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Balantiopteryx io and Balantiopteryx infusca.

By Joaquín Arroyo-Cabrales and J. Knox Jones, Jr.

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Balantiopteryx io Thomas, 1904

Thomas' Sac-winged Bat

Balantiopteryx io Thomas, 1904:252. Type locality "R. Dolores, near Coban [Río Dolores, near Cobán, Alta Verapaz], Guatemala."

CONTEXT AND CONTENT. Order Chiroptera, Suborder Microchiroptera, Family Emballonuridae, Subfamily Emballonurinae. The genus *Balantiopteryx* contains three species, a key to which was given by Arroyo-C. and Jones (1987). *Balantiopteryx io* is monotypic.

DIAGNOSIS. *Balantiopteryx io* can be distinguished from *B. plicata*, with which it is partly sympatric, as follows: size smaller (forearm <39 mm, greatest length of skull usually <13); no white line on posterior edge of wing membrane; inner margin of ear concave; interpterygoid fossa broader, U-shaped; basisphenoidal pits larger, longer than broad, not divided by a medium septum. *B. io* is the smallest species of the genus (Hall, 1981; Thomas, 1904).

GENERAL CHARACTERS. Thomas' sac-winged bat is a slenderly built species; the wing and leg bones are remarkably thin. The ears are short and rounded, concave on the inner surface just below the tip. The tragus is slender, rounded at the tip; there is a marked lobulation opposite the base of the inner margin and another slight projection above it. The wing sac is located in the center of the antebrachial membrane as in other species of the genus. Feet are free of the membranes, the wing is attached to the distal end of the tibia. The calcar is slender and does not reach the knee when bent forward. The uropatagium is furred basally as far as exsertion of tail. The pelage is dark brownish dorsally, paler below (Sanborn, 1937; Thomas, 1904; Villa-R., 1967). The zygoma are abruptly and widely expanded (Fig. 1); the anterior margin of the palate has a well-marked median spine; the dental formula, as in other American emballonurids, is i 1/3, c 1/1, p 2/2, m 3/3, total 32.

Average external measurements (in mm) of 28 males and 14 females (except where noted parenthetically) from Belize (Kirkpatrick et al., 1975) are, respectively: total length, 52.6, 54.4; length of tail, 14.8, 14.2; length of hind foot, 6.1, 6.3; length of ear, 12.1, 12.4; length of tragus, 5.4 (27), 5.2; length of forearm, 36.8 (26), 38.0. The average weight (in g) of 28 males and 11 females from the above series was 3.7 and 5.0, respectively; Jones (1966) reported the average weight of 35 specimens (9 males, 26 females) from Guatemala as 4.2 (range, 4 to 6).

Ranges in cranial measurements (in mm) of specimens from Guatemala (Sanborn, 1936, 1937) are as follows: greatest length of skull, 12.4 to 13.1; condylobasal length, 10.9 to 11.7; postorbital constriction, 3.1 to 3.6; breadth of rostrum, 5.7 to 6.2; zygomatic breadth, 8.2 to 8.7; mastoid breadth, 7.5 to 7.9; breadth of braincase, 6.4 to 6.8; length of maxillary toothrow, 4.5 to 4.9; breadth across upper canines, 3.0 to 3.3; breadth across upper molars, 5.5 to 5.9.

DISTRIBUTION. This species occurs in lowland tropical areas (Fig. 2) from central Veracruz and eastern Oaxaca eastward to Belize and Guatemala (Hall, 1981). Additionally, Dalquest and Roth (1970) reported a late Pleistocene mandible from Cueva del Abra, Tamaulipas, to the north of the presently known range.

FORM AND FUNCTION. The small baculum of *B. io* is flat basally and rounded distally (Brown et al., 1971). Measurements (in mm) of two specimens from Veracruz were: greatest length of baculum, 0.7, 0.8; greatest breadth at base, 0.8, 0.9.

Phillips and Jones (1969) studied dentitions of 116 specimens

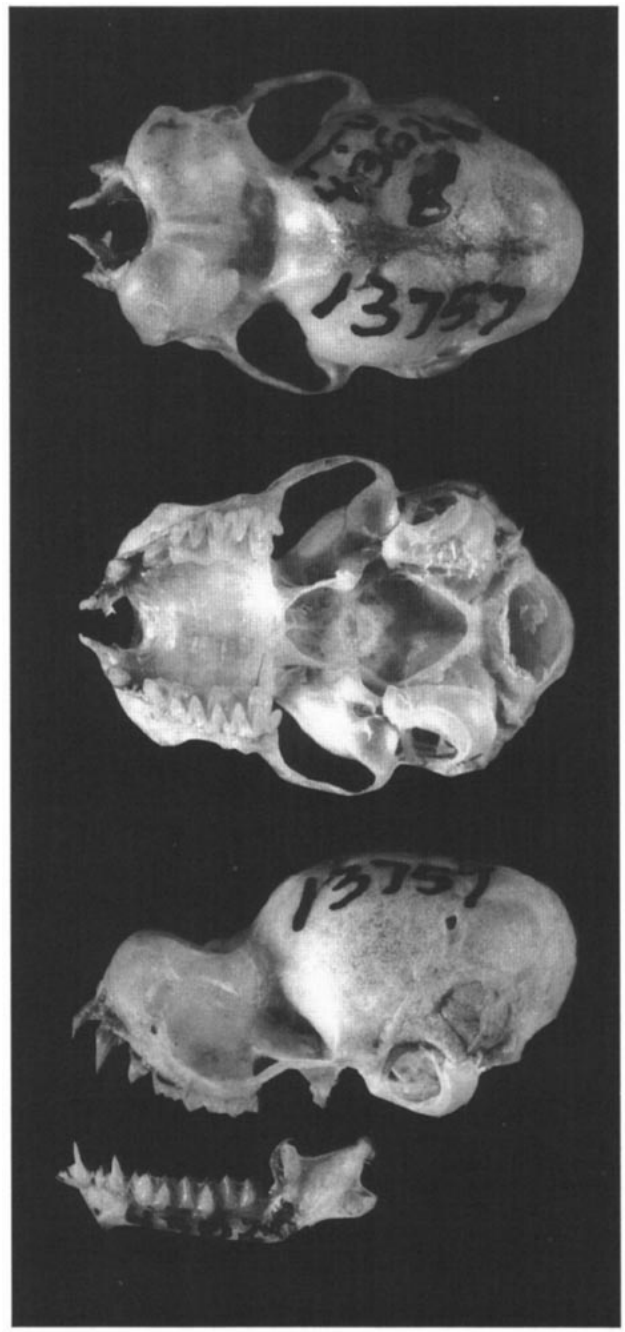

FIG. 1. Dorsal, ventral, and lateral views of cranium, and lateral view of lower jaw of *Balantiopteryx io* (Texas Tech University 43628, ♂) from Tabasco. Greatest length of skull, excluding incisors, is 12.9 mm.

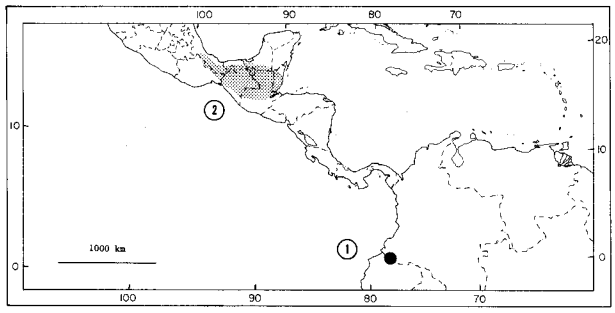

FIG. 2. Locality of record (1) for *Balantiopteryx infusca* and distribution (2) of *B. io*.

and found two males from Guatemala with supernumerary first upper premolars on each side that closely resembled the small upper premolar; in each case both small premolars on each side bore evidence of wear. They also found an adult female and adult male that lacked the first upper premolar on the left side, with no trace of an alveolus. Five other specimens had lost teeth in life.

Strickler (1978) figured the scapula, clavicle, humerus, and shoulder musculature of *B. io*, and compared the osteology and myology of the shoulder region with that of other chiropterans. He reported an aspect ratio of 7.41 for this species, which he described as a moderately fast flier.

ONTOGENY AND REPRODUCTION. Few data have been published on reproduction in this species and none is available on growth and development. Gravid females, all with one fetus, have been recorded from the months of March, April, May, and July (Baker and Greer, 1960; Hall and Dalquest, 1963; Villa-R., 1967). Crown-rump lengths of fetuses were 9 mm in March and 17 and 20 mm in May. Average length of testes of nine January-taken males from Guatemala was 1.4 (1 to 2) mm; none of 26 females taken there in January was pregnant (Jones, 1966).

ECOLOGY AND BEHAVIOR. Published information on natural history of *B. io* is anecdotal. The species roosts predominantly in caves, selecting dimly lit areas near the cave entrance, but Hall and Dalquest (1963) found individuals as deep as 300 m in one cave and Baker and Greer (1960) also observed these bats in a dark cave chamber. Hall and Dalquest (1963:215) reported that 500 to 1,000 individuals in a cave in Veracruz all "hung singly, and usually more than nine inches from one another. They preferred to hang from the tops of pits and crevices but some hung from the open, flat ceiling." These authors (1963:216) also reported *B. io* as roosting "in deep, dark crevices and masses of stalactites" that hung from faces of cliffs. Sanborn (1936:95) reported these sac-winged bats as being shot from a crevice in a limestone cliff in Guatemala—the crevice forming a "cave 100 feet long, 100 feet high, and from two to four feet wide." Only two females were found among 89 specimens collected by Hall and Dalquest (1963) at one locality in Veracruz, although essentially equal sex ratios also have been reported. Thomas' sac-winged bat is found primarily in areas of lowland tropical forest, but it has been reported also from "upland broadleaf seasonal forest" in Guatemala (McCarthy, 1982:683).

Other bats reported as inhabiting caves with *B. io* include: *Saccopteryx bilineata, Pteronotus parnellii, Glossophaga soricina, Artibeus jamaicensis, Desmodus rotundus, Diphylla ecaudata*, and at least two species of *Myotis* (Hall and Dalquest, 1963; Kirkpatrick et al., 1975; Schaldach, 1965). Hall and Dalquest (1963) reported that specimens had small red mites attached to the uropatagium, wings, and ears.

GENETICS. Chromosomal structure of a number of emballonurine bats was reported by Baker and Hood (1986), but the karyotype of *B. io* has not been described.

Balantiopteryx infusca (Thomas, 1897)

Ecuadorian Sac-winged Bat

Saccopteryx infusca Thomas, 1897:546. Type locality "Cachavi, N. Ecuador" [Río Cachabí, 150 m, Esmeraldas, Ecuador].

B[alantiopteryx] infusca: Thomas, 1904:252, first use of current name-combination.

CONTEXT AND CONTENT. See account of *B. io* above. *Balantiopteryx infusca* is a monotypic species.

DIAGNOSIS. Medium in size among three species of genus, but nearer *B. plicata* than *B. io*; length of forearm 37.5 to 40.5; inner margin of ear slightly concave; braincase elongate posteriorly, resembling condition in *B. plicata* and less rounded than in *B. io*; moderate frontal depression; rostrum inflated both anteriorly and posteriorly; mesopterygoid fossa narrow as in *B. plicata* (Hill, 1987; Thomas, 1897).

GENERAL CHARACTERS. *Balantiopteryx infusca* was described by Thomas (1897:546) as similar to *B. plicata* "but rather smaller and thickly built, much darker in colour, with decidedly narrower ears, less hairy interfemoral [membrane], and no white line along the posterior edge of the wing membrane." The dorsum was characterized as "dark chestnut-brown." Thomas further noted that the uropatagium was thinly haired to the level of exsertion of the tail. In addition to being narrow and slightly concave on the inner margin, the ear was described as narrowly rounded at the tip and with the outer margin straight, slightly convex proximally.

Although Thomas (1897) had at hand five specimens of *B. infusca*, three skins with skulls and two individuals in spirits (Carter and Dolan, 1978; Hill, 1987), he described only one of the latter (the holotype, now known to be BM(NH) 97.11.7.73), giving for it but four external measurements; no cranial dimensions were listed because the skull had not been removed at that time. In the original description of *B. io*, Thomas (1904) noted (somewhat incorrectly) that the skull of that species agreed in size with the skull of *B. infusca*. Hill (1987) provided measurements for the five specimens and the first published cranial measurements for the species. He graciously provided us with a copy of his manuscript, from which length of forearm in the Diagnosis (five specimens) and the following ranges of cranial measurements (two to four specimens, in mm) were taken: greatest length of skull, 12.9 to 13.5; condylobasal length, 11.5 to 11.8; condylocanine length, 11.0 to 11.2; rostral width, 5.4 to 5.7; least interorbital width, 4.8 in all; least postorbital width, 2.9 to 3.3; zygomatic breadth, 8.4 (type only); breadth of braincase, 6.6 to 6.9; depth of braincase, 5.1 to 5.3; length of maxillary toothrow, 4.6 to 4.8; breadth across third upper molars, 5.7 to 5.8; length of lower c–m^3, 4.7 to 4.9. External measurements of the holotype listed by Thomas (1897) included: length of head and body, 42; length of tail, 13; length of ear, 11.3.

DISTRIBUTION. Presently known only from the type locality in northwestern Ecuador (Fig. 2), which Carter and Dolan (1978) located as approximately 6 km N, 107 km E Esmeraldas (1°N, 78°40′W).

ECOLOGY. The five known specimens of this species were taken from a cave in the bank of the Río Cachabí (Carter and Dolan, 1978; Hill, 1987).

REMARKS. *Balantiopteryx infusca* is among the least known of South American bats. The five extant specimens, all in the British Museum (Natural History), were collected by W. F. H. Rosenberg on 5 January 1897.

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J. ARROYO-CABRALES AND J. K. JONES, JR., THE MUSEUM AND DEPARTMENT OF BIOLOGICAL SCIENCES, TEXAS TECH UNIVERSITY, LUBBOCK 79409.