

Mammalia, Chiroptera, Vespertilionidae, *Rhogeessa hussoni* Genoways and Baker, 1996: Distribution extension and taxonomic notes

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ABSTRACT: The present note reports new locality records for the bat *Rhogeessa hussoni* (Chiroptera, Vespertilionidae), with a distribution extension westwards (Nova Lacerda, Mato Grosso). A second specimen from Ipatinga, Minas Gerais, is also reported, confirming the occurrence of this species in the Atlantic Rainforest. Comments on distinguishing the two Brazilian species of the genus, *R. hussoni* and *R. io*, are given.

The genus *Rhogeessa* H. Allen, 1866 (Vespertilionidae, Nycticeiini) is currently represented by 10 species distributed in the Neotropical region (Simmons 2005). Only three of them are found in South America: *Rhogeessa minutilla* Miller, 1897, *Rhogeessa io* Thomas, 1903, and *Rhogeessa hussoni* Genoways and Bakers, 1996, with the last two occurring in Brazil. The genus *Rhogeessa* is scarcely represented in most collections, which may be related to the difficulty in collecting specimens of Vespertilionidae using traditional capture methods (e.g. mist-nets), and in properly distinguishing species within *Rhogeessa*. Therefore, taxonomic studies and data on geographic distribution for these species are scarce. *Rhogeessa io* has been classified as "Least Concern" in the conservation status criteria adopted by the IUCN (Soriano and Tavares 2008), whereas *R. hussoni* has been considered "Data Deficient" (Sampaio *et al.* 2008).

Genoways and Baker (1996), while evaluating Surinamese specimens of *Rhogeessa*, described *R. hussoni* and designated its type locality Sipaliwini Airstrip, District of Nickerie, Suriname (Figure 1). These authors also considered that the specimen collected in Maranhão, Brazil, and studied by Goodwin (1958), also belonged to this new species. Goodwin (1958) identified discontinuities in morphological characters along the geographical distribution of *Rhogeessa tumida*, describing the new subspecies *R. tumida riparia* from Venezuela. He also identified peculiarities in one individual from Alto Paraíba, Maranhão, suggesting that this specimen should represent another subspecies. Although similar in color and texture of pelage with the type of *R. tumida riparia*, it had a longer forearm (Goodwin 1958). Simmons (2005) restricted the geographic distribution of *R. hussoni* to the extreme south of Suriname and eastern Brazil, but Bickman and Ruedas (2008) suggested that it may occur in all Suriname and northern Brazil, and that the southernmost record of *R. hussoni* is from the region of Juazeiro da Bahia, Bahia, Brazil (9°25' S, 40°30' W) (Figure 1) (Faria *et al.*

2006). Furthermore, Astúa and Guerra (2008) reported five specimens of *Rhogeessa* in the mammal collection of Universidade Federal de Pernambuco (UFPE), from Sertânia and Oroco, Pernambuco. We have examined one of the specimens (UFPE 1541) from Oroco, Pernambuco (8°37'12" S, 39°36'06" W), and assigned it to *R. io* due to characters of the fur and general cranial morphology (unpublished data).

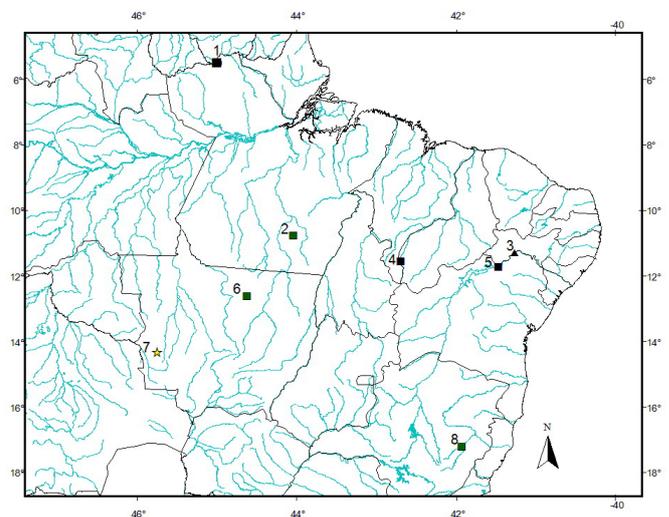


FIGURE 1. Distribution of the specimens of *Rhogeessa hussoni* and *Rhogeessa io* described in the text. Squares solid – specimens of *R. hussoni* - from Bickman and Ruedas, 2008, and specimens registered in the Collection of Mammals from MZUSP; triangle solid – *R. io* from UFPE; star yellow – new records of *Rhogeessa hussoni*. Numbers indicate the localities listed from Gazetteer. Number 1 represent locality type of *R. hussoni*.

In the present study we report new locality records for *R. hussoni* and comment on its taxonomic identification. We based our taxonomic assessment on characters related to skull sutures and ridges, general color of body pelage, distribution of fur in patagium, and morphology of ears, tragus and muzzle. We have also recorded body and skull measurements, based on Vizotto and Taddei (1973), and

their definitions are as follows: FA = forearm length; 3rd Met = 3rd metacarpus length; 1st Phal = 1st phalange of 3rd metacarpus length; 2nd Phal = 2nd phalange of 3rd metacarpus length; 3rd Phal = 3rd phalange of 3rd metacarpus length; PO = polex length; TI = tibia length; FT = foot length; CL = calcaneum length; E = ear length; TR = tragus length; GLS = distance from the posterior-most point of the occiput to the anterior-most point of the premaxilla (excluding incisors); POC = breadth at the postorbital constriction; BB = greatest breadth of the braincase, excluding mastoid and paraoccipital processes; MXT = distance from the anterior-most edge of the upper canine crown to the posterior-most edge of the crown on M3; MDT = distance from the anterior-most surface of the lower canine to the posterior-most surface of m3; MD = midpoint of mandibular condyle to anterior-most point of dentary; CS = distance between the external bases of upper canines; CI = distance between the external bases of lower canines; PAL = greatest palatal breadth; MOS = distance between of uppers molars. All measurements are in millimeters (mm) and were taken to nearest tenth of millimeter.

After a revision of the specimens deposited in the mammal collection of the Museu de Zoologia da Universidade de São Paulo (MZUSP), three females and two males of *R. hussoni* were identified (Table 1).

Specimen MZUSP 33905 was collected in Pinkaití, in the “Centro Kayapó de Estudos Ecológicos”, Kayapó Indigene Area, south of the State of Pará (7°41'00" S, 51°52'00" W, 300 m above the sea level) (Figure 1). It is an

area of primary forest, of relatively low and heterogeneous stature, located along the Riozinho creek, a secondary tributary of the Xingu River (Peters *et al.* 2006).

Two specimens were obtained in the State of Mato Grosso (MZUSP 34661 and MZUSP 34662). The specimen MZUSP 34662 was collected on July 23th 1997, using a mist-net disposed along the banks of Carmelita creek (11°31'00" S, 55°06'00" W, 365 m above the sea level). This area is characterized by marsh vegetation, with typical dominance of “buritis” (*Mauritia* sp.). The specimen MZUSP 34661 was collect by one of the authors (A. Cesari), on December 23rd 2008, using a mist-net placed along the banks of the Areia Branca creek (14°11'14" S, 59°28'07" W), in Nova Lacerda, Mato Grosso (Figure 1). Areia Branca creek is an affluent of the Galera River, which is part of the Guaporé Basin, a tributary of the Madeira River. The specimen was collected in a patch of riparian vegetation between two farms. This patch follows the Areia Branca creek for about 10 km and in its eastern portion it is delimited by pastures and by a patch of Cerrado of about 500 km². Both sampled areas (Nova Lacerda and Cláudia) may be considered as a contact area between Amazonia and Cerrado. Whereas still in a zone of Cerrado, the riparian patch where the specimen MZUSP 34661 was collected shows typical species of the Amazonian flora, including various specimens of Brazilian nut (*Bertholetia excelsa*). This specimen represents the westernmost record for *R. hussoni* of the species, therefore, extending its geographic distribution westwards in 1,500 km.

TABLE 1. Measurements of *Rhogeessa hussoni* from the state of Minas Gerais, southeastern Brazil (MZUSP 5831 and MZUSP 24045), Pará, northern Brazil (MZUSP 33905), and Mato Grosso, central-western Brazil (MZUSP 34661 and MZUSP 34662), and *Rhogeessa io* from Orocó, Pernambuco, northeastern Brazil (UFPE 1541). Measurements in millimeters. Age categories: adult (A) and subadult (S).

	UFPE 1541	MZUSP 5831	MZUSP 24045	MZUSP 33905	MZUSP 34662	MZUSP 34661
Character- sex/age	♀/A	♀/A	♀/A	♀/A	Male/A	Male/S
FA	27.14	28.80	28.20	30.91	30.87	29.81
3 rd Met	25.63	26.27	24.63	28.10	26.63	28.23
1 st Phal	11.31	11.55	11.78	12.24	11.65	12.10
2 nd Phal	9.75	10.74	9.50	10.79	9.72	10.70
3 rd Phal	4.20	4.60	5.25	6.6	6.13	6.78
PO	4.57	4.82	4.78	5.11	5.28	4.95
TI	12.03	13.41	11.49	13.46	13.43	13.11
FT	5.85	6.43	6.75	6.02	6.32	5.02
CL	-	8.08	9.77	11.35	11.97	12.38
E	-	9.91	9.16	10.01	8.07	11.84
TR	-	4.86	5.20	6.69	4.61	6.00
GLS	-	13.15	-	12.60	12.95	12.62
POC	-	3.80	-	3.59	3.49	3.41
BB	-	6.24	-	6.23	6.81	5.90
MXT	-	4.89	-	4.66	4.72	4.56
MDT	-	5.26	-	5.34	5.27	5.06
MD	-	9.93	-	9.74	9.81	9.52
CS	-	3.98	-	4.09	4.04	3.78
CI	-	2.74	-	2.76	2.78	2.56
PAL	-	3.10	-	2.95	2.86	3.19
MOS	-	2.90	-	2.77	2.81	2.83

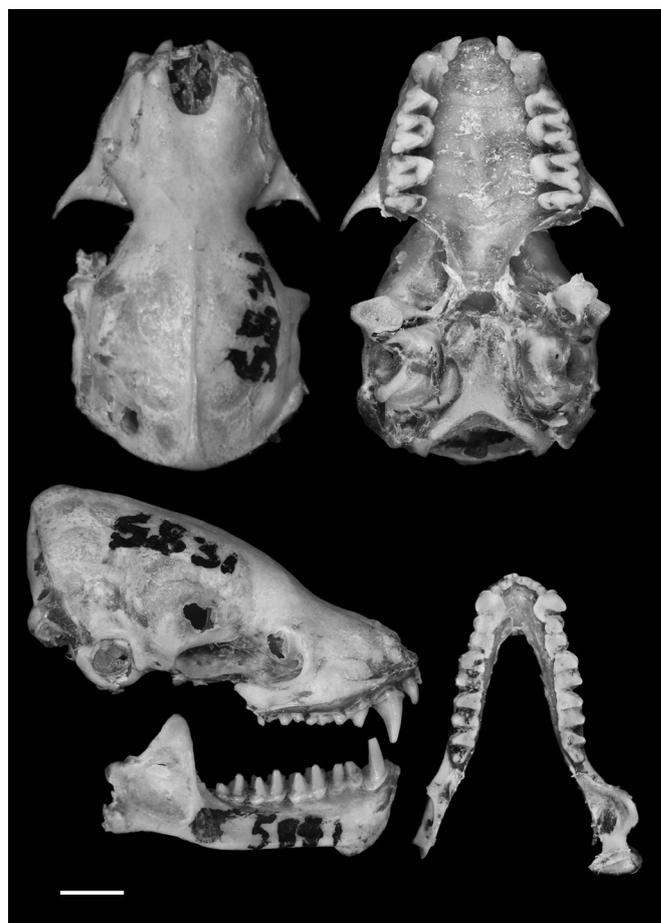


FIGURE 2. Dorsal, ventral, and lateral views of the skull, and dorsal and lateral views of the mandible of *Rhogeessa hussoni* (MZUSP 5831). Picture: M.V. Brandão-Oliveira. See Table 1 for measurements. Scale bar = 3mm.

The two additional specimens (MZUSP 5831 and MZUSP 24045) were collected by Ollala inside a house, in the region of lower Piracicaba River, nearby the confluence with Doce River, Ipatinga, Minas Gerais (19°29'32" S, 42°30'56" W, 230 m above the sea level). These specimens were captured with a bamboo stick on September 5th, 1940. The geographic coordinates were based on the accounts of Pinto (1945), who described the expedition in which the aforementioned animals were collected. Nowadays this region is located inside the domains of the Parque Estadual do Rio Doce. The vegetation of this conservation unit is classified as submontane seasonal semideciduous forest (Veloso et al. 1991) and is distributed through an area of about 36,000 ha, with altitudinal variation ranging from 230 to 515 m (Lopes et al. 2002). The climate is classified as tropical wet savanna, with well defined periods of rainfall and drought (Lopes et al. 2002). Tavares et al. (2010) have previously analyzed the specimen MZUSP 24045 and their taxonomic assessment is congruent with ours. The specimens from Ipatinga extend the distribution of *R. hussoni* southwards in about 1,100 km, confirming its

presence in the Atlantic Forest.

According to our results, the geographical distributions of *R. io* and *R. hussoni*, previously regarding as disjunct (Bickman and Ruedas 2008), in fact overlap in the most portion of Brazilian territory (Figure 1).

Regarding the distinction between *R. hussoni* and *R. io*, we point out that the most remarkable character for distinguishing the two species was the color of the body pelage. *Rhogeessa hussoni* has golden brown fur with brown tips, both ventrally and dorsally, whereas *R. io* presents a fainter color, pale yellow in the ventral region. The morphology of the muzzle of *R. hussoni* is similar to *Eptesicus Rafinesque*, 1820 (Vespertilionidae, Eptesicini), showing inflated pads above the muzzle, whereas for *R. io* this character is more subtle, showing only a light outline of pads. Based on our sample, breadth across the upper canines (CS), palatal breadth (PAL), and length of the maxillary tooththrow (MXT) are the most useful characters for distinguishing the two species that occur in Brazil, being all these cranial measurements larger in *R. hussoni* than in *R. io* (Figure 2 and Table 2).

TABLE 2. Summary of diagnostic characters used to distinguish *R. hussoni* and *R. io*. Measurements in millimeters.

SPECIES	CS	PAL	MXT	COLOR OF DORSUM	COLOR OF VENTRAL AREA	MUZZLE
<i>R. hussoni</i>	4.1-4.15	3.07-3.33	4.63-4.83	Golden brown with brown tips	Golden brown with brown tips	Pads inflated
<i>R. io</i>	3.76	2.96	4.53	Light brown	Pale yellow	Pads inconspicuous

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APPENDIX 1. Gazetteer.

SURINAME, 1 - *Silaliwini*: Sipaliwini Airstrip (2°02' N, 56°08' W); BRAZIL, 2 - *Pará*: Pinkaití, Centro Kayapó de Estudos Ecológicos, Kayapó Indigene Area (7°41' S, 51°52' W); 3 - *Pernambuco*: Orocó (8°37'12" S, 39°36'06" W); 4 - *Maranhão*: Alto Parnaíba (9°06' S, 45°56' W); 5 - *Bahia*: Juazeiro da Bahia (9°25' S, 40°30' W); 6 - *Mato Grosso*: Ribeirão Carmelita, Cláudia (11°31' S, 55°06' W); 7 - *Córrego Areia Branca*, Nova Lacerda (14°11'14.892" S, 59°28'7.752" W); 8 - *Minas Gerais*: lower Piracicaba River, Parque Estadual do Rio Doce (19°29'32.15" S, 42°30'56.79" W).