

## *Platyrrhinus recifinus* (Chiroptera: Phyllostomidae)

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**Abstract:** *Platyrrhinus recifinus* (Thomas, 1901) is a medium-sized leaf-nosed fruit bat commonly known as the Recife's broad-nosed bat because of its type locality, in the city of Recife, Pernambuco State, northeastern Brazil. Its distribution was originally thought to be circumscribed to the Atlantic rain forests of northeastern and southeastern Brazil but was recently broadened to encompass several locations in the tropical rain forests of South America, including Amazonian records in Guyana and Suriname in northern South America, and Paraná State in southern South America. Individuals of *P. recifinus* have been captured in primary and secondary forest, and open areas ranging from 200 to 1,530 m in elevation. The conservation status of this species was recently listed as "Least Concern" by The International Union for Conservation of Nature and Natural Resources. DOI: 10.1644/859.1.

**Key words:** bat, frugivore, phyllostomid, Recife broad-nosed bat, South America, Stenodermatinae

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### *Platyrrhinus recifinus* (O. Thomas, 1901) Recife Broad-nosed Bat

*Vampyrops recifinus* O. Thomas, 1901:192 (footnote). Type locality "Pernambuco" (= Recife), Pernambuco, Brazil. *Platyrrhinus recifinus*: Koopman, 1993:191. First use of current name combination.

CONTEXT AND CONTENT. Order Chiroptera, suborder Microchiroptera, family Phyllostomidae, subfamily Stenodermatinae, tribe Stenodermatini. *Platyrrhinus recifinus* is monotypic (Gardner 2008; Simmons 2005).

NOMENCLATORIAL NOTES. *Platyrrhinus* refers to a flattened nose. The specific epithet *recifinus* refers to the type locality, Recife, capital of the state of Pernambuco, northeastern Brazil.

### DIAGNOSIS

*Platyrrhinus recifinus* (Fig. 1) is medium sized when compared to the largest and smallest stenodermatine fruit bats (Phyllostomidae: Stenodermatinae) and also when compared to its congeners (length of forearm 39.9–43.5 mm; condyloincisive length 20.5–22.98 mm; mass 14–19 g—Dias and Peracchi 2008; Velazco 2005; D. Astúa de



**Fig. 1.**—An adult female of *Platyrrhinus recifinus* collected from Sitio Sinimbu, Guarimiranga, Ceará, Brazil. Photograph by Thieres Pinto used with permission.

Moraes, in litt.). *P. recifinus* has 4 color bands in the dorsal fur; lacks interramal vibrissae; has long, dense hair on the dorsum of the feet; has a nearly imperceptible fossa on the squamosal end of the zygomatic arch, laterally to the glenoid fossa; has a deep fossa on the hypoconal basin of P4; and lacks a stylid cuspid between the metaconid and protoconid of m2. The 3rd metacarpal is longer than the 5th metacarpal (Velazco 2005).

*Platyrrhinus recifinus* can be confused with the Incan broad-nosed bat (*P. incarum*) and the white-lined broad-nosed bat (*P. lineatus*), 2 congeners that may occur sympatrically with *P. recifinus*. *P. incarum* can easily be distinguished from *P. recifinus* by its smaller size and the presence of a stylid cuspid on the anterior cristid of p4, lacking in *P. recifinus* (Velazco 2005; Velazco and Patterson 2008). *P. lineatus* can be distinguished from *P. recifinus* by its larger size, and by the form of p2, which is relatively narrow in labial outline and triangular in cross-sectional outline (posterolingual cristid weakly developed). In contrast, the crown of p2 of *P. recifinus* is “sail-shaped” when viewed laterally, and bladelike in cross-sectional outline (posterolingual cristid developed). The labial surface of p2 is conspicuously convex in *P. lineatus*, the “heel” being 20% or more of the anteroposterior length of tooth. In contrast the labial surface of p2 is nearly flat in *P. recifinus*, and the “heel” is less than 20% of the anteroposterior length of the tooth in labial view (Gardner 2008). In addition, *P. recifinus* often has trilobed upper incisors, whereas *P. lineatus* and *P. incarum* have bilobed upper incisors (Gardner 2008).

### GENERAL CHARACTERS

Dorsal color of *Platyrrhinus recifinus* is dark brown to grayish, and the venter is generally paler than the dorsum. The dorsal fur is from 6.3 to 7.5 mm long and has 4 color bands; ventral fur has 3 color bands. The bat has conspicuous white dorsomedial and ventrolateral facial stripes; the white dorsal stripe is wide and conspicuous. The genal vibrissae are implanted in a basal, wart-like protuberance. There are 7 vibrissae surrounding the margin of the nose leaf in a single array, a single vibrissa is present on the upper lip ventral to the vibrissae that surround the margin of the nose leaf, and 4 submental vibrissae lie on each side of the chin. The inferior border of the horseshoe is free from the upper lip. Parallel folds in the pinna are poorly marked but are distinguishable. The posterior edge of the plagiopatagium inserts at the level of the 1st metatarsal; long, dense hair covers the upper surfaces of the feet. The posterior border of the uropatagium is U shaped and densely haired. The posterior border of the hard palate is U shaped; the postorbital and paraoccipital processes are moderately developed (Fig. 2). A shallow fossa may occur in the squamosal end of the zygomatic arch, lateral to the glenoid fossa. The upper outer incisors are unicuspidate; there is a



**Fig. 2.**—Dorsal, ventral, and lateral view of skull and lateral view of mandible of an adult male *Platyrrhinus recifinus* from Brazil, Minas Gerais, Município de Coqueiral (Coleção de Mastozologia da Universidade Federal de Lavras [CMUFLA] 113). Greatest length of skull is 23.92 mm.

deep fossa on the hypoconal basin of P4; a parastyle is present on M1, which lacks a mesostyle. There is both a labial cingulum and a lingual cingulum at the base of the metacone of M1 and there is a sulcus in the posterior cristid of the paraconid that joins the cingulum of the lingual face of the metaconid. A metastylid is present and the protoconid is moderately developed on M1. A parastylid, metastylid, and labial cingulid are present in M2. There is no styler cuspule on the lingual face of both the metacone and paracone in M2 and the lingual cingulum is continuous to the metacone. There are labial and lingual cingulids on p4, but no styler cuspulids on the anterior or posterior cristid of the main cone of the tooth. The 1st lower molar lacks a paracone. Labial and lingual cingulids are present on m2 (Velazco 2005).

Ranges of external measurements (mm) of 4 females and 2 males from São Paulo, and 1 male and 1 female from Minas Gerais, both in southeastern Brazil (eastern part of range of distribution for this species) were: total length, 89–93 (only São Paulo); length of hind foot, 11–13 (only São Paulo); length of ear, 18–20 (only São Paulo); length of forearm, 42.0–43.5; length of tibia, 15.2–17.5 (only São Paulo); mass, 17–19 g (Velazco 2009). Ranges of external measurements (mm) of 3 males and 1 female from Pernambuco, Brazil (northern part of the distribution of the species) were: total length, 58.4–60.8; length of hind foot, 10.6–11.8; length of ear, 16–19; length of forearm, 39.9–41.5; mass, 14.0–15.8 g (D. Astúa de Moraes, in litt.). Specimens recently recorded at the southernmost known distribution of *P. recifinus*, Paraná State, southern Brazil, had the following ranges of external measurements: total length, 57.9–63.4; length of hind foot, 11.4–13.4; length of ear, 15.3–16.9; length of forearm, 42.6–45.9 (Scultori et al. 2009).

Ranges of cranial measurements (mm) of 6 specimens from São Paulo, Brazil (4 females and 2 males—Velazco 2005), 9 specimens from Rio de Janeiro, Brazil (6 females and 3 males—Dias and Peracchi 2008), and 2 specimens from Minas Gerais (1 female and 1 male—P. M. Velazco and V. C. Tavares, in litt.) were: greatest length of skull, 23.0–25.2; condyloincisive length, 22.0–23.0; condylocanine length, 21.6–22.1; postorbital breadth, 5.5–6.2; zygomatic breadth, 13.6–14.6; braincase breadth, 10.2–10.8; mastoid breadth, 11.6–12.4; length of maxillary tooththrow, 8.6–9.4; breadth across molars, 9.9–11.0. Ranges of cranial measurements (mm) of 3 males and 1 female from the northern part of the distribution of the species, Pernambuco, Brazil, were: greatest length of skull, 21.0–21.9; condyloincisive length, 20.5–21.4; condylocanine length, 20.5–21.4; postorbital breadth, 5.4–5.8; zygomatic breadth, 13.4–13.9; braincase breadth, 9.9–10.4; mastoid breadth, 10.7–11.3; length of maxillary tooththrow, 8.6–9.1; breadth across molars, 9.9–10.4 (D. Astúa de Moraes, in litt.). Specimens recently recorded at the southernmost known distribution of *P. recifinus*, Paraná State, southern Brazil, had the following ranges of

cranial measurements: greatest length of skull, 24.5–25.5; condyloincisive length, 22.3–23.4; postorbital breadth, 5.8–6.0; zygomatic breadth, 14.5–14.9; braincase breadth, 10.5–11.2; mastoid breadth, 12.0–12.6; length of maxillary tooththrow, 9.2–9.7; breadth across molars, 6.3–6.7 (Scultori et al. 2009).

It has been suggested (E. Vicente, in litt.) that within *P. recifinus* there is clinal variation in size—with a decrease in size for individuals from southern to northern regions. This is supported by data recently obtained by us and 2 other researchers (D. Astúa de Moraes, in litt.; Scultori et al. 2009) from specimens collected from the northern and southern parts of the species range.

## DISTRIBUTION

*Platyrrhinus recifinus* was originally thought to be an endemic of the Atlantic Forests of southeastern Brazil based on records from the states of São Paulo, Espírito Santo, Minas Gerais, Bahia, and Pernambuco (Aguiar 1994; Pedro and Passos 1995; Pedro et al. 2001; Tavares 1999; Tavares et al. 2008; Thomas 1901). However, 1 old record (Gargaglioni et al. 1998) and other recent records indicate that the species is also distributed in the Brazilian Cerrado and Caatinga biomes as well as in transitional areas of these biomes within the Atlantic Forest (Paglia et al. 2005; Souza et al. 2004). In Brazil *P. recifinus* has been reported for the states of Alagoas, Bahia, Ceará, Espírito Santo, Minas Gerais, Paraíba, Paraná, Pernambuco, Rio de Janeiro, Santa Catarina, and São Paulo (Dias et al. 2002; Gardner 2008; Peracchi and Albuquerque 1993; Piccinini 1974; Reis et al. 1996; Sanborn 1955; Scultori et al. 2009; Tavares et al. 2007, 2008; Thomas 1901; Velazco 2005; E. Vicente, in litt.; Vieira 1942). Recent revisionary studies on the species have pointed out that *P. recifinus* is not a Brazilian endemic, but also occurs in Guyana and Suriname (Velazco 2009; see Fig. 3). No fossils are known.

## FORM AND FUNCTION

Dental formula is  $i\ 2/2$ ,  $c\ 1/1$ ,  $p\ 2/2$ ,  $m\ 3/3$ , total 32. Size of upper incisors and gaps between upper incisors are variable within populations (Dias and Peracchi 2008; Sanborn 1955; Velazco 2005).

## ECOLOGY

*Platyrrhinus recifinus* lives mainly in areas of Atlantic Forest, predominantly in primary and secondary forest (Aguiar 1994; Pedro and Aguiar 1998; Pedro and Passos 1995; Pedro et al. 2001; Scultori et al. 2009; Tavares 1999; Tavares et al. 2007), and moist patches enclosed in the domains of the Cerrado and Caatinga biomes (Gargaglioni

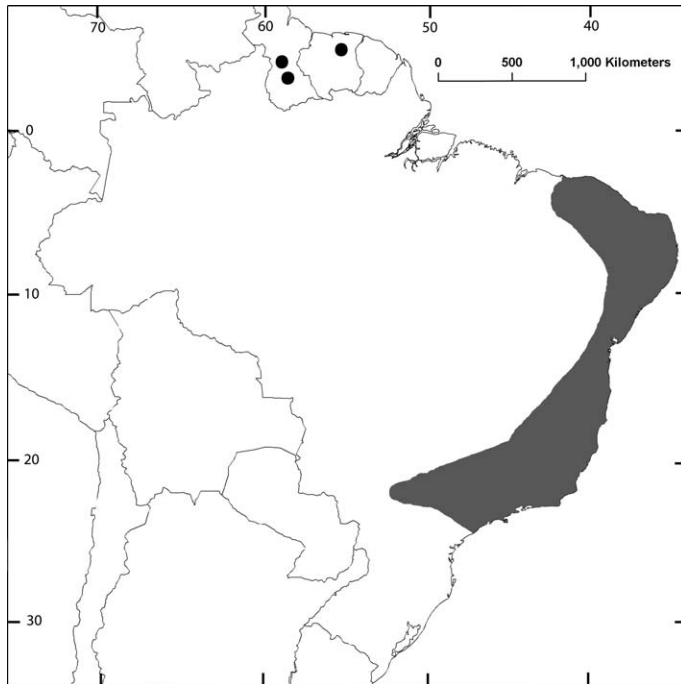


Fig. 3.—Geographic distribution of *Platyrrhinus recifinus*.

et al. 1998; Paglia et al. 2005; Souza et al. 2004). It has been reported that *P. recifinus* roosts in tree hollows, leafy tangles, and caves in small groups (3–10 individuals—Sampaio et al. 2008). The elevational distribution ranges from 200 m (São Paulo, Município Ilhabela, Ilha de São Sebastião, Parque Estadual Ilhabela—Velazco 2005) to about 1,530 m (Minas Gerais, Município de Simonésia, Reserva Particular do Patrimônio Natural Mata do Sossego—Aguiar 1994). A specimen from the state of Ceará was shot in a banana plantation (Gardner 2008). In the submontane forests of Reserva Natural Morro da Mina, close to the Serra do Mar mountains of Paraná State, southern Brazil, 2 females were captured in mist nets 1 m above the ground, another female at 8 m, an additional female at 16 m, and a male was captured at 6 m above the ground (Scultori et al. 2009).

In Minas Gerais State, southern Brazil, embaúba (*Cecropia*) and figs (*Ficus*) were reported in the diet of *P. recifinus* (Garcia et al. 2000; Pedro and Passos 1995; Tavares 1999; Tavares et al. 2007). At Reserva Morro da Mina, Paraná State, southern Brazil, a male was captured in an elevated mist net (6 m) placed in front of opened flowers of *Pseudobombax grandiflorum* (Cav.) A. Robins (Malvaceae—Scultori et al. 2009).

### GENETICS

Ferreira et al. (2005) used polymerase chain reaction–restriction fragment length polymorphism techniques to examine the limits between *Platyrrhinus lineatus* and *P.*

*recifinus*, suggesting that in fact those are well-differentiated taxa that did not share haplotypes. Additionally, Ferreira et al. (2005) did not find polymorphisms in *P. recifinus*, suggesting a low genetic diversity in the species.

### CONSERVATION

*Platyrrhinus recifinus* is considered an endangered species throughout its range in Brazil; however, the conservation status of this species in Suriname and Guyana has not been assessed yet. The major threats to the species in Brazil are associated with the destruction or disturbance of their habitat and the lack of basic knowledge about the species, from both systematic and ecological perspectives (Sampaio et al. 2008; Tavares and Aguiar 2008; Tavares et al. 2008). *P. recifinus* is listed in the Instrução Normativa 3, 27 May 2003, of the Ministério do Meio Ambiente as threatened with extinction in Brazil. Previously, the species was considered “Vulnerable” (Baillie and Groombridge 1996) but it has recently been reassessed and moved to the “Least Concern” category by the International Union for the Conservation of the Nature and Natural Resources (Sampaio et al. 2008). A conservation strategy for *P. recifinus* should focus on protection of its habitats and study of its ecology, and geographic and individual variation. The maintenance of habitats within the Atlantic Forest has been pointed out as crucial for this species (Sampaio et al. 2008). Fortunately, *P. recifinus* occurs in several reserves within the Atlantic Forest of southern and southeastern Brazil (Scultori et al. 2009; Tavares and Aguiar 2008).

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