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NOTES ON GEOGRAPHIC DISTRIBUTION

First confirmed record for Peru of *Diclidurus scutatus* Peters, 1869 (Chiroptera: Emballonuridae)

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ABSTRACT: *Diclidurus scutatus* Peters, 1869, is known from Venezuela, Guyana, Surinam, French Guiana, Brazil, Ecuador, and Peru. In Peru *D. scutatus* was previously known from a single specimen without a specific locality. Here we report the first record of *D. scutatus* from a known locality for Peru. We also provide an updated distribution map for the species.

The genus *Diclidurus* Wied-Neuwied, 1820 includes four species grouped into two subgenera: *Diclidurus* for *albus*, *ingens*, and *scutatus* and *Depanycteris* for *isabellus* (Hood and Gardner 2008; Simmons 2005). The genus is distributed from western Mexico, southeastward to eastern Brazil (Hood and Gardner 2008). Members of this genus are diagnosed by the presence of relatively long, soft, whitish to pale brownish pelage; a small first upper premolar not in contact with the second; postorbital processes broad, nearly obliterated by markedly broadened supraorbital ridges; rostrum distinctly and deeply dished; and the presence of a large and conspicuous glandular area on the uropatagium (especially prominent in males during the breeding season) at, and posterior to, the place where the tail protrudes from the membrane (Jones and Hood 1993).

There are only two species of *Diclidurus* reported to occur in Peru: *D. albus* Wied-Neuwied, 1820 distributed from western Mexico southward to eastern Bolivia, and Trinidad (Hood and Gardner 2008; Vargas Espinoza 2007) characterized by having a forearm length ranging from 60–70 mm and lacking a palatine foramen; and *D. scutatus* Peters, 1869 known from Venezuela, Guyana, Surinam, French Guiana, Brazil, Ecuador, and Peru (Jones and Hood 1993; Albuja 1999) characterized by having a forearm shorter than 60 mm and a large palatine foramen that is confluent with a posterior palatal emargination (Jones and Hood 1993). Both species are represented by single specimens deposited at the American Museum of Natural History, New York, USA (AMNH), collected by Abram Andi in different years. The specimen of *D. albus* (AMNH 99310) is an adult of undetermined sex preserved as skin and skull collected in Parinari, Loreto (04°34' S, 74°26' W, Figure 1) on May 30th 1929. The specimen of *D. scutatus* (AMNH 99309) is an adult of undetermined sex preserved as skin and skull, without any indication of precise locality other than "Peru," collected on January 8th 1924.

Herein we report the first vouchered record of *Diclidurus scutatus* with a precise locality in Peru and provide an updated distribution map for the species. This specimen, an adult female, MUSM 37068 (Figure 2), was collected at the mouth the Yavarí river on Lago Preto, Lago Preto Conservation Concession, Loreto, Peru (04°30' S, 71°43' W, Figure 1) on May 29, 2007 at 19:30 h. The habitat at the site of capture is a river bank forest with clay soils and an open understory characterized by the presence of some *Cecropia* sp., *Helicona* sp., and *Piper* sp. The height of the forest canopy was 18 m and characterized by the presence of *Bactris* spp., *Cecropia* sp., and *Inga* sp. This bat was collected during a full moon night in a mistnet set 10 meters above ground. The specimen was deposited in the mammal collection of the Museo de Historia Natural de la Universidad Nacional Mayor de San Marcos (MUSM) in Lima, Peru. Standard external measurements (in mm) are as follows: length of tail, 13.0; length of tibia, 20.0; length of hind foot, 10.0; length of forearm, 58.0; length of ear (tragus), 15.0 (6.0). Selected cranial and forearm measurements are provided in Table 1.

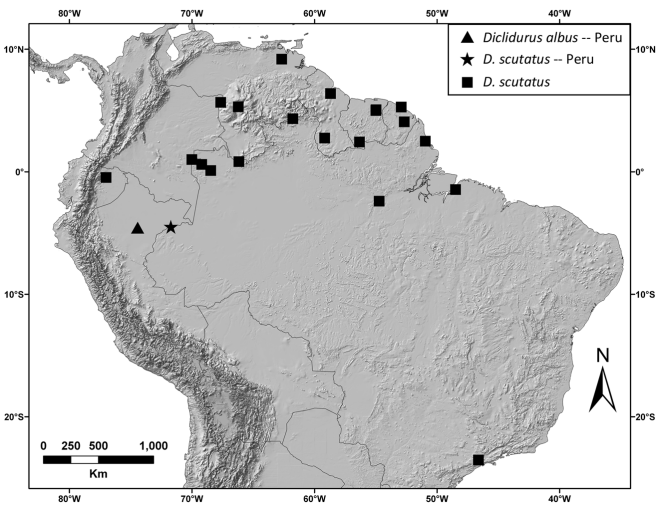

FIGURE 1. Geographic distribution of *Diclidurus scutatus* and the new record in Peru (star) and the Peruvian record of *D. albus* (triangle).

The following list includes all other localities where *Diclidurus scutatus* has been recorded throughout its distribution. The following institutional abbreviations are used on the list: AMNH (American Museum of Natural History, New York, USA), FMNH (Field Museum of Natural History, Chicago, USA), MUSM (Museo de Historia Natural de la Universidad Nacional Mayor de San Marcos, Lima, Peru), and ROM (Royal Ontario Museum, Toronto, Canada). BRAZIL: *Amapá*: Colônia Torrão, Calçoene (Piccinini 1974). *Amazonas*: Jauareté, Rio Uaupés (= Iauaretê) (Piccinini 1974); Taracuá, (= Taraquá), Rio Negro (= Rio Vaupés) (Vieira 1942). *Pará*: Para (= Belém) (Thomas 1920); Santarém, Piquiatuba, Tapajós River (AMNH 95779). *São Paulo*: São Paulo (Sodré and Uieda 2006). COLOMBIA: *Vaupés*: Lower Río Apaporis, Yay Gojes (FMNH 88234–88235). ECUADOR: *Orellana*: Coca, Campo Petrolero Sacha Norte 1 (Albuja 1999). FRENCH GUIANA: *Sinnamary*: Paracou, near Sinnamary (Simmons and Voss 1998). *Régina*: Les Nouragues (Brosset and Charles-Dominique 1991). GUYANA: *Cuyuni-Mazaruni*: Kartabo Point, Cuyuni River (AMNH 142908). *Upper Takutu-Upper Essequibo*: Rupununi, Marurawaunawa Village, Ow-wi-dy-wau, Ishi Wau Head, Near Marurawaunowa (ROM 38505). PERU: *Loreto*: mouth of Lago Preto, Yavari River (MUSM 37068). SURINAME: *Brokopondo*: Afobaka, on Suriname River, northern shore of Brokopondo Lake (Husson 1978); Brokopondo (Husson 1978). *Brokopondo?*: Upper Suriname River (Husson 1978). *Nickerie*: Alalapadu, 322 km S. of Paramaribo (ROM 34575). VENEZUELA: *Amazonas*: Cerro Neblina Base Camp (Gardner 1988); Puerto Ayacucho (Handley 1976); San Juan, Río Manapiare, 163 Km ESE Puerto Ayacucho (Handley 1976). *Bolívar*: Icabarú (Handley 1976). *Monagas*: Laguna Guasacónica (Linares and Rivas 2003).

Even though *Diclidurus albus* and *D. scutatus* have been found in only a few localities, the IUCN lists them as Least Concern because of their wide distribution. Therefore, these species are unlikely to be declining fast enough to qualify for inclusion in any of the threat categories in the near future (Lim *et al*. 2008; Sampaio *et al*. 2008).

After decades of continuous bat research in Peru, the only two previous records for *Diclidurus* were collected in the 1920's. Diclidurines are rapid fliers active at tree-top levels or in open areas over water (Kalko *et al*. 1996; Lim *et al*. 1999; Ochoa G. *et al*. 2008). We believe that the use of a variety of uncommon practices, such as using shotguns, aerial nets, and acoustic monitoring methods in bat surveys in Peru will be necessary to improve our knowledge of the biology and distribution of this group of bats, which are not easily caught in nets because of their flight behavior.

Table 1. Measurements (mm) of *Diclidurus albus* and *D. scutatus.*

MEASUREMENTS	*Diclidurus albus*		*Diclidurus scutatus*		
	Range[a]	AMNH 99310	Range[b]	AMNH 99309	MUSM 37068
Forearm length	63.0–69.2	61.1	51.0–58.9	54.0	58.0
Greatest length of skull	17.0–19.6	––	15.3–15.7	––	––
Zygomatic breadth	11.9–12.7	––	10.6–11.5	10.2	––
Least breadth of postorbital constriction	5.5–5.9	5.2	4.3–5.3	4.8	––
Braincase breadth	8.9–9.9	––	8.3–8.5	8.4	––
Length of maxillary toothrow	7.3–8.7	7.5	6.3–7.5	6.5	––
Mastoid breadth	9.8–10.2	––	9.2–9.3	––	––
Breadth across canines	5.6–6.2	4.2	3.8–4.0	3.9	––
Breadth across third upper molars	8.0–9.0	8.0	7.1–7.4	7.2	––

[a] Measurements provided by Jones (1966), Ojasti and Linares (1971), Starrett and Casebeer (1968), and Villa-R. and Ramirez-P. (1968).
[b] Measurements provided by Albuja (1999), Husson (1962), and Sodré and Uieda (2006) and from the following specimens ROM 34575, 38505 and FMNH 88234–88235.

Figure 2. Live photograph (MUSM 37068 - ♀) of the little ghost bat, *Diclidurus scutatus*, collected at the mouth of Lago Preto, Lago Preto Conservation Concession, Yavarí river, Loreto, Peru. Photo: Mark Bowler.

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