

Noteworthy bat records from the Pacific Tropical rainforest region and adjacent dry forest in northwestern Peru

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The bat fauna of the Pacific Tropical rainforest region in Peru is poorly known. Here we report noteworthy range extensions of 12 bat species, including: *Diaemus youngi*, *Chrotopterus auritus*, *Micronycteris minuta*, *Mimon crenulatum*, *Vampyrum spectrum*, *Chiroderma salvini*, *Enchisthenes hartii*, *Noctilio leporinus*, *Thyroptera discifera*, *Eptesicus chiriquinus*, *Rhogeessa io*, and *Myotis riparius*. These document the first confirmed records for the department of Tumbes. All, except *E. hartii* and *N. leporinus*, are also first records for the western slope of Peru. The record of *R. io* is the first for Peru, while that of *C. auritus* is the first for the Pacific versant of the Andes. In total, 41 bat species are present in the Pacific Tropical rainforests and surrounding dry forests, at the new Parque Nacional Cerros de Amotape, in Tumbes. This region requires urgent conservation programs, because the Pacific Tropical rainforest is threatened by human settlement, and resource exploitation in spite of its protected status.

Key words: Chiroptera, Pacific Tropical rainforests, diversity, Peru, Tumbes, dry forests, Parque Nacional Cerros de Amotape

INTRODUCTION

The extreme northwestern region of Peru, Tumbes Department, is unique because it harbors a typical lowland Amazonian fauna and flora but on the western side of the Andes, much different from the dry forests and desert areas further south on that side of the Andes (Koopman, 1978; Brack E., 1986). This region was classified as the Pacific Tropical rainforests ecological region by Brack E. (1986), where trees such as cético *Cecropia*, palmeras *Aiphanes*, matapalo *Ficus*; and mammals such as peccaries, ocelots, jaguars, river otters, red brocket deers, white-fronted capuchins and

mantled howler monkeys are characteristic (Cabrera and Willink, 1980; Brack E., 1986; Zamora Jimeno, 1996).

The Pacific Tropical rainforests ecological region, although very small, about 15,000 ha, represent the southernmost extension of the Pacific Province (Cabrera and Willink, 1980; Brack E., 1986) or the Colombian-Pacific Fauna of Chapman (1917, 1926) which extend in South America northward along the Ecuadorean and Colombian Pacific versant. Some other classifications include the Pacific Tropical rainforests within the Dry Forests (Zamora Jimeno, 1996) or the Equatorial Dry Forests ecological regions (Rodríguez, 1996; Ponte,

1998). The definitions of these ecological systems are based on climatic, ecological, soil, fauna and flora characteristics (Zamora Jimeno, 1996) but lack the biogeographic relevance expressed by the definitions of Cabrera and Willink (1980) or Brack E. (1986).

Previous bat diversity assessments for the region of Tumbes are scarce. Thomas and Thomas (1977) reported: *Phyllostomus discolor*, *Artibeus fraterculus*, *Desmodus rotundus*, *Molossus molossus*, and *Lonchophylla hesperia* from owl-pellet remains or bat captures. Koopman (1978) added nine more bat species: *Saccopteryx bilineata*, *Noctilio leporinus*, *Micronycteris megalotis*, *Phyllostomus hastatus*, *Glossophaga soricina*, *Carollia perspicillata*, *Uroderma bilobatum*, *Vampyrops helleri* (actually *Platyrrhinus matapalensis* — see Velazco, 2005), and *Amorphochilus schnablii*. Later, Graham and Barkley (1984) added *Choeroniscus minor* and *Artibeus jamaicensis*. More recently, Rodríguez (1998) added *Sturnira lilium* (samples re-identified as *S. luisi*), *Vampyressa pusilla* (currently *V. thyone* — see Porter and Baker, 2004), *Myotis albescens*, and *Lasiurus ega*.

The Peruvian bat fauna is one of the most diverse in the World. Hice *et al.* (2004) estimated 158 species for Peru, but with *Carollia manu* described by Pacheco *et al.* (2004), *Platyrrhinus albericoi*, *P. ismaeli*, *P. masu*, and *P. matapalensis* by Velazco (2005), *Carollia benkeithi* by Solari and Baker (2006), *Lonchophylla pattoni* by Woodman and Timm (2006), and numerous updated distributions by Simmons (2005) and elsewhere, the total number of described bat species is now 161 (V. Pacheco, unpublished data). Here, we report a number of noteworthy bat distributional records obtained on several expeditions to the Pacific Tropical rainforests region of Tumbes, Peru, from 2004 to 2006.

MATERIALS AND METHODS

Selected measurements, taken from the skin label and skull specimens, are recorded in millimeters (body mass in grams) and include the following: body mass (W), head and body length (HBL), tail length (TL), hind foot length (HL), ear length (EL), forearm length (FL), greatest skull length (GSL), condylo-basal length (CBL), condylocanine length (CCL), palatal length (PL), maxillary toothrow length (MTRL), zygomatic width (ZW), braincase width (BW), lacrimal width (LW), postorbital breadth (POB), palatal width at second molar (PWM2), palatal width at canines (PWC), and braincase height (BH) following Pacheco and Patterson (1992) and Pacheco and Hocking (2006). Voucher specimens are deposited in the Museo de Historia Natural, Universidad Nacional Mayor de San Marcos (Lima, Peru).

Study Area

We have surveyed five localities placed in the Parque Nacional Cerros de Amotape, Departamento Tumbes (Fig. 1), completing 705 mistnet-nights. Usually five nights were surveyed per locality, from 0600 pm to midnight. Mistnets were placed at ground level, occasionally a few mistnets were set up at 20 m high. In this region the rainy season extends from November to April, while the dry season is from May to October.

(1) Provincia Zarumilla, Distrito Matapalo, Quebrada Campo Verde, 03°50'44"S, 80°11'11"W, 570 m a.s.l. This place is located along a relatively wide stream near to Campo Verde control post; and was surveyed in May 2005, May 2006, and September 2006. It is a predominantly evergreen forest which canopy reaches up to 30 m height. The most characteristic plant species are: *Triplaris cumingiana*, *Cavanillesia platanifolia*, *Guazuma ulmifolia*, and *Ficus jacobii*. The understory consists of dense bushes that reach up to 6 m high. This locality belongs to the Pacific Tropical rainforests ecosystem.

(2) Provincia Zarumilla, Distrito Matapalo, Quebrada Los Naranjos, 03°50'15"S, 80°11'44.99"W, 550 m a.s.l. Samples here were taken along a narrow stream between Faical and Campo Verde control posts in October 2004, May 2005, May 2006, and September 2006. It is an undisturbed evergreen forest whose canopy reaches up to 20–25 m height. Plant composition is similar to Quebrada Campo Verde, with the additionally conspicuous presence of *Aiphanes* palms. This place belongs to Pacific Tropical rainforests ecosystem.

(3) Provincia Tumbes, Distrito Pampas de Hospital, Quebrada Faical, 03°49'19"S, 80°15'30"W,

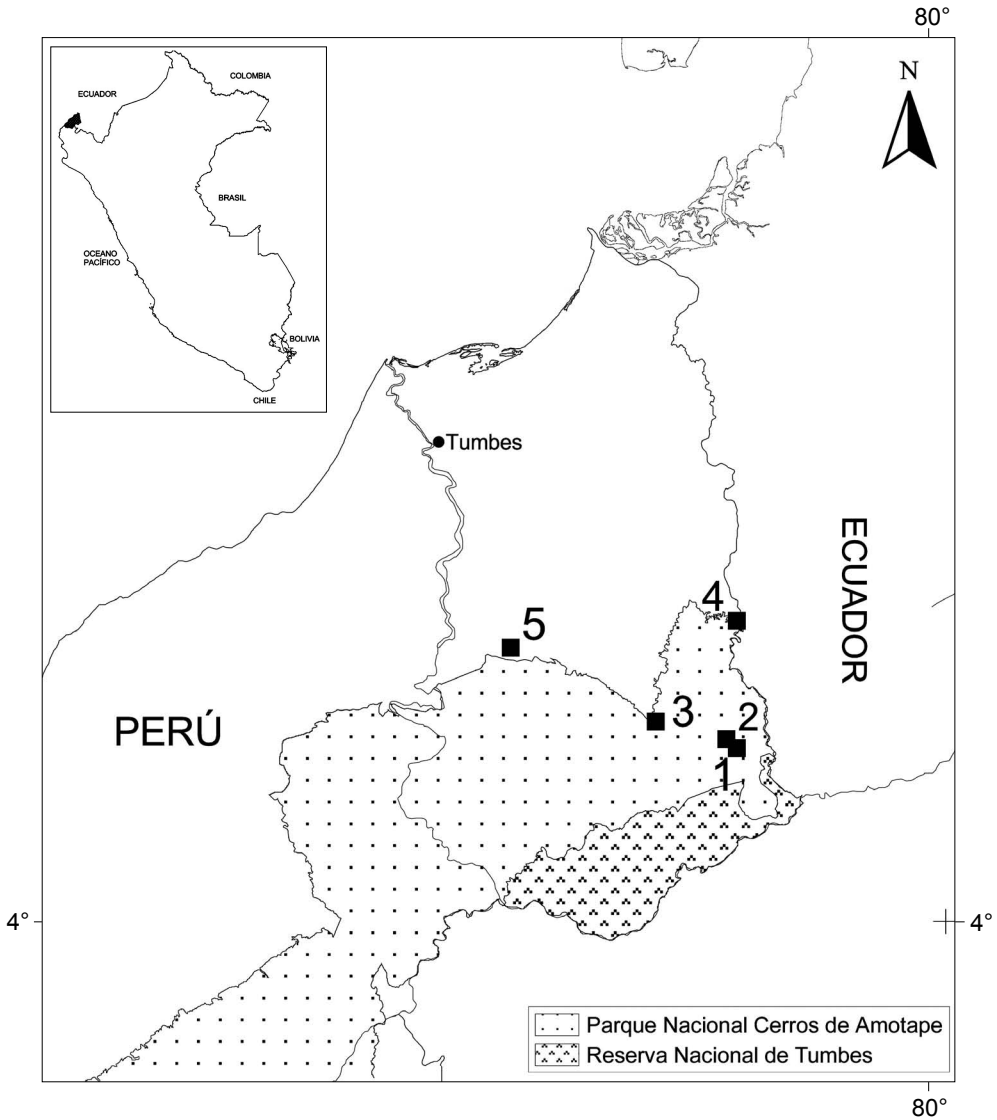


FIG. 1. Bat collecting localities from Parque Nacional Cerros de Amotape, Departamento Tumbes, Peru: 1 — Quebrada Campo Verde, 2 — Quebrada los Naranjos, 3 — Quebrada Faical, 4 — Carrizalillo, 5 — Quebrada Angostura

350 m a.s.l. This locality is near Faical biological station, and includes Faical and Las Pavas streams. It was sampled in June 2004, May 2005, May 2006, and September 2006. The vegetation type is transitional between the Equatorial Dry forest and the Pacific Tropical rainforests. The canopy may reach 20 m with the presence of lianas; whereas a dense understory vegetation of bushes and lianas may reach up to 6 m. The most representative tree species are: *Triplaris cumingiana*, *Cavanillesia platanifolia*, *Ficus jacobii*, *Bougainvillea peruviana*, *Ceiba trichistandra*,

Mutingia calabura, *Tessaria integrifolia*, and *Mimosa pellita*.

(4) Provincia Zarumilla, Distrito Matapalo, Carrizalillo, 03°43'56.71"S, 80°11'10.42"W, 125 m a.s.l. This locality is situated in the left bank of the Río Zarumilla and was sampled in May 2006. The vegetation is transitional between the Equatorial Dry forest and the Pacific Tropical rainforests. Plant composition is similar to the locality of Quebrada Faical except that is more disturbed by the presence of cattle.

(5) Provincia Tumbes, Distrito Pampas de Hospital, Angostura, 03°45'23"S, 80°23'15"W, 74 m a.s.l. This sampling locality is near the Angostura control post along a dry stream, and was evaluated in May 2005, May 2006, and September 2006. The vegetation type is a dry forest composed of trees of *Prosopis pallida* and *Acacia macracantha* in the lower areas; and trees of *Bursera graveolens*, *Ceiba trichistandra*, *Cordia lutea*, and *Loxopterygium huasango* in the hillsides. This site is moderately disturbed by banana and lemon crops.

RESULTS

We documented notable range extensions of twelve species from western Peru, in the Pacific Tropical rainforests ecological region. Species are arranged following Simmons (2005).

Diaemus youngi (Jentink, 1893)

New Specimens

One male (MUSM 22132): Angostura, Platanal in September 2006, on the forest edge of a banana plantation.

Distribution

This species is widely distributed from Tamaulipas (Mexico) south to northern Argentina, Bolivia, Paraguay, and eastern Brazil, including Trinidad and Margarita Island (Venezuela) (Simmons, 2005). On the western versant of the Andes, the species was unknown south of Colombia (Koopman, 1988; Greenhall and Schutt, 1996; Albuja, 1999; Tirira S., 1999). Recently, Muñoz-Saba and Alberico (2004) reported one specimen from Riosucio, Parque Nacional Natural Los Katios, Chocó, and another from Loboguerrero, Valle Atuncelo, Valle del Cauca, in Colombia. Our specimen represents the first record of the species for the western versant of the Peruvian Andes, the first record for the department of Tumbes, and the third specimen collected on the western side of the Andes. The distributional range of the species is extended more

than 940 km south from Loboguerrero, Colombia.

General Comments

Our specimen agrees with the characteristics provided by Koopman (1988 — see Table 1), except that the postorbital region is better defined, and the second upper molar is lacking.

Chrotopterus auritus (Peters, 1856)

New Specimens

One male (MUSM 19178): Quebrada Faical in June 2004.

Distribution

This species is widely distributed in the Neotropics, from Veracruz (Mexico) south to the Guianas, southern Brazil, Peru, Bolivia, and northern Argentina. It occurs in tropical rainforest, tropical deciduous forest, and cloud forest from 0 to 2000 m (Medellín, 1989; Simmons, 2005). In South America, it was not known for the Pacific versant of the Andes (Koopman, 1982; Albuja, 1999; Alberico *et al.*, 2000; Muñoz-Saba and Alberico, 2004). This specimen is the first report of the species for the Pacific versant of the Andes, first report of the western side of the Peruvian Andes, and first report for the department of Tumbes. It represents a considerable range extension of more than 1,300 km on the western side of the Andes, suggesting it occurs in western Colombia and Ecuador.

General Comments

In this specimen, the ventral surface of the plagiopatagium is haired around the elbow and basal forearm; and the basal half of the thumb is well haired. This specimen does not differ in skin, skull and teeth characteristics with three specimens of *C. auritus* from southeastern Peruvian region (MUSM 5096, 13653, 16668).

Micronycteris minuta (Gervais, 1856)*New Specimens*

One female (MUSM 19189) and one male (MUSM 19345): Quebrada Los Naranjos in October 2004 and May 2005.

Distribution

This species inhabits the lowland rainforests from Honduras to southern Brazil, Bolivia, and Peru; including the Guianas and Trinidad (López-González, 1998; Simmons, 2005).

Our specimens represent the first records of this species on the western side of the Peruvian Andes, and first records for the department of Tumbes. It extends the range of the species 580 km southward along the Pacific versant from the previous record from Hacienda La Granada in Ecuador (Albuja, 1999).

General Comments

The pale ventral pelage, moderate notch in ear band, P³ smaller than P² and P⁴, and calcar shorter than foot are characteristics that agree with those provided by Simmons (1996).

Mimon crenulatum (E. Geoffroy, 1803)*New Specimens*

Four males (MUSM 19190, 19346, 19347, 22173) and two females (MUSM 19348, 22172): Quebrada Los Naranjos and Quebrada Angostura in 2004 and 2005, and Carrizalillo in 2006.

Distribution

This species is widely distributed from Chiapas and Campeche (Mexico) to Guianas, eastern Brazil, Bolivia, Ecuador, eastern Peru, and Trinidad (Simmons, 2005). Our specimens represent the first records of the species on the western side of the Peruvian Andes, and first record for the department of Tumbes. They were taken

only 55 km south of prior records from Cayancas, in southern Ecuador (Albuja, 1999; Tirira S., 1999).

Vampyrum spectrum (Linnaeus, 1758)*New Specimens*

One male (MUSM 22208): Quebrada Angostura in September 2006.

Distribution

This species has a wide distribution in the Neotropics from Veracruz (Mexico) to Ecuador and Peru, Bolivia, Brazil, Guianas, Trinidad, and perhaps Jamaica (Simmons, 2005). On the western slope of the Andes, the species is known at Reserva Natural La Planada, el Hondón, Nariño, Colombia (Muñoz-Saba and Alberico, 2004), and Vueltas Largas, Provincia Manabí, Ecuador (Albuja, 1999). Our specimen represent the first record of this species from the western slope of the Peruvian Andes, and first record for the department of Tumbes, extending the range distribution of the species 270 km south from Vueltas Largas, Ecuador.

General Comments

Published maps indicating the presence of *V. spectrum* in western Peru (Navarro and Wilson, 1982; Emmons and Feer, 1997; Eisenberg and Redford, 1999; Patterson *et al.*, 2005) were presumed distributions not supported by voucher specimens in museum collections.

Chiroderma salvini Dobson, 1878*New Specimens*

One male (MUSM 19177): Quebrada Los Naranjos in October 2004.

Distribution

This species has a wide distribution from Peru, Bolivia, and Venezuela north to

TABLE 1. Summary statistics for external and craniodental measurements (in mm) and body masses (in g) of 12 bat species with noteworthy distribution in northwestern Peru. Measurements are given as mean, standard deviation and observed range where at least three specimens were available. Sample sizes differing from those reported under species names are in brackets

Variable	<i>Diaemus youngi</i>		<i>Chrotopterus auritus</i>		<i>Microonycteris minuta</i>		<i>Mimon crenulatum</i>		<i>Enchisthenes hartii</i>		<i>Vampyrum spectrum</i>		<i>Chiroderma salvini</i>	
	1♂	1♀	1♂	1♀	1♂	1♀	4♂	1♀	3♂	1♀	1♂	1♂	1♂	1♂
Body mass	41.0	76.0	6.5	5.8	13.4 ± 1.80	11.0–15.0	12.5	13.8 [2]	13.5–14.0	18.8	130.0	27.5	130.0	27.5
Head and body length	135.0	101.0	47.0	44.0	57.9 ± 4.48	53.0–63.0	58.0	59.0 ± 1.00	58.0–60.0	66.0	146.0	73.0	146.0	73.0
Tail length	–	4.0	9.0	7.0	24.1 ± 2.46	22.0–26.0	27.0	–	–	–	–	–	–	–
Hind foot length	18.5	20.0	11.5	9.0	11.2 ± 0.30	11.0–11.6	11.0	10.2 ± 0.29	10.0–10.5	10.0	26.0	14.0	26.0	14.0
Ear length	17.0	42.0	20.5	18.0	26.5 ± 3.11	22.0–29.0	27.0	15.7 ± 0.58	15.0–16.0	16.0	42.0	18.7	42.0	18.7
Forearm length	56.5	77.3	37.0	36.2	50.2 ± 1.97	48.5–53.0	49.5	39.6 ± 0.38	39.4–40.0	42.0	103.0	50.6	103.0	50.6
Greatest skull length	24.8	36.1	18.1	17.8	21.9 [2]	21.8–22.0	21.6	20.2 [2]	19.9–20.5	21.1	48.3	25.8	48.3	25.8
Condylobasal length	22.6	31.2	16.5	16.0	19.5 [2]	19.4–19.5	19.4	18.4 [2]	18.3–18.5	19.0	41.9	23.9	41.9	23.9
Condyllocanine length	20.5	30.4	15.8	15.4	18.6 [2]	18.6	18.4	17.6 [2]	17.4–17.8	18.4	41.4	22.9	41.4	22.9
Palatal length	8.4	16.8	8.1	7.9	9.6 [2]	9.5–9.6	9.5	9.1 [2]	9.1–9.2	9.8	23.9	14.2	23.9	14.2
Maxillary tooththrow length	3.5	12.8	6.5	6.4	7.9 [2]	7.8–7.9	7.8	6.7 [2]	6.6–6.8	7.0	19.9	9.3	19.9	9.3
Zygomatic width	14.3	18.9	8.5	8.3	12.0 [1]	12.0	11.9	12.2 [2]	11.6–12.7	12.9	22.4	15.9	22.4	15.9
Braincase width	12.8	13.9	7.7	7.4	8.6 [2]	8.6	8.3	9.7 [2]	9.2–10.2	9.5	15.6	10.6	15.6	10.6
Lacrimal width	7.3	8.3	4.7	4.3	5.9 [2]	5.7–6.1	5.6	6.0 [2]	5.8–6.2	6.1	10.6	7.2	10.6	7.2
Postorbital width	6.7	6.6	4.4	4.2	4.2 [2]	4.2	4.1	5.9 [2]	5.7–6.1	6.0	8.1	6.0	8.1	6.0
Palatal width at M ²	6.3	11.6	5.4	5.4	8.4 [2]	8.4	8.3	8.3 [2]	8.1–8.5	8.5	14.3	11.8	14.3	11.8
Palatal width at canines	6.4	7.9	3.1	3.0	5.3 [2]	5.2–5.5	5.0	5.4 [2]	5.3–5.5	5.6	8.1	6.4	8.1	6.4
Braincase height	12.6	16.3	8.0	7.5	9.1 [2]	8.8–9.4	9.1	8.8 [2]	8.4–9.2	9.1	17.1	11.0	17.1	11.0

TABLE 1. Extended

Variable	<i>Noctilio leporinus</i>		<i>Thyroptera discifera</i>		<i>Eptesicus chiroquinus</i>		<i>Rhogeessa io</i>		<i>Myotis riparius</i>			
	1 ♂	2 ♂♂	2 ♂♂	1 ♀	1 ♂	2 ♀♀	1 ♂	2 ♀♀	1 ♂	6 ♀♀		
Body mass	60.0	4.3	4.0-4.5	11.3	11.0-11.5	9.5	2.8	3.8	3.0-4.6	5.0	5.2 ± 1.17 [5]	4.0-7.0
Head and body length	96.0	45.0	45.0	59.5	59.0-60.0	62.0	43.0	40.5	39.0-42.0	50.0	47.8 ± 3.14	45.5-54.0
Tail length	32.0	31.0	30.0-32.0	45.0	44.0-46.0	41.0	22.0	30.5	30.0-31.0	31.0	36.2 ± 3.54	30.0-39.0
Hind foot length	34.0	5.8	5.5-6.0	10.0	10.0	11.0	5.5	5.5	5.0-6.0	8.0	7.4 ± 0.38	7.0-8.0
Ear length	30.1	12.5	12.0-13.0	16.0	16.0	15.5	13.5	15.5	14.0-17.0	13.0	14.6 ± 2.8	12.0-19.0
Forearm length	79.4	33.8	33.0-34.6	46.6	45.0-48.5	45.0	27.0	29.0	27.0-31.0	36.0	37.3 ± 0.43	36.9-38.0
Greatest skull length	26.4	14.7	14.4-14.9	16.8	16.6-17.0	16.9	11.5	12.2	12.1-12.4	13.9	13.7 ± 0.21	13.4-14.0
Condylobasal length	26.0	13.4	13.2-13.7	16.4	16.2-16.5	16.4	11.0	11.7	11.5-11.9	13.1	13.0 ± 0.24	12.7-13.3
Condylocanine length	24.4	12.7	12.5-12.9	16.0	15.8-16.3	15.8	10.9	11.5	11.3-11.7	12.3	12.1 ± 0.23	11.9-12.4
Palatal length	13.9	-	-	-	-	-	-	-	-	-	-	-
Maxillary toothrow length	11.2	5.9	5.8-6.0	6.7	6.6-6.7	6.7	4.3	4.4	4.3-4.5	5.1	5.1 ± 0.12	5.0-5.3
Zygomatic width	20.0	7.1	7.0-7.2	11.5	11.5-11.6	11.1	7.7	8.2 [1]	-	9.1	8.8 ± 0.07	8.7-8.9
Braincase width	13.9	7.1	6.9-7.2	8.0	7.9-8.0	7.9	5.9	6.2	6.1-6.2	6.6	6.6 ± 0.13	6.4-6.8
Lacrimal width	11.5	4.0	3.9-4.0	6.7	6.7	6.7	4.3	4.4	4.4	4.7	4.4 ± 0.13	4.2-4.7
Postorbital width	7.5	2.8	2.7-2.8	4.2	4.1-4.2	4.0	3.4	3.5	3.4-3.5	3.6	3.5 ± 0.06	3.5-3.6
Palatal width at M ²	13.2	4.9	4.9-5.0	7.3	7.3-7.4	6.9	5.2	5.2	5.2-5.3	5.5	5.4 ± 0.10	5.3-5.6
Palatal width at canines	9.4	3.0	3.0-3.1	5.2	5.1-5.2	5.0	3.6	3.6	3.5-3.7	3.6	3.6 ± 0.12	3.4-3.7
Braincase height	11.8	6.2	6.0-6.4	6.4	6.4-6.5	6.3	4.5	4.8 [3]	4.7-4.9	5.5	5.5 ± 0.13	5.3-5.7

Michoacán, Hidalgo, and Chihuahua in Mexico (Simmons, 2005). Our specimen is the first report of the species on the western side of the Peruvian Andes, and first record for the department of Tumbes. It extends the range of the species 260 km south from Los Tillales in Ecuador (Albuja, 1999).

Enchisthenes hartii (Thomas, 1892)

New Specimens

Three males (MUSM 19309–19311) and one female (MUSM 19308): Quebrada Campo Verde, Quebrada Las Pavas, and Quebrada Los Naranjos in May 2005.

Distribution

This species has a wide distribution in the Neotropics from Bolivia and Venezuela north to Mexico, and Trinidad (Simmons, 2005). Our records are the second locality for the species in the western slope of Peru, and the first record for the department of Tumbes.

General Comments

This species was first reported for the western side of the Peruvian Andes by Graham and Barkley (1984) based on specimens netted over the Rio La Pachinga at Las Juntas, ca. 14 km N, 25 km E Olmos (5°45'S, 79°42'W) in the department of Piura (reported erroneously as Lambayeque), 305 m elevation, in an unusual dry habitat of *Acacia* patches. Albuja (1999) considered *E. hartii* to be a rare species known from only three localities in western Ecuador.

Noctilio leporinus (Linnaeus, 1758)

New Specimens

One male (MUSM 22070): Quebrada Faical in September 2006.

Distribution

This species has a wide distribution in the Neotropics, from Sinaloa (Mexico) to

the Guianas, southern Brazil, northern Argentina, Paraguay, Bolivia, Peru, Trinidad, Greater and Lesser Antilles, and southern Bahamas (Simmons, 2005). In western Ecuador, it is known from several localities including Cayancas, Provincia El Oro, close to the Peruvian border (Albuja, 1999). Our specimen confirms the presence of this species on the western side of the Peruvian Andes, and in the Departamento Tumbes.

General Comments

Koopman (1978) reported one specimen of *N. leporinus* (FMNH 81166) from a locality called Huásimo, Departamento Tumbes, Peru, collected by C. Kalinowski in June 1954; but Stephens and Traylor (1983) matched the Huásimo entry with El Huásimo, Piura; clouding the provenience of Kalinowski's specimen. We suggest that this locality refers to El Huasimo, Departamento Tumbes (3°59'51"S, 80°30'13"W — Maplandia, 2007).

Thyroptera discifera (Lichtenstein and Peters, 1855)

New Specimens

Two males (MUSM 19385, 19386): Quebrada Campo Verde in May 2005.

Distribution

This species has a wide distribution from Nicaragua; Panama and Colombia to Guianas, Amazonian Brazil, Peru, and Bolivia (Simmons, 2005). However, on the western side of the Andes, it is known by few specimens. Muñoz-Saba and Alberico (2004) registered the species for Isla Gorgona, Cauca, Colombia, while Tirira S. (1999) reported it from western Ecuador without mentioning specific localities. The Tumbes specimens represent the first record of this species on the western side of the Peruvian Andes, and the first record for the department of Tumbes.

Eptesicus chiriquinus Thomas, 1920*New Specimens*

One female (MUSM 19312) and two males (MUSM 22209, 22210): Quebrada Los Naranjos in May 2005, and Quebrada Faical and Quebrada Campo Verde in September 2006.

Distribution

This species is found in Costa Rica, Panama, Colombia, Ecuador, Peru, Venezuela, Guyana, French Guiana, and Amazonian Brazil (Simmons, 2005). Muñoz-Saba and Alberico (2004) listed the species from the Colombian Chocó region, and Simmons and Voss (1998) reported it from Zaruma, El Oro, Ecuador (AMNH 47217). Our specimens represent the first report of the species from the western slope of Peru and the Departamento Tumbes. The range of the species is extended 70 km southwest from Zaruma, Ecuador.

General Comments

Long confused with both *Eptesicus andinus* and *E. brasiliensis*, this species was revalidated by Simmons and Voss (1998). Our specimens exhibit the pelage, cranial and size characteristics of the species as rediagnosed by Simmons and Voss (1998).

Rhogeessa io Thomas 1903*New Specimens*

Two females (MUSM 19364, 22217) and one male (MUSM 22218): Quebrada Los Naranjos in May 2005 and Carrizalillo in May 2006.

Distribution

This species is distributed from Nicaragua south to northern Colombia and western Ecuador, Venezuela, Trinidad and Tobago, Guyana, Brazil, and northern Bolivia

(Simmons, 2005). Our specimens represent the first record of this genus from Peru and extend the range of the genus 115 km southward from Isla Puná, Ecuador (Albuja, 1999).

General Comments

Examining the nearest specimen of *Rhogeessa* to Peru, we noted that the Ecuadorean record from Isla Puná (AMNH 66824) has conflicting identifications. Albuja (1999) included this record as *Rhogeessa tumida*, but Genoways and Baker (1996), while noting the resemblance of that specimen's baculum to *R. minutilla*'s, did not assign it to a specific taxon. They also restricted the distribution of *R. tumida* from Tamaulipas (Mexico) to northern Nicaragua and northwestern Costa Rica. Our specimens were assigned to *R. io* because they lack a helmet between the sagittal and occipital crests unlike *R. minutilla* and *R. tumida* (LaVal, 1973b; Vonhof, 2000); the postorbital width average (POW = 3.5) is greater than in either, and the third metacarpal is more than 1 mm shorter than the forearm unlike *R. minutilla* (LaVal, 1973b). These characteristics were also employed by Genoways and Baker (1996) when comparing *R. io* with *R. hussoni*.

Myotis riparius Handley, 1960*New Specimens*

Six females (MUSM 19358–19360, 22214–22216) and two males (MUSM 19193, 19357): Angostura, Quebrada Campo Verde, Carrizalillo and Quebrada Los Naranjos in 2005 and 2006.

Distribution

This species is widely distributed from Honduras south to Uruguay, eastern Brazil, Argentina, Paraguay, Bolivia, and Trinidad (Simmons, 2005). It was also reported in the western versant of the Colombian and

TABLE 2. Bat species reported from Parque Nacional Cerros de Amotape, Tumbes, Peru. Localities: A — Angostura, BC — Bocana Carrillo, C — Carrizalillo, CV — Campo Verde, F — Faical, N — Naranjos. Habitats: EDF — Equatorial dry forest, T — transitional, PTR — Pacific Tropical rainforest. See text for habitat descriptions. Previous reports: 1 — Thomas and Thomas (1977), 2 — Koopman (1978), 3 — Graham and Barkley (1984), 4 — Rodriguez (1998)

Taxon	Individuals collected	Localities	Habitats	Previous reports
Family Emballonuridae				
<i>Saccopteryx bilineata</i>	—	—	—	2
Family Noctilionidae				
<i>Noctilio leporinus</i>	1	F	T	2
Family Phyllostomidae				
Subfamily Phyllostominae				
<i>Chrotopterus auritus</i>	1	F	T	—
<i>Lophostoma silvicolum</i>	11	A, C	EDF, T	—
<i>Micronycteris megalotis</i>	15	A, C, CV, F, N	EDF, T, PTR	2
<i>M. minuta</i>	2	CV, N	PTR	—
<i>Mimon crenulatum</i>	6	A, C, N	EDF, T, PTR	—
<i>Phyllostomus discolor</i>	12	A, C, F	EDF, T	1
<i>P. hastatus</i>	3	A, CV	EDF, PTR	2
<i>Vampyrum spectrum</i>	1	A	EDF	—
Subfamily Desmodontinae				
<i>Desmodus rotundus</i>	15	A, BC, C, CV, F	EDF, T, PTR	1, 4
<i>Diaemus youngi</i>	1	A	EDF	—
Subfamily Glossophaginae				
<i>Anoura geoffroyi</i>	2	N	PTR	—
<i>Choeroniscus minor</i>	—	—	—	3
<i>Glossophaga soricina</i>	49	A, BC, C, CV, F	EDF,	2, 4
<i>Lonchophylla hesperia</i>	3	A	EDF	—
Subfamily Carolliinae				
<i>Carollia brevicauda</i>	20	A, C, CV, F, N	—	—
<i>C. perspicillata</i>	40	A, BC, C, CV, F, N	EDF, T, PTR	2
Subfamily Stenodermatinae				
<i>Artibeus fraterculus</i>	45	A, BC, C, CV, F, N	EDF, T, PTR	1, 4
<i>A. jamaicensis</i>	31	C, CV, F, N	T, PTR	3
<i>A. lituratus</i>	6	CV, F, N	T, PTR	—
<i>Chiroderma salvini</i>	1	N	PTR	—
<i>C. villosum</i>	3	C	T	—
<i>Dermanura</i> sp.	10	CV, N	PTR	—
<i>Enchisthenes hartii</i>	4	CV, F, N	T, PTR	—
<i>Platyrrhinus matapalensis</i>	4	F	T	4
<i>Sturnira luisi</i>	47	A, CV, F, N	EDF, T, PTR	4
<i>Uroderma bilobatum</i>	3	C	T	2
<i>Vampyressa thuyone</i>	10	CV, N	PTR	4
Family Furipteridae				
<i>Amorhochilus schnablii</i>	—	—	—	4
Family Thyropteridae				
<i>Thyroptera discifera</i>	2	CV	PTR	—
Family Vespertilionidae				
<i>Eptesicus chiriquinus</i>	3	CV, F	PTR	—
<i>E. innoxius</i>	—	F	—	—
<i>Lasiurus blossevillii</i>	1	F	T	—
<i>L. ega</i>	—	—	—	4

TABLE 2. Continued

Taxon	Individuals collected	Localities	Habitats	Previous reports
<i>Myotis albescens</i>	—	—	—	4
<i>M. keaysi</i>	2	C	T	—
<i>M. nigricans</i>	3	A, N	EDF, PTR	—
<i>M. riparius</i>	8	A, C, CV, N	EDF, T, PTR	—
<i>Rhogeessa io</i>	3	C, CV	T, PTR	—
Family Molossidae				
<i>Molossus molossus</i>	8	A, BC, F	EDF, T	1

Ecuadorean Andes (LaVal, 1973a; Albuja, 1999). Our specimens are the first records of the species on the western side of the Peruvian Andes, 70 km southwest of Zaruma (Albuja, 1999).

General Comments

Our specimens agree with the measurements and characteristics of *M. riparius* described by LaVal (1973a) and Simmons and Voss (1998). The dorsal fur is relatively short (3–5 mm), and color varies from dark brown to bright cinnamon. All specimens have a sagittal crest, although poorly developed in three individuals; and the postorbital constriction is narrow. The P³ is crowded to the lingual side and small, about one-fourth the height of P⁴.

In total, 41 bat species are present in the Pacific Tropical rainforests and adjacent dry forests, at the new Parque Nacional Cerros de Amotape, Departamento Tumbes. This estimate derives from these twelve records, 23 other bat species additionally collected by us, five species previously reported by Koopman (1978), Graham and Barkley (1984), and Rodríguez (1998), and the unpublished record of *Eptesicus innoxius* from Quebrada Faical (LSUMZ 24504) (Table 2).

DISCUSSION

The bat diversity of the Pacific Tropical rainforests of Peru (41 species — Table 2) is still incompletely sampled; additional field

trips focusing on canopy-level netting and searching for roosts are likely to increase the tally. This result is less than the 64 species reported for the Pacific Tropical rainforest of Ecuador (= piso Tropical Noroccidental — Albuja, 1999), but many more than the 6–14 species reported for several Ecuadorian localities in the Cordillera de la Costa, Ecuador (Albuja, 1992). Although differing in composition, the Pacific Tropical rainforests appear to have a bat's species richness similar to other places from the eastern lowland rainforests in spite of the reduced area. For example, the 41 reported species is slightly less than the 44 species reported for Cuzco Amazónico, Madre de Dios, Peru (Woodman *et al.*, 1991) as tallied by Voss and Emmons (1996).

On the western slope of the Andes of Peru, the Pacific Tropical rainforests hold the largest bat diversity, since this value decreases in correlation with a drier landscape farther south (Koopman, 1978). Twenty-six species are known to occur in Lambayeque, 19 species in La Libertad, 18 in Lima, and 11 in Arequipa (V. Pacheco, unpublished data).

This ecosystem is remarkably fragile because of its size, the presence of human settlements along its borders, and the exploitation of its resources. Cattle and goats continuously graze and browse inside these forests. Poaching exists, both for local subsistence and commercially to maintain loggers. Although this place is formally protected by Parque Nacional Cerros de

Amotape, conservation actions for protecting the diversity are not in place. Local authorities are apparently unaware of the unique diversity they hold in their territory. This diversity requires urgent conservation and management programs, especially considering that on the Ecuadorian side of the frontier this ecosystem is almost completely gone (Wust, 1998).

ACKNOWLEDGEMENTS

Collecting permits were issued by the Ministerio de Agricultura (INRENA), Lima. Bruce D. Patterson (FMNH) and Mark S. Hafner (LSUMZ) kindly allow us the use of unpublished catalogues of Peruvian mammals holding in their institutions. We thank Claudia Chung, Fanny Cornejo, Liz Huamani, Marina Vargas, Mónica Alzamora, Carlos Mendoza, Jael Odar and Juan Carlos Jordán for participating in field trips; to Jael Odar for identifying the plant species; and to Eduardo Rios, Aldo Aguirre, and Alan Garcia from INRENA-Tumbes, and Guadalupe Ruedas for logistic support. We are also grateful to Heidi Quintana for skillfully preparing the map (Fig. 1), and to Bruce D. Patterson, Burton K. Lim, and Sergio Solari for improving previous drafts of this manuscript. This research was supported by the Instituto de Investigación en Ciencias Biológicas 'Antonio Raimondi' and Consejo Superior de Investigaciones, UNMSM (grants No. 041001081, 051001011, and 061001021); the Asociación Peruana para la Conservación de la Naturaleza and Conservation International (grant No. 16-2006-APECO-CI); and Bat Conservation International.

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Received 29 April 2007, accepted 17 July 2007