Eger (1977). A dagger (†) denotes the new records for Brazil.

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