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Artibeus hirsutus and Artibeus inopinatus.

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Artibeus hirsutus Andersen, 1906

Hairy Fruit-eating Bat

Artibeus hirsutus Andersen, 1906. Type locality La Salada, Michoacán.

Artibeus inopinatus Davis and Carter, 1964

Honduran Fruit-eating Bat

Artibeus inopinatus Davis and Carter, 1964. Type locality Choluteca, 10 ft, Honduras.

CONTEXT AND CONTENT. Order Chiroptera, Family Phyllostomidae, Subfamily Stenodermatinae, Tribe Stenodermatini. The genus *Artibeus* contains approximately 13 extant species. *Artibeus hirsutus* and *A. inopinatus* currently are regarded as monotypic species.

DIAGNOSIS. Bats of the genus *Artibeus* differ from other stenodermatines in the following combination of characters: length of rostrum slightly more than half that of braincase; inner upper incisor bifid, slightly larger than outer but not twice as large; third molars present or absent, if present minute and peglike; interpterygoid space not extended forward as a deep palatal emargination. There is no tail and the interfemoral membrane is narrow.

The hairy and Honduran fruit-eating bats are closely related (Davis and Carter, 1964) and can be distinguished from other large (length of forearm more than 48 mm, greatest length of skull more than 24 mm) congeners in that they are the smallest species in that grouping and possess a fringed to densely-furred uropatagium (Fig. 1). *Artibeus hirsutus* differs from *A. inopinatus* in having a more densely-furred interfemoral membrane, a broad spine on the posterior border of the palate that projects into the interpterygoid space, and in being larger in most external and cranial measurements (Davis and Carter, 1964; Hall, 1981; Fig. 2).

GENERAL CHARACTERS. Anderson (1960) found no significant secondary sexual variation in 28 adult *A. hirsutus* from Guerrero. Selected average external and cranial measurements (mm, extremes in parentheses) of six female *A. hirsutus*, followed by those of eight female *A. inopinatus*, are (Davis and Carter, 1964): length of forearm (including wrist), 55.7 (52.0 to 58.4), 52.0 (51.7 to 52.3); greatest length of skull (including canines), 26.7 (26.2 to 27.3), 25.5 (25.0 to 26.0); zygomatic breadth, 16.7 (16.4 to 17.2), 15.7 (15.4 to 16.3); postorbital breadth, 6.7 (6.6 to 6.8), 5.6 (5.5 to 5.8); length of maxillary toothrow, 9.9 (9.8 to 10.0), 8.9 (8.8 to 9.2); length of mandibular toothrow (c-m3), 10.6 (10.5 to 10.8), 9.7 (9.5 to 10.0). The average weight (g, extremes in parentheses) of the same individuals was 39.6 (32.0 to 47.2) and 29.3 (24.7 to 35.9).

The dental formula of *A. hirsutus* and *A. inopinatus* is i 2/2, c 1/1, p 2/2, m 3/3, total 32; however, third molars may be absent in both species. One of 88 *A. hirsutus* examined by Anderson (1960) lacked the third molar both above and below, eight others lacked M3 on both sides, whereas three bats lacked that tooth on one side. The third upper molars were absent in one of five *A. inopinatus* from El Salvador (Burt and Stirton, 1961). In addition, a specimen of *hirsutus* from Guerrero had a supernumary lower incisor (Farney, 1976).

DISTRIBUTION. Both species are limited to tropical North America (Fig. 3). *A. hirsutus* is known from western México (central Sonora southeastward to Morelos and Guerrero) and *A. inopinatus* is known along the Pacific versant of Middle America from El Salvador to Nicaragua (Jones and Carter, 1976; Hall, 1981). *A. hirsutus* occurs from near sea level to 2,575 m in elevation, whereas *A. inopinatus* is known from only as high as 190 m.

FORM. The morphology of the brains of *Artibeus hirsutus*, *A. inopinatus*, *A. jamaicensis*, and *A. lituratus* is similar. Each has relatively well-convoluted cerebral hemispheres and well-developed major sulci, the pseudotemporal lobes are angled ventrally, the inferior colliculi are not exposed dorsally, and the crested cerebellum has small secondary foliations on the lateral edges of the vermiform body (McDaniel, 1976). The endocranium volume of *A. hirsutus* averages 0.756 cm^3 and the area of the foramen magnum averages 17.92 mm^2 (Findley, 1969).

The stomach morphology of *A. inopinatus* is similar to those of six other congeners (*aztecus*, *jamaicensis*, *lituratus*, *phaeotis*, *toltecus*, and *watsoni*) and *Centurio senex* (Forman et al., 1979). All have a greatly enlarged cardiac vestibule in which large amounts of plant material can be stored, a narrow zone of transition between the fundic and pyloric mucosa, a symmetrical pyloric sphincter with a long and thin valve flap (relative to non-frugivores), and a long (relative to body length) small intestine. They possess few if any Brunner's glands and the pyloric glands react strongly with Hales' colloidal iron.

The dactylopatagium minus of *A. hirsutus* is broad, semitransparent, and permanently open between the second and third digits (Vaughan, 1970).

FUNCTION. Carpenter and Graham (1967) examined the physiological responses of *Artibeus hirsutus* to various ambient temperatures. Body temperatures of 29°C and 39.2°C were recorded at ambient temperatures of 5°C and 38°C, respectively. Although *A. hirsutus* did not enter torpor, shivering was irregular at the ambient temperature of 7.5°C and continual at 3.5°C. The minimal metabolic rate was 2.36 cm^3 O_2 g^{-1} hr^{-1} at the thermal neutral point of 30°C, but increased to 3.40 cm^3 O_2 g^{-1} hr^{-1} at 38°C, presumably a result of excessive panting to reduce body heat. Water loss was less than 4.1 mg H_2O g^{-1} hr^{-1} at ambient temperatures less than 30°C, but was 11.6 mg H_2O g^{-1} hr^{-1} at 38°C. Minimal rates of respiration occurred between T_A = 30–35°C; the respiratory rate increased sharply to 462 breaths min^{-1} at 38°C, and a gradual increase in respiration occurred as ambient temperatures dropped from 30°C reaching approximately 150 breaths min^{-1} at 5°C.

ONTOGENY AND REPRODUCTION. Pregnant females of *A. hirsutus* have been collected in the months from February to September except March, and lactating females have been taken in June, August, and September (Wilson, 1979). Spermatogenesis, copulation, parturition, and lactation apparently occur at the same time within a population (Findley and Jones, 1965), which tends to support Anderson's (1960) contention that the hairy fruit-eating bat

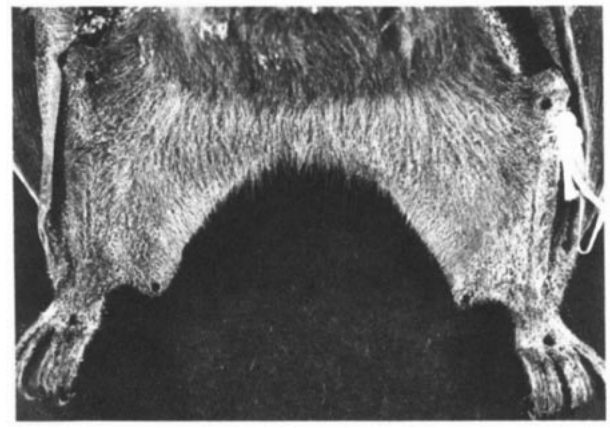

FIGURE 1. Uropatagium of *Artibeus hirsutus* illustrating densely-furred condition.

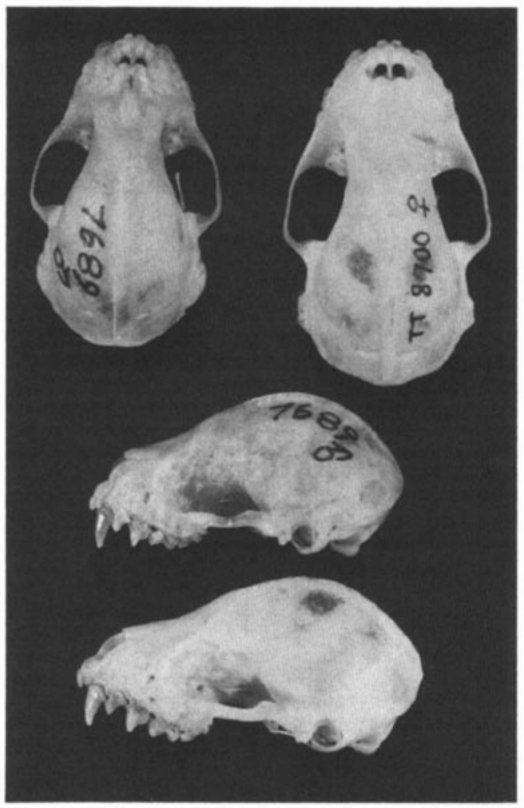

FIGURE 2. Dorsal and lateral views of skulls of *Artibeus inopinatus* (left, middle), TTU 7689, ♂, from 6 km E Amatillo, Honduras, and *A. hirsutus* (right, lower), TTU 8700, ♀, from 2.5 mi SW (by road) Atenquique, Jalisco. Greatest length of skull of *A. hirsutus* is 27.7 mm.

FIGURE 3. Distribution of *Artibeus hirsutus* (1) and *A. inopinatus* (2). Scale represents 1,000 km.

lacks a restricted breeding season. Eight August-taken males from Jalisco had testes that averaged 7.8 mm (range 6 to 9) in length (Watkins et al., 1972).

There is little reproductive information available for *A. inopinatus*. Juveniles were collected in August in Honduras (Davis and Carter, 1964) and Nicaragua (Baker and Jones, 1975), and lactating females are known from Honduras in July (Dolan and Carter, 1979). Additional females with enlarged nipples, now deposited in The Museum, Texas Tech University, were collected in El Salvador and Honduras in May and July, and pregnant females were captured in Honduras in May.

ECOLOGY. *Artibeus hirsutus* has been collected most frequently in mist nets over ponds and streams, and in mango and fig orchards. Recorded daytime roosts include abandoned mines, small caves, buildings, and beneath boulders. Davis and Russell (1952) noted that *Artibeus hirsutus* was separated ecologically from *A. jamaicensis* in Morelos; the former was collected in arid upland environments, whereas the latter was captured along streams in tropical vegetation.

Other species of bats collected with the hairy fruit-eating bat include *Balantiopteryx plicata*, *Mormoops megalophylla*, *Pteronotus parnellii*, *P. davyi*, *P. personatus*, *Macrotus waterhousii*, *Glossophaga soricina*, *Choeronycteris mexicana*, *Anoura geoffroyi*, *Leptonycteris sanborni*, *L. nivalis*, *Sturnira lilium*, *Chiroderma salvini*, *Artibeus jamaicensis*, *Desmodus rotundus*, *Natalus stramineus*, *Myotis yumanensis*, *Lasiurus borealis*, *Tadarida brasiliensis*, *T. femorosacca*, and *T. macrotis* (Anderson, 1960, 1972; Baker and Christianson, 1966; Cockrum and Bradshaw, 1963; Genoways and Jones, 1968; Jones et al., 1972; Loomis and Davis, 1965; Lukens and Davis, 1957; Packard and Judd, 1967; Villa-R., 1967).

Artibeus inopinatus is restricted to thorn-scrub habitats (Dolan and Carter, 1979), and has been collected in mist nets placed over streams (Davis and Carter, 1964) and in banana groves (Baker and Jones, 1975). Unoccupied houses are known to serve as daytime roosts. Other bats taken with *A. inopinatus* include *Balantiopteryx plicata* and *Myotis albescens* (Dolan and Carter, 1979).

Trombiculid mites (*Perissopalla beltrani*) and streblid batflies (*Trichobius intermedius*) are known from the hairy-fruit eating bat (Webb and Loomis, 1977).

GENETICS. Hairy and Honduran fruit-eating bats have a diploid chromosome number of 30 (females) or 31 (males) and a fundamental number of 56; the X- and Y_1-chromosomes are subtelocentric and the Y_2-chromosome is acrocentric (Baker, 1979).

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