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## COLOMBIAN MAMMALS FROM THE CHOCOAN SLOPES OF NARIÑO

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The biogeographic Chocó extends from Darién and San Blas in Panamá along the Pacific Colombian coast to the Provincia del Oro in Ecuador (Hernández-Camacho et al., 1992). Recently, the Colombian Chocó was identified as one of 18 "hotspots" of biological diversity worldwide, based on endemism and pending human intervention (Myers, 1988, 1990). With regard to mammals, Voss and Emmons (1996) recognized the Colombian Chocó and adjacent areas in northwestern Ecuador as one of the five areas of lowland Neotropical rainforests most in need of new inventories.

We here present the results for mammals of a multi-taxa rapid assessment inventory conducted by the Instituto de Ciencias Naturales (ICN) of the Universidad Nacional de Colombia in Bogotá and the Instituto del Desarrollo de Recursos Naturales Renovables (INDERENA, now = Ministerio del Medio Ambiente) in March of 1995 along the western (Chocoan) slopes of the Andes in the Colombian Department of Nariño. Although this information is preliminary and incomplete, the paucity of hard data on mammalian distributions warrants this report.

Western Nariño corresponds to the southern province of the biogeographic Chocó (Hernández-Camacho et al., 1992) and receives from 4000 to more than 6000

mm of rain in an annual unimodal precipitation regime (IGAC, 1989). The intermediate elevations of the western-facing slopes of the Andes in Nariño lie at the interface between the Chocoan lowland fauna and the highland fauna of the northern Andes. For the remainder of this report, the "western" or "Pacific" slopes of the Andes in Nariño will refer specifically to those south of the dry Patía River Valley, which represents a barrier to many montane species.

The few early specimens of mammals known from the Pacific slopes of the Andes in Nariño were collected incidental to work on birds. W. B. Richardson collected some mammals in this area in 1912 for the American Museum of Natural History, but left an elevational gap between 370 and 1540 m (Allen, 1916). Our search of museum holdings and the literature yielded only a few mammal specimens of M. A. Carriker, Jr., who worked in the region in the late 1950s. K. von Sneiderm collected birds in the area in the 1940s and 1950s (Paynter and Traylor, 1981), but we have not found records of any mammals he collected there. Extensive field work in Colombia by P. Hershkovitz in the 1940s and 1950s did not include surveys of montane western Nariño.

More recently, researchers of the Universidad del Valle and the Fundación para la Educación Superior (FES)

conducted the first modern surveys of mammals in the region, near Junín and Ricaurte. They trapped for small mammals at 850 and 1800 m and netted for bats at 870 and 1950 m (Orejuela et al., 1982; Alberico and Orejuela, 1982), still leaving much unsampled territory. Other workers continued the inventories of bats at the high elevation site "La Planada," near Ricaurte (Germán Gómez, pers. comm.), but their efforts remain unpublished. To

our knowledge, the only additional field work on mammals recently undertaken at middle elevations in western Nariño was by a group of British researchers who carried out a multi-taxa conservation assessment for Chocoan Nariño (Salaman, 1994). They, however, were unable to collect voucher specimens, and, thus, most of their small mammal identifications cannot be considered definitive.

## METHODS AND MATERIALS

We sampled small mammals in areas near Junín and Altaquer midway down the Andean slopes of the department and compiled sighting reports of large mammals in various areas of the region. Our efforts emphasized small mammals, which were sampled at localities between 900 and 1400 m near the town of Altaquer. These areas correspond to premontane rain forests (bp-

PM) and premontane very humid forests (bmvh-PM) in the Holdridge life zone system (IGAC, 1977). Our field work in March 1995 coincided with one of the latter months of the rainy season (IGAC, 1989). Collection localities follow (Figure 1); elevations were recorded with an altimeter, and the coordinates were obtained from a map based on satellite images (IGAC, 1983).

1. The Reserva del Río Ñambí, administered by the Fundación Ecológica los Colibríes de Altaquer (FELCA), lies ca. 7 km NE of Altaquer at approximately 1100-1500 m (1°18'N, 78°03'W). The forest was well conserved and included many palms, epiphytes, and mosses. A cloud belt at this elevation produced constantly high humidity with fog present much of the time. The canopy was not very complete, with many palms growing much higher than the other canopy trees.

2. The area known as La Guarapería is located at approximately 900 m (ca. 2 km NW Junín, 1°21'N, 78°08'W). The vegetation was not as intact as in the Reserve, as the majority of the hardwood species had been selectively extracted. The land had never been fully cleared, however, except within a few hundred meters of the highway. Many unactivated, handcrafted wooded snares used by the indigenous people of the region to trap large rodents were present along the trails.

3. The rural vegetation on the edge of the town of Altaquer (ca. 1400 m, 1°15'N, 78°06'W) was comprised of various cultivars, especially small plots of bananas.

4. The Quebrada La Ensilada (1°15'N, 78°05'W), crosses the Pasto-Tumaco highway approximately 1 km SE of Altaquer at around 1400 m. Vegetation along the large stream with swift, clear waters was burned a few years ago in an oil pipeline fire, but is recovering. Intact forest lies above this point.

We set Sherman live traps of two dimensions (7.6 x 8.9 x 22.3 cm and 10.2 x 12.0 x 38.0 cm) for small rodents at the Reserva Natural del Río Ñambí and at La Guarapería. An average of 60 traps were set for 3 nights at each site and were baited with either: a) a mixture of lard, ground roasted peanuts, and oats or b) pieces of a small, local banana (*chiro*).

To capture bats, we raised three Japanese nylon mist nets from dusk to around 2200 h for one night each at four locations. The nets varied from 10 to 18 m in length and were set approximately 3 m above the ground. At La Guarapería, nets were set across a stream, across a trail in the forest, and in a cleared area. At the Quebrada La Ensilada, the nets were set across the stream. Fi-

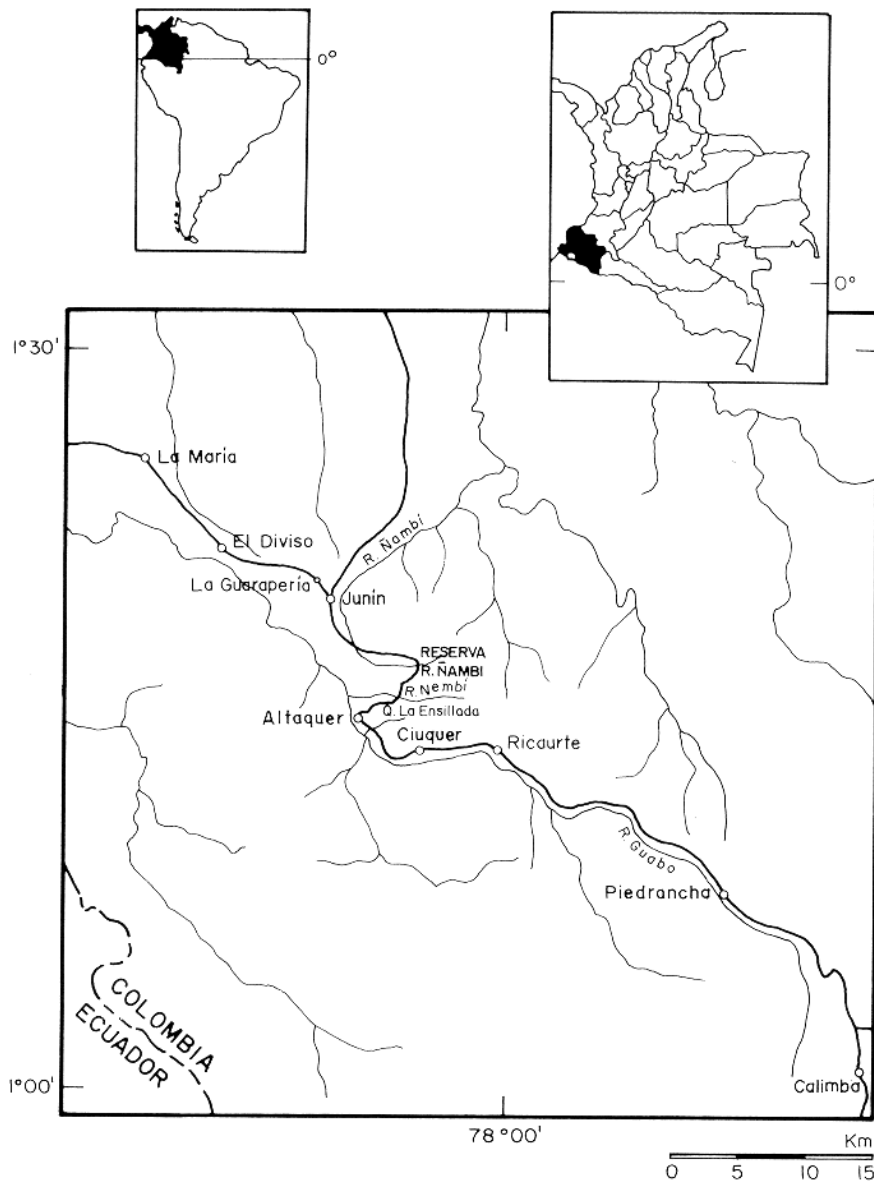


Figure 1. Location of the study areas. The small white block in the southern portion of the Department of Nariño denotes the placement within Nariño of the area enlarged in the detailed map.

nally, we netted at two different areas on the outskirts of Altaquer, with most nets in or near small plots of cultivated bananas.

The rodents and bats were prepared as standard museum voucher specimens. They were weighed in grams (WHT) and measured in mm: total length (TOT), tail

length (TAIL), hind foot length in rodents (HF), tibia-foot length in bats (TIB-FT), ear length (EAR), and forearm length in bats (FA). The animals were sexed, examined for reproductive activity, and (in bats) aged by ossification of the phalanges. We released some juveniles and lactating females of species already represented. A few specimens were preserved in formalin and later trans-

ferred to 70 % ethanol. Specimens were deposited in the Instituto de Ciencias Naturales (ICN) in Bogotá. We also examined comparative material from the United

States National Museum of Natural History (USNM), the University of Michigan Museum of Zoology (UMMZ), and The Field Museum (FMNH).

## RESULTS AND ACCOUNTS OF SPECIES

In the four nights of netting, we captured 28 bats of 12 species. Ten of those pertained to six genera of the family Phyllostomidae. The other two species belonged to two vespertilionid genera. Bats were captured at all of the sites netted. In contrast, we took only five small rodents belonging to three species, none of them congeneric. All non-volant mammals were caught in the

Reserva Natural del Río Ñambí; our trapping efforts at La Guarapería yielded no captures. In addition, F. Gary Stiles provided an *Anoura caudifera* from near El Barro, and residents of Altaquer brought us a single *Mus musculus* from a house in town. The following species accounts detail information on the collected specimens, and Table 1 lists data on the observed mammals.

## ORDER CHIROPTERA

### Family PHYLLOSTOMIDAE

#### Subfamily CAROLLIINAE

#### *Carollia brevicauda*

(Schinz, 1821)

Although not easily identified in the field, these *C. brevicauda* differed markedly from a specimen of *C. perspicillata* also captured. They have a much hairier forearm than *perspicillata* and, in agreement with Pine (1972), a curved upper tooth row and a longer, bowed-out lower tooth row. We also examined a specimen in the USNM collected in the area by M. A. Carriker in 1957.

*Habitat*.— Individuals of this species were found both in a banana plantation and in a disturbed forest in La Guarapería.

*Reproduction*.— Both males were adults with scrotal testes. We released one lactating female.

*Specimens examined* (3).— NARIÑO, Mpio. Barbacoas, Corr. Altaquer: ca. 2 km NW Junín, La Guarapería, 900 m, 2 (♂ ICN 13642, TOT 74.2, TAIL 10, TIB-FT 29, EAR 20.5, FA 41.2, WHT 21; ♂ ICN 13643, TOT 78.8, TAIL 12.1, TIB-FT 28.3, EAR 18.6, FA 42.4, WHT 19); NARIÑO, Ricaurte: 1500 m, 1 (♂ USNM 309017, FA [dry] 39.3).

#### *Carollia perspicillata*

(Linnaeus, 1758)

This single individual strongly contrasted with *C. brevicauda* by having less hair on the forearms, as well as more subtle cranial differences, such as straighter upper tooth rows and v-shaped lower tooth rows. We also report four specimens collected by Carriker in 1958.

*Habitat*.— We caught this bat in rural vegetation adjacent to a small banana plantation.

*Reproduction*.— The individual we captured was a scrotal adult male.

*Remarks*.— Pine (1972) reported specimens of *C. perspicillata* from La Guayacana in the Field Museum collection but apparently did not examine the USNM specimens we report here. One specimen Carriker collected on 13 May 1958 represents a subadult individual.

*Specimens examined* (5).— NARIÑO, Mpio. Barbacoas, Corr. Altaquer: town of Altaquer, 1400 m, 1 (♂ ICN 13644, TOT 74, TAIL 14, TIB-FT 30, EAR 20.4, FA 41.4, WHT 16); NARIÑO, La Guayacana: 250 m, 4 (♂ USNM 309060, FA [dry] 42.5; sex unknown USNM 309061 skull only; ♀ USNM 309062, FA [dry] 40.8; subadult ♂ USNM 309064).

Table 1. Mammals observed either by expedition biologists or reported to us through interviews with locals, as indicated in the fourth column. For information on common names of Colombian mammals, see Rodríguez-Mahecha et al. (1995).

| Order, Family   | Species  | Elev. (m) | Evidence for register, locality   |
|-----------------|--|-----------|---|
| Didelphimorphia |  |           |   |
| Didelphidae     | <i>Caluromys derbianus</i>                                   | 1300      | Biologist W. Beltrán, field station of the Reserve  |
| Chiroptera      |  |           |   |
| Phyllostomidae  | <i>Desmodus rotundus</i>                                     | 1300      | Local ranchers, near Altaquer reported that vampire bats frequently fed on their cattle   |
| Primates        |  |           |   |
| Cebidae         | <i>Alouatta palliata</i>                                     | <900      | L. Patiño (lifetime local resident and landowner in La Guarapería)  |
|                 | <i>Ateles fusciceps</i>                                      | <900      | L. Patiño, La Guarapería  |
|                 | <i>Cebus capucinus</i>                                       | <900      | L. Patiño, La Guarapería  |
| Xenarthra       |  |           |   |
| Dasypodidae     | <i>Cabassous centralis</i>                                   | 1400      | Biologist P. Ruiz's interview of indigenous locals  |
|                 | <i>Dasybus novemcinctus</i>                                  | 1400      | Biologist P. Ruiz's interview of indigenous locals  |
| Carnivora       |  |           |   |
| Felidae         | <i>Felis concolor</i>  | 1400      | L. Patiño, La Guarapería  |
|                 | <i>Panthera onca</i>   | <900      | Biologist P. Ruiz's interview of indigenous locals, and L. Patiño   |
|                 | <i>Conepatus semistriatus</i>                                | 3000      | A. Cadena, with voucher photographs, El Espino  |
|                 | <i>Eira barbara</i>  | 1300      | Biologist W. Beltrán, field station of the Reserve  |
|                 | <i>Tremarctos ornatus</i>                                    | 1700-1800 | Biologist G. Cantillo   |
| Artiodactyla    |  |           |   |
| Cervidae        | <i>Mazama rufina</i> <sup>1</sup>                            | 1400-2000 | J. C. Coral, Jr., manager of captive breeding program in Altaquer   |
|                 | <i>Tayassu tajacu</i>  | <900      | L. Patiño, La Guarapería  |
| Rodentia        |  |           |   |
| Agoutidae       | <i>Agouti paca</i>   | 1400      | Biologists G. Stiles and V. Rueda, near Altaquer  |
|                 | <i>Agouti taczanowskii</i>                                   | 3000      | Biologist J. M. Renjifo, El Espino  |
| Caviidae        | <i>Cavia aperea</i>  | 2600-3000 | Biologists A. Cadena, P. Ruiz, and J. M. Renjifo, outskirts of Pasto and Túquerres  |
|                 | <i>Dasyprocta punctata</i>                                   | 1400      | J. C. Coral, Jr.  |
| Echimyidae      | <i>Proechimys semispinosus</i> /<br><i>Hoplomys gymnurus</i> | <1300     | Local indigenous people reported capturing spiny rats in handcrafted snares in La Guarapería. That description could pertain to either <i>Proechimys</i> or <i>Hoplomys</i> . |
|                 | <i>Microsciurus mimulus</i>                                  | 1300      | ACG, PRP, and RPA, with voucher photographs, in the Reserve   |
|                 | <i>Sciurus granatensis</i>                                   | 1300      | Biologist W. Beltrán, field station of the Reserve  |
| Lagomorpha      |  |           |   |
| Leporidae       | <i>Sylvilagus brasiliensis</i>                               | <900      | Biologist V. Rueda  |

<sup>1</sup> In western Nariño, *Mazama rufina* is called the *venado chonta*, whereas that name refers to *Pudu mephistophiles* in

most other parts of Colombia (Rodríguez-Mahecha et al., 1995; Hershkovitz, 1982).

## Subfamily GLOSSOPHAGINAE

*Anoura caudifera*

(É. Geoffroy, 1818)

*Anoura caudifera* may be easily separated from *A. cultrata*, another *Anoura* with a tail, by the lack of both the enlarged upper canine with its prominent sulcus and the enlarged first lower premolar characteristic of the latter (Handley, 1984). A third tail-less species, *A. luismanueli*, which is quite similar to *A. caudifera*, was described recently based on material from the Mérida Andes of Venezuela (Molinari, 1994). In addition to several discrete characters separating the two, individuals of *A. luismanueli* were shown to be smaller than *A. caudifera* from Venezuela (including eight non-overlapping measurements), but overlap was observed in all mensural characters when the new species was compared to samples of *A. caudifera* from other areas of South America (Molinari, 1994:77-78,80-81). The measurements for the series we report here overlap the ranges of both *luismanueli* and *caudifera* in Venezuela (Table 2). We observed no discrete characters that would assign these individuals to *luismanueli* rather than to *caudifera*.

*Habitat*.— Our captures ranged from along a trail in the disturbed forest at La Guarapería to a banana plantation near Altaquer, to a forest at 1460 m.

*Reproduction*.— The subadult male and one of the adult males displayed scrotal testes. One of the females was pregnant, and another was lactating.

*Specimens examined* (6).— NARIÑO, Mpio. Barbacoas, Corr. Altaquer: ca. 2 km ENE El Barro, 1460 m, 1 (subadult ♂ ICN 13633, TOT 62.7, TAIL 4.5, TIB-FT 19.2, EAR 15.1, FA 35.1, WHT 12); ca. 2 km NW Junín, La Guarapería, 900 m, 2 (♀ ICN 13634, TOT 60, TAIL 5, TIB-FT 21, EAR 13, FA 34.5, WHT 11; ♀ ICN 13635, TOT 62, TAIL 5, TIB-FT 22.8, EAR 13.6, FA 36.3, WHT 13); town of Altaquer, 1400 m, 3 (♂ ICN 13636, TOT 60.6, TAIL 4.5, TIB-FT 22, EAR 14.3, FA 34.3, WHT 9; ♀ ICN 13637, TOT 62, TAIL 3.7, TIB-FT 20, EAR 11, FA 34, WHT 10; ♂ ICN 13638, TOT 65, TAIL 3.4, TIB-FT 20.7, EAR 9, FA 37.5, WHT 11).

*Anoura cultrata*

Handley, 1960

This distinctive bat is easily identified by the prominent sulcus on its upper canine.

*Habitat*.— *A. cultrata* was netted in a disturbed forest in La Guarapería.

*Reproduction*.— The individual we captured was a scrotal adult male.

*Specimen examined* (1).— NARIÑO, Mpio. Barbacoas, Corr. Altaquer: ca. 2 km NW Junín, La Guarapería, 900 m, 1 (♂ ICN 13639, TOT 72, TAIL 5, TIB-FT 27, EAR 14, FA 41, WHT 17).

Table 2. Selected measurements of *Anoura* from middle elevations in western Nariño, Colombia (present study) and Mérida, Venezuela (Molinari, 1994). Measurements were taken as in Molinari (1994) and are reported as the mean  $\pm$  2 SD, followed by the sample size.

|                                   | <i>A. luismanueli</i> (Mérida) | <i>A. caudifera</i> (Nariño) | <i>A. caudifera</i> (Mérida) |
|-----------------------------------|--------------------------------|------------------------------|------------------------------|
| Length of calcar                  | 3.0 $\pm$ 0.79, 25             | 3.6 $\pm$ 0.72, 5            | 4.6 $\pm$ 0.77, 16           |
| Length of cranium                 | 21.0 $\pm$ 0.54, 36            | 21.7 $\pm$ 1.24, 5           | 23.0 $\pm$ 0.70, 16          |
| Condylbasal length                | 20.3 $\pm$ 0.60, 36            | 21.1 $\pm$ 1.38, 5           | 22.6 $\pm$ 0.71, 16          |
| Palatal length                    | 10.4 $\pm$ 0.72, 36            | 11.1 $\pm$ 1.07, 5           | 12.5 $\pm$ 0.56, 16          |
| CM <sup>3</sup> (upper tooth row) | 7.5 $\pm$ 0.45, 35             | 7.9 $\pm$ 0.38, 5            | 8.5 $\pm$ 0.36, 16           |
| Length of mandible                | 14.9 $\pm$ 0.69, 35            | 15.2 $\pm$ 0.97, 5           | 17.0 $\pm$ 0.53, 16          |
| cm <sub>3</sub> (lower tooth row) | 7.8 $\pm$ 0.41, 36             | 8.3 $\pm$ 0.51, 5            | 8.9 $\pm$ 0.36, 15           |

*Anoura geoffroyi*  
Gray, 1838

This species exhibits narrow lower second and third premolars in contrast to the thick ones of *latidens*, the other *Anoura* without a tail (Handley, 1984).

*Habitat*.— We netted this bat in a disturbed forest in La Guarapería.

*Remarks*.— This individual lacked first and second upper and lower molars. Phillips et al. (1969) documented a similar phenomenon in *Leptonycteris nivalis* and showed macronyssid mites to have caused the abnormality.

*Specimen examined* (1).— NARIÑO, Mpio. Barbaocoas, Corr. Altaquer: ca. 2 km NW Junín, La Guarapería, 900 m, 1 (subadult ♀ ICN 13640, TOT 56, TAIL 0, TIB-FT 23, EAR 14.1, FA 36.3, WHT 12).

**Subfamily LONCHOPHYLLINAE**

*Lonchophylla mordax*

Thomas, 1908

*Lonchophylla mordax* and *L. thomasi* represent the two smaller species of the genus present in Colombia. The measurements for this individual match those of *mordax* (Taddei et al., 1983) and agree with previously verified specimens of *mordax* in the ICN collection.

*Habitat*.— This specimen was captured near banana plantings in rural vegetation.

*Reproduction*.— The individual displayed scrotal testes.

*Specimen examined* (1).— NARIÑO, Mpio. Barbaocoas, Corr. Altaquer: town of Altaquer, 1400 m, 1 (♂ ICN 13647, TOT 68, TAIL 12, TIB-FT 23.5, EAR 14.8, FA 34.3, WHT 10).

*Lonchophylla robusta*

Miller, 1912

Alberico and Orejuela (1982) reported *L. handleyi* for Colombia based on a *robusta*-like specimen near Junín in Nariño at 870 m, and subsequently Alberico (1987) noted the collection of another from the Departamento del Valle at 480 m. Those identifications were based on measurements that were larger than those for *robusta* from western areas of the country. Our specimens (Table 3) also generally fall in the ranges of *handleyi* from Ecuador (Hill, 1980) as well as in the key to the genus (Taddei et al., 1983). However, a well developed basal internal cusp on the upper premolar, which characterizes *robusta* (Hill, 1980; Taddei et al., 1983), is present in ICN 13648, and to a lesser degree in ICN 13649. These specimens also lack the fringe of hairs on the posterior of the uropatagium which characterizes *L. handleyi* (Hill, 1980). Thus, we place more

Table 3. Selected measurements of *Lonchophylla* from middle elevations in western Nariño, Colombia (present study) and Ecuador (Hill, 1980). Protocols are according to Hill (1980), and measurements are given as the mean, range, and sample size.

|  | <i>L. handleyi</i> (Ecuador) | <i>L. robusta</i> (Nariño) | <i>L. robusta</i> (Ecuador) |
|--|------------------------------|----------------------------|-----------------------------|
| Length of palate                       | 16.8 (16.1 - 17.5), 15       | 15.5 (15.5 - 15.5), 2      | 13.9 (13.6 - 14.4), 9       |
| Greatest length of skull               | 28.5 (27.5 - 29.2), 16       | 27.8 (27.2 - 28.3), 2      | 25.9 (25.3 - 26.2), 9       |
| Mastoid breadth                        | 11.4 (10.9 - 12.0), 16       | 11.6 (11.4 - 11.7), 2      | 10.5 (10.2 - 10.8), 9       |
| CM <sup>3</sup> (upper tooth row)      | 10.6 (10.2 - 11.0), 16       | 10.4 (10.2 - 10.5), 2      | 9.4 (9.1 - 9.6), 9          |
| cm <sub>3</sub> (lower tooth row)      | 10.9 (10.5 - 11.4), 16       | 10.6 (10.5 - 10.6), 2      | 9.8 (9.5 - 10.0), 9         |
| Length complete mandible from condyles | 19.8 (19.1 - 20.3), 14       | 19.3 (19.1 - 19.4), 2      | 17.3 (17.0 - 17.6), 8       |
| Tibia                                  | 18.0 (17.0 - 18.5), 18       | 17.2 (16.0 - 18.4), 2      | 16.8 (16.0 - 17.5), 9       |

weight on the discrete characters of the premolar and uropatagium than on the measurements in our identification, which remains subject to confirmation.

*Habitat.*— One specimen was netted in rural vegetation near a planting of bananas and the other in a disturbed forest.

*Reproduction.*— The female was post-lactant and the male a scrotal adult.

*Specimens examined* (2).— NARIÑO, Mpio. Barbacoas, Corr. Altaquer: town of Altaquer, 1400 m, 1 (♂ ICN 13648, TOT 84, TAIL 11, TIB-FT 27.0, EAR 17.6, FA 44.2, WHT 16); ca. 2 km NW Junín, La Guarapería, 900 m, 1 (♀ ICN 13649, TOT 84.5, TAIL 10.5, TIB-FT 32.2, EAR 14, FA 45, WHT 19).

#### Subfamily STENODERMATINAE

##### *Sturnira ludovici*

Anthony, 1924

This specimen clearly falls in the *ludovici* group of species (along with *oporaphilum*, *bogotensis*, and *erythromos*), a group only recently receiving decisive taxonomic treatment (Pacheco and Patterson, 1991, 1992). It may be separated from the other two of this group present in Colombia (*bogotensis* and *erythromos*) because its upper middle incisors are separated at the point, i.e. with diverging pointed tips, (Linares, 1986) and by its larger size (Davis, 1980).

*Habitat.*— We netted this species above a fast-flowing stream in early successional vegetation.

*Remarks.*— A juvenile male was also captured and released.

*Specimen examined* (1).— NARIÑO, Mpio. Barbacoas, Corr. Altaquer: ca. 1 km SE Altaquer, Quebrada La Ensilada, 1400 m, 1 (♀ ICN 13658, TOT 71.8, TAIL 0, TIB-FT 32.5, EAR 16.5, FA 46, WHT 27).

##### *Artibeus glaucus*

Thomas, 1893

The specific identification of this small, light colored *Artibeus* with molars 2/3 varies according to the author followed, as the taxonomic treatment of small *Artibeus* remains in flux. By the presence of highly inflated supraorbitals, it falls into what has traditionally been considered *cinereus* (e.g. *sensu* Kooopman, 1981) in northwestern South America, in contrast with the non-inflated supraorbitals of *A. phaeotis*. More recently, however, Handley (1987) revised the small species of *Artibeus*, in which the forms with inflated supraorbitals were split off from typical *cinereus*, which he restricted to the "Amazon Basin (possibly only the lower basin) and adjacent coastal areas." This specimen corresponds to his "*glaucus* Group," which Kooopman (1993), considered a single species, *Artibeus glaucus*. We follow Kooopman (1993) but note that according to Handley (1987), this animal would correspond to *A. watsoni* (one of the species in his *glaucus* group).

*Habitat.*— This species was captured in a small banana plantation adjacent to the town of Altaquer.

*Reproduction.*— The only individual captured was a lactating adult female.

*Remarks.*— The *Artibeus cinereus* reported for this area (Alberico and Orejuela, 1982) probably represent the same species as ICN 13641.

*Specimen examined* (1).— NARIÑO, Mpio. Barbacoas, Corr. Altaquer: town of Altaquer, 1400 m, 1 (♀ ICN 13641, TOT 55, TAIL 0, TIB-FT 22, EAR 13, FA 38, WHT 12).



**Subfamily PHYLLOSTOMINAE*****Phyllostomus hastatus***

(Pallas, 1767)

This easily identifiable bat represents the largest chiropteran in the Neotropics other than *Vampyrum spec-trum*.

*Habitat*.— The three individuals entered nets placed in a small banana plantation adjacent to Altaquer.

*Reproduction*.— The female was lactating, and the adult male was scrotal.

*Specimens examined* (3).— NARIÑO, Mpio. Barbacoas, Corr. Altaquer: town of Altaquer, 1400 m, 3 (♀ ICN 13655, TOT 138.9, TAIL 22, TIB-FT 52.8, EAR 30.8, FA 90, WHT 108; subadult ♂ ICN 13656, TOT 150, TAIL 20, TIB-FT 57, EAR 30, FA 93, WHT 126; ♂ ICN 13657, TOT 152, TAIL 22, TIB-FT 56, EAR 28, FA 95, WHT 140).

**Family VESPERTILIONIDAE****Subfamily VESPERTILIONINAE*****Eptesicus brasiliensis***

(Desmarest, 1819)

In accordance with the synonymization of *andinus* with *brasiliensis*, these bats clearly pertain to *brasiliensis* and not to *fuscus* or *furinalis*, its other two congeners in Colombia. See also Davis (1966) and Linares (1986).

*Habitat*.— These individuals were only captured in nets strung across the Quebrada La Ensillada.

*Reproduction*.— The adult female displayed enlarged mammae, suggesting that she might have been post-lactant.

*Specimens examined* (2).— NARIÑO, Mpio. Barbacoas, Corr. Altaquer: ca. 1 km SE Altaquer, Quebrada La Ensillada, 1400 m, 2 (♀ ICN 13645, TOT 105, TAIL 46, TIB-FT 27.2, EAR 14.5, FA 43.4, WHT 10; juvenile ♀ ICN 13646, TOT 94, TAIL 46, TIB-FT 26.4, EAR 16.2, FA 41.3, WHT 8).

***Myotis nigricans***

(Schinz, 1821)

Although showing surprising variation in external coloration (some quite dark dorsally, some with dorsal hair gradually fading to yellowish tips), these bats clearly pertain to *nigricans* following the cranial diagnoses of LaVal (1973). They would be extremely difficult to separate from *albescens* in the field in this part of Colombia, however, since, as he notes, the dorsal coloration of the *nigricans* found along the Pacific coast of South America “varies from overall dark brown or black in the north, to light tips contrasting with dark bases in the south” (LaVal 1973:12). At the same time, in *albescens*, which is usually characterized by a “distinct gold or silver frosted appearance,” this “contrast of tips [is] greatly reduced in a few specimens, and in one entire series from the Andes of Ecuador” (LaVal, 1973:26). With cleaned skulls in hand, these two species may be separated, however, and the measurements we took on these five individuals uniformly agreed with those given by LaVal (1973:28) for *nigricans* rather than with those for *albescens* (Table 4).

*Habitat*.— The *Myotis* were found near a banana plantation in rural vegetation.

*Reproduction*.— All five individuals were adult males with abdominal testes.

*Remarks*.— This species has been reported from Ricaurte at 1500 m and from La Guayacana, which lies near 250 m on the coastal plain south of Barbacoas (LaVal, 1973:12).

*Specimens examined* (5).— NARIÑO, Mpio. Barbacoas, Corr. Altaquer: town of Altaquer, 1400 m, 5 (♂ ICN 13650, TOT 81, TAIL 31, TIB-FT 22.1, EAR 13.5, FA 33.8, WHT 4.5; ♂ ICN 13651, TOT 85, TAIL 37, TIB-FT 22.2, EAR 15.5, FA 35, WHT 5; ♂ ICN 13652, TOT 80, TAIL 35, TIB-FT 22, EAR 11, FA 34, WHT 5; ♂ ICN 13653, TOT 80, TAIL 37, TIB-FT 22.4, EAR 15, FA 35, WHT 5; ♂ ICN 13654, TOT 82, TAIL 37, TIB-FT 19.4, EAR 11.5, FA 33.7, WHT 4).

Table 4. Selected cranial measurements and indices of *Myotis* from middle elevations in western Nariño, Colombia (present study) and Perú (LaVal, 1973) following the methods of LaVal (1973:2,28). Width across upper canines represents the greatest width between the lateral edges of the upper canines. Measurements are displayed as the mean  $\pm$  2 SE, with the sample size given in the heading of each column.

|  | <i>M. albescens</i> (Perú)<br><i>n</i> = 14 | <i>M. nigricans</i> (Nariño)<br><i>n</i> = 5 | <i>M. nigricans</i> (Perú)<br><i>n</i> = 16 |
|--|---|--|---|
| Postorbital constriction                                 | 3.8 $\pm$ 0.06                              | 3.5 $\pm$ 0.07                               | 3.6 $\pm$ 0.08                              |
| Width across upper canines /<br>postorbital constriction | 0.94 $\pm$ 0.017                            | 1.02 $\pm$ 0.037                             | 1.00 $\pm$ 0.030                            |
| Depth of braincase                                       | 5.5 $\pm$ 0.08                              | 4.9 $\pm$ 0.10                               | 5.2 $\pm$ 0.07                              |
| Depth of braincase /<br>greatest length of skull         | 0.39 $\pm$ 0.007                            | 0.36 $\pm$ 0.006                             | 0.37 $\pm$ 0.007                            |

## ORDER RODENTIA

### Family HETEROMYIDAE Subfamily HETEROMYINAE

*Heteromys australis*  
Thomas, 1901

In Colombia, *Heteromys australis* may be easily distinguished from *H. anomalus* by its uniformly dark or indistinctly bicolored tail (that of *anomalus* is sharply bicolored) and by its smaller size and slaty gray pelage.

*Habitat*.— We captured this species in a very wet, soggy area of the reserve, in virtually pristine forest.

*Reproduction*.— This individual was a pregnant female with two embryos (3 and 8 mm).

*Remarks*.— The animal was captured in a small Sherman trap baited with the peanut-oats mixture.

*Specimen examined* (1).— NARIÑO, Mpio. Barbacoas, Corr. Altaquer: ca. 7 km NE Altaquer, Reserva Natural del Río Ñambí, 1300 m, 1 (♀ ICN 13659, TOT 207; TAIL 95; HF 31.2; EAR 15; WHT 55).

### Family MURIDAE Subfamily MURINAE

*Mus musculus*  
Linnaeus, 1758

Locals brought us a single *Mus musculus* caught in a house in Altaquer, which we did not prepare. The presence of this introduced human commensal is not surprising given that the highway from Tumaco on the coast passes right through Altaquer.

### Subfamily SIGMODONTINAE

*Melanomys caliginosus*  
(Tomes, 1860)

The dusky rice rat may be easily separated from the externally similar *Akodon* spp. of Colombia by skull characters, having much shorter incisive foramina and more complex and wider molars than *Akodon*.

*Habitat*.— We trapped these specimens in virtually intact forest with many palms and epiphytes present.

*Reproduction.*—The male was scrotal, and one of the females was lactating. The other (ICN 13662) was a pregnant female that gave birth to two young within hours after capture and proceeded to eat them within the following days.

*Remarks.*—One individual was caught in a small Sherman trap baited with the peanut mixture, and two were captured in large traps baited with banana.

*Specimens examined* (3).—NARIÑO, Mpio. Barbacoas, Corr. Altaquer: ca. 7 km NE Altaquer, Reserva Natural del Río Nambí, 1300 m, 3 (♀ ICN 13660, TOT 216, TAIL 92, HF 26, EAR 15, WHT 55; ♂ ICN 13661, TOT 214, TAIL 93, HF 24.5, EAR 14.1, WHT 51; ♀ ICN 13662, TOT 194, TAIL 85, HF 25, EAR 15).

### *Sigmodontomys* sp.

We caught a single individual of this medium-sized rat. In South America, its pentadont molars place it in either the tribe Oryzomyini (Voss and Carleton, 1993) or the plesion Thomasomyini (Voss, 1993). Cranially, it has a short palate without postpalatal pits, a well developed alisphenoid strut, and a reduced tegmen tympani (for explanation of characters, see Voss, 1993). The first two characters do not correspond to the phylogenetic diagnosis of the Oryzomyini given in Voss and Carleton (1993), but the third does. We believe this mouse is an oryzomyine and interpret the homoplasies as reversals.

Externally, it generally resembles an *Oryzomys* of the *albigularis* group (Carleton and Musser, 1995), ex-

cept for its extremely long tail and longer and more prominent vibrissae. Its converging, though very weak, supraorbital ridges, long tail, glossy buffy brown dorsal pelage, and oval (rather than rectangular) molars serve to ally it with members of the genus *Sigmodontomys*. Examination of specimens of *S. alfari* and *S. aphantus*, the only two accepted species of the genus (Musser and Carleton, 1993), showed it to be specifically distinct from either of them, especially by its narrow feet and short palate. We believe it is closely related to those two species and to *Oryzomys hammondi*, a species with closer affinities to *S. aphantus* than to any other *Oryzomys* (Carleton and Musser, 1995). A single specimen of *O. hammondi* we examined (UMMZ 155827) showed no supraorbital ridges and a rather weakly developed posterior palate, similar to ICN 13663. UMMZ 155827, however, presented a dull, wooly pelage and wide feet, in contrast to the glossy, luxurious, well-ordered dorsal pelage and narrow hind feet of ICN 13663, which probably represents an undescribed member of the genus *Sigmodontomys*.

*Habitat.*—We captured this animal in nearly pristine forest near the Río Nambí.

*Reproduction.*—The individual was a scrotal male.

*Remarks.*—It was caught in a large Sherman baited with the peanut-oats mixture and set near the base of a large tree.

*Specimen examined* (1).—NARIÑO, Mpio. Barbacoas, Corr. Altaquer: ca. 7 km NE Altaquer, Reserva Natural del Río Nambí, 1300 m, 1 (♂ ICN 13663, TOT 320; TAIL 184; HF 39 (35.8 in museum); EAR 20; WHT 72).

## DISCUSSION

For the Pacific Andean slopes of Nariño, the collected bats add five species to those confirmed for the area, extend the altitudinal ranges of two, and corroborate the elevational ranges found in previous studies for the remaining species. The inventory produced the first reported voucher specimens of *Carollia perspicillata*, *Phyllostomus hastatus*, *Lonchophylla mordax*, *Lonchophylla robusta*, and *Eptesicus brasiliensis* for the middle elevations of western Nariño. Furthermore,

*Artibeus glaucus* is now confirmed up to 1300 m, and *Anoura geoffroyi* down to 900 m. *Anoura caudifera*, *Carollia brevicauda*, *Sturnira ludovici*, and *Myotis nigricans* appear widely distributed altitudinally along these slopes (Alberico and Orejuela, 1982; LaVal, 1973; present study). Although *Anoura cultrata* was captured in both our efforts and those of previous workers (Alberico and Orejuela, 1982), it has not been found here above 870-900 m.

Many bats previously reported for the region (Alberico and Orejuela, 1982) were not included in our brief sampling: *Artibeus hartii*, *A. jamaicensis*, *A. phaeotis*, *Chiroderma salvini*, *Lionycteris spurrelli*, *Myotis keaysi*, *Rhinophylla alethina*, *Sturnira bidens*, *S. erythromos*, *S. mordax* (see Alberico, 1994), *Vampyressa pusilla*, *Platyrrhinus dorsalis*, *P. infuscatus*, and *P. vittatus*. Additionally, LaVal (1973) reported *Myotis oxyotus* from Ricaurte. Local ranchers spoke of bats feeding on their cattle, indicating the presence of *Desmodus rotundus*. In the unpublished report of the British workers, one finds references to species of the genera *Micronycteris*, *Mimon*, and *Chiroderma* (Salaman, 1994). The lack of overlap between the respective studies emphasizes the incompleteness the species list and the need for continued, intensive sampling.

Our low captures of small non-volant mammals precludes many conclusions on that fauna in this area. Orejuela et al. (1982:52-53) reported *Hoplomys gymnurus*, *Heteromys australis*, and an immature individual of the genus *Oryzomys*, possibly *Oryzomys* (= *Melanomys*) *caliginosus*, from near Junín and *M. caliginosus* from near Ricaurte. We caught *Melanomys* and *Heteromys* but no *Hoplomys*. The capture of *Sigmodontomys* sp. clearly attests to the still grossly

incomplete sampling of this area with regard to small rodents.

Different segments of central and western Nariño present various conservation conditions and outlooks. While areas of the central highlands of the department have been intensely settled for several hundred years, some important relict forests remain, such as where we observed *Conepatus semistriatus* (El Espino) and *Cavia aperea* (Túquerres). In contrast, the Pacific slopes remain well forested, harboring important populations of many rare and endangered animals (Table 1). Clearing of land near Ricaurte (ca. 2000 m) has proven extensive in the last two decades, however, and completion of the excellent all-weather highway from Pasto to Tumaco will without doubt open the region to unprecedented colonization. Thus, reserves such as the Reserva Natural del Río Nambi and "La Planada" (near Ricaurte) must be emulated *now* throughout the region if the biotic diversity of the area is to be maintained at anywhere near its current level. At the same time, intensive inventories preserving voucher specimens must be initiated at various elevations in the region in order to complete this preliminary species list for mammals, and properly assess and characterize the biological diversity of western Nariño.

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Resumen.— Se reportan los murciélagos y pequeños roedores colectados y otros mamíferos observados en la vertiente pacífica de los Andes entre 900 y 1.400 msnm en el Departamento de Nariño en Colombia, que hace parte del Chocó biogeográfico. El área de muestreo queda parcialmente inventariada e incluye bosque pluvial tropical premontano y zonas intervenidas por el hombre. Nuevos reportes o extensiones de la distribución altitudinal para el área, incluyen el ratón *Sigmodontomys* sp. y los siguientes murciélagos: *Anoura geoffroyi*, *Artibeus glaucus*, *Carollia perspicillata*, *Eptesicus brasiliensis*, *Lonchophylla mordax*, *L. robusta* y *Phyllostomus hastatus*. Reportes y observaciones indican que en esta zona, que actualmente se encuentra en proceso de colonización activa, existen todavía poblaciones de varios mamíferos grandes poco comunes. Se resalta la importancia de llevar a cabo inventarios intensivos conservando especímenes de referencia en la región, para completar el listado de especies de mamíferos y caracterizar la diversidad biológica de la región biogeográfica del Chocó.

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