

REDISCOVERY OF THE BROWN SAC-WING BAT, *BALANTIOPTERYX INFUSCA* (THOMAS, 1897), IN ECUADOR

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Until now, our knowledge of *Balantiopteryx infusca* has been limited to 5 specimens collected 100 years ago. In 1991, we netted this bat at the entrances of 2 railroad tunnels near the type locality in northwestern Ecuador. The sex ratio in our small samples favored females; we found no evidence of sexual dimorphism. We refine the designation of the type locality and comment on the original series of this bat collected by W. F. H. Rosenberg.

Key words: *Balantiopteryx infusca*, bat, distribution, Ecuador, Emballonuridae, type locality

The 3 known species of *Balantiopteryx* include *B. plicata* and *B. io*, which are distributed within distinct ecotypes of Middle America. Occurrence of *B. plicata* from southern Baja California and Sonora, Mexico, along the Pacific versant to northwestern Costa Rica reflects its adaptation to drier habitats. *B. io* inhabits mesic forests from southern Veracruz, Mexico, to central and eastern Guatemala and Belize (Hill 1986). A 3rd species, *B. infusca*, is known from a single locality in the wet region of Provincia de Esmeraldas, Ecuador. The distance from northwestern Costa Rica to northwestern Ecuador represents a considerable hiatus between known populations of *Balantiopteryx*.

MATERIALS AND METHODS

We investigated (25–28 December 1991) railway tunnels near Lita (00°52'N, 78°28'W), Provincia de Imbabura, Ecuador. The rail station (510 m) was located where the Río Lita drains into the Río Mira, forming the political boundary between Imbabura and Esmeraldas to the west. A tunnel located a short distance across the Río Lita is about 6.25 m high and 50 m long, curving through sedimentary conglomerate. This

porous formation allowed considerable seepage, resulting in a wet cavelike habitat. We used 1 monofilament mist net inside near a tunnel entrance to capture bats between 1820 and 1915 h. Similarly, we sampled bats (28 December) between 1100 and 1200 h at a 2nd tunnel of like appearance about 1.7 km east of the station, where a seeming larger number of bats roosted.

RESULTS AND DISCUSSION

Emballonurid bats were noticed among those occupying both ends of the 1st tunnel. Two *B. infusca* (Fig. 1) were captured along with *Saccopteryx bilineata*, *Carollia brevicauda*, *C. castanea*, and *Desmodus rotundus*. Seven additional *Balantiopteryx* were captured the following morning at sunrise. In the 2nd tunnel, we netted *Lonchophylla mordax*, *C. brevicauda*, *D. rotundus*, and 9 *B. infusca*.

We do not know how many *B. infusca* actually roosted inside these tunnels. Colonies of *B. plicata* (López-Forment 1979) and *B. io* (Hall and Dalquest 1963) can range from <100 to >1,000 individuals. Our 2 small samples of *B. infusca* represented male:female:juvenile ratios of 1:7:1 and 1:4:4, respectively, suggesting that adult female *B. infusca* may outnumber

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FIG. 1.—Adult female (CM 112480) *Balantiopteryx infusca* newly rediscovered in Ecuador, 25 December 1991.

males in colonies. Studies of *B. plicata* in Costa Rica and Guerrero, Mexico (Bradbury and Vehrencamp 1976; López-Forment 1979), and *B. io* in Veracruz, Mexico (Hall and Dalquest 1963), indicate a higher ratio of males in colonies, a phenomenon we have observed for *B. io* in Belize.

The adult females were nonparous: 4 were lactating, 2 were postlactating, and 5 were inactive. The inactive bats may have been 1st-year adults. For adults, length of forearm and weight averaged 39.1 mm and 4.45 g for 2 males and 40.0 mm ($n = 11$) and 4.3 g ($n = 10$) for females. Data for *B. plicata* and *B. io* confirmed larger and heavier females (Arroyo-Cabrales and Jones 1988a, 1988b). Our measurements and those of Hill (1986) indicate no sexual dimorphism in *B. infusca*. Averages of cranial measurements (in millimeters) for 2 males and 10 females, respectively, were greatest length of skull (to premaxillaries), 13.4, 13.4; condylobasal length (to premaxillaries), 11.8, 11.8; zygomatic breadth, 8.4, 8.4; interorbital constriction, 4.8, 4.7; postorbital constriction, 3.0, 3.0; mastoidal breadth, 7.55, 7.5; breadth of braincase, 6.9, 6.85; breadth across molars (alveolar), 5.7, 5.6; breadth across canines (alveolar), 3.0, 3.0; length of maxillary tooththrow (alveolar), 4.6, 4.5; length of mandible, 8.45, 8.5; and length of mandibular tooththrow (alveolar), 4.7, 4.7. Specimens were deposited in

the Carnegie Museum (CM 112480–112495) and Escuela Politécnica Nacional (TJM field numbers 7760, 7764).

Overall coloration of adults was dark. Dorsal fur had hairs with blackish brown distal tips, brown hair shafts, and pale grayish brown bases. The ventrum was paler overall, with brown hair tips and shafts with grayish brown bases. White, wiry hairs were dispersed dorsally and ventrally on many specimens. All membranes were black. The upper one-third of the dorsal surface of the uropatagium was sparsely haired, especially along the short tail.

The original description of *B. infusca* was based on a single adult male preserved in fluid. It was collected 5 January 1897 by W. F. H. Rosenberg at “Cachavi, N. Ecuador” (Thomas 1897:546). The holotype was not designated. Carter and Dolan (1978) reported 5 original specimens (3 skins with skulls and 2 in alcohol), and they were able to determine that Thomas wrote “type” on the specimen jar label to indicate WR 30 as the holotype (The Natural History Museum, London, BMNH 97.11.7.73); Hill (1986) stated that Thomas also had marked the register accordingly.

One of us (T. J. McCarthy) examined the original series (BMNH 97.11.7.17–19, 73, 74). We assumed that Rosenberg’s field numbers were WR 26–30, although the 2nd fluid specimen (BMNH 97.11.7.74) was without a label. The dry specimens are in fragile condition. The right wings of 2 of the dry skins (BMNH 1897.7.17, 18; WR 28, 26) are nearly separated at the base of the forearms. The fluid specimens were slightly faded but otherwise stable.

Carter and Dolan (1978:22) reported that Rosenberg collected these “from a cave in the bank of R. Cachabi,” as noted on a skin label and recorded the elevation as 500 feet (152 m). They interpreted the type locality as “[Río] Cachabi, 500 ft., [in department of Esmeraldas] Ecuador” and approximated this as 6 km N, 107 km E Esmeraldas (01°N, 78°40’W). On page 201 of the BMNH register for 1897, the locality is not-

ed as "Cachavi, on R. Cachavi, tributary of R. Santiago, Pacific slope NW Ecuador 500' forest."

The type locality for *B. infusca* is better understood from reports concerning other collections by Rosenberg, which include insects, amphibians, reptiles, and birds deposited in London. Rosenberg collected in western Ecuador from November 1896 to September 1897, during which time he was at Cachabí from November 1896 to February 1897 (Brown 1941; Paynter 1993). Boulenger (1898; as Cachabé) and Hartert (1898; as Cachaví) reported on Rosenberg's herpetological and ornithological collections, for which Rosenberg provided descriptive notes of his localities. He reported Cachabí as a settlement of 4 or 5 houses on the river of the same name and connected with Lita along a difficult path through dense, humid, and uninhabited forest. The Río Cachabí joins the Río Bogotá 2.4 km above Concepción and continues to the Río Santiago, Río Cayapas, and Pacific Ocean. Rosenberg noted that his barometer was not dependable because of an accident and estimated Cachabí to be at about 152 m (Hartert 1898). We estimated a direct distance of about 29 km between Lita and Cachabí measured from a 1:1,000,000 map (Instituto Geográfico Militar).

We follow Brown (1941) and Paynter (1993) for the designation of Cachabí (about 00°58'N, 78°48'W) as Provincia de Esmeraldas: 25 km SE Concepción (01°03'N, 08°50'W) on the upper Río Cachabí situated at about 200 m on the coastal plain near the base of the mountains. This description is further amended because this village is presently known as Urbina (Albuja V. 1982). Urbina appears on recent maps as closer to 300 m.

The spelling "Cachaví" by Thomas (1897:546) is not an error as indicated by Carter and Dolan (1978) and Hill (1986). This variant was used by Hartert (1898) and Brown (1941) and is used on present-day maps and maps in use during Rosenberg's collection. San Javier de Cachabí (01°04'N,

78°47'W) is another village on the Río Cachabí, not to be confused with Cachabí (=Urbina) as was done by Lynch (1971).

We document records of *B. infusca* roosting in train tunnels near Lita, in Esmeraldas and Imbabura, close to the type locality in northwestern Ecuador. The adaptive use of these cavelike structures by this species suggests flexibility in response to limited environmental change. Terbourgh and Winter (1982) demonstrated a considerable diversity of birds having limited ranges that are endemic to the Chocó region of the western Andes of Colombia and Ecuador. We suspect that the bat fauna of the Chocó contains additional undescribed species with restricted ranges similar to that of *B. infusca*. Other Chocoan endemics include *Rhinophylla alethina*, *Choeroniscus periosus*, *Platyrrhinus choacoensis*, and *Molossops equatorianus*. The brown sac-wing bat is recorded on the 1996 Red List of Threatened Animals as endangered (Aguilar and Taddei 1996). We assume that this status reflects the restricted range and limited knowledge of this species.

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ADDENDUM

Recently, this sac-wing bat was listed as occurring in southwestern Colombia (Alberico, M., A. Cadena, J. Hernández-Camacho, and Y. Muñoz-Saba. 2000. *Mamíferos (Synapsida: Theria) de Colombia*. *Biota Colombia* 1:43–75). Seven specimens represented by catalogue numbers (Instituto de Ciencias Naturales 99310–99316) document *B. infusca* in the Andes (1,200 m) at an unspecified locality in the Departamento del Valle de Cauca, Colombia. The ICN catalogue numbers are corrected as 9310–9316 (M. Alberico, in litt.). No further data were given.