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THE IDENTITY OF *BRADYPUS VARIEGATUS* SCHINZ
(MAMMALIA, EDENTATA)

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A brown-throated, three-toed sloth from Brazil, in the Frankfurt Museum, was described by Schinz (1825:510) as "*Brad. variegatus*," the "Geflecktes Faulthier." *B. variegatus* is an earlier name for the brown-throated sloth than *B. infuscatus* Wagler, 1831:611, currently used for that species.

Schinz's specimen, a former museum exhibit mount plus skull, is still in the collection of the Natur-Museum und Forschungsinstitut Senckenberg, Frankfurt am Main. The skin and skull, SMF 4313 (old catalogue No. VIII.A.1.a), have been examined by both authors. The specimen was acquired in 1822 from the collector Freireiss who was sponsored by Baron Rothschild to obtain Brazilian specimens for the Senckenberg Museum. Labels on the skin indicate that it is the type of *B. variegatus* Schinz, and that it was compared (by Rüppell, 1842b) with Prince Maximilian Wied-Neuwied's illustration of *B. tridactylus* L. and believed to be a synonym of that species.

The coloration and pattern of the skin of SMF 4313 fit Schinz's description. Apparently this actually is the specimen that he described.

Because of the good quality of preservation, the skin and skull of SMF 4313 retain the necessary features for specific identification. Both represent the same species. The specimen is not of the maned sloth, *Bradypus torquatus* Illiger of

Espírito Santo and eastern Bahia, Brazil, for the skin lacks the distinctive long black tufts of posterior nuchal hair, the black neck and head, and the unique dorsal pelage of *B. torquatus*, and the skull does not have the expanded pterygoid sinuses characteristic of that species. On the other hand, it also is not of *B. tridactylus* L. of coastal Guiana, the Guyana Highlands, and the adjoining northern Amazon basin. The throat and sides of the forehead are brown as in *B. infuscatus*, not light yellow or buff as in *B. tridactylus*, and the skull lacks the foramina of the anterodorsal nasopharynx seen in *B. tridactylus*. In all respects, both skin and skull agree with *Bradypus infuscatus* Wagler whose holotype has been examined by the senior author.

The history of the name *B. variegatus* Schinz has been an unfortunate one. Gray (1843:192) placed it in synonymy with *B. torquatus*, as did later authors such as Fitzinger (1871:391) and Cabrera (1958:210). This was done despite the evidence that Schinz (1821:328 and 1825:432) recognized *B. torquatus* as a distinct species. Wied-Neuwied (1823, 1826) recognized only two species, *B. torquatus* and what he called *B. tridactylus*. It is probable that he was not familiar with the actual *tridactylus* as he used the specific name but illustrated (1823) the brown-throated species later known as *B. infuscatus* (shown here to be *variegatus*). Because of the usually high quality of Wied-Neuwied's observations, it seems unlikely that he had seen both species and lumped them together as *B. tridactylus*.

Rüppell (1842b:178), working with the Frankfurt collection, continued the use of the name *B. tridactylus* L. for the *variegatus* (= *infuscatus*) species. Although he did not cite *variegatus* Schinz, he included the type-specimen of *variegatus* (specimen VIII.A.1.a) under *tridactylus*, as he found the specimen similar to that figured by Wied-Neuwied (1823). As Frankfurt had, by this time, a three-toed sloth from "die Wälder von Guiana," Rüppell (1842a:138) recognized the difference between the two species by erecting a new name, *B. gularis*, which is a junior synonym of *B. tridactylus* L. A syntype (labeled "cotype") for *B. gularis* Rüppell is SMF 4312, skin and skull, which Mertens (1925:23) considered to be the type.

His decision, therefore, should be accepted as a selection of a lectotype.

Bradypus variegatus Schinz is a valid name because of priority. On the basis of repeal of "the fifty year rule," Article 23 (b), and the expiration, in December, 1970, of the substitute article (Declaration 43, Bull. Zool. Nomencl., 27 (3/4):135, Dec. 1970), *Bradypus infuscatus* Wagler is a junior synonym. An incomplete synonymy, restricted to names from Venezuela and Colombia east of the Andes, the greater Amazon basin and the remainder of Brazil, follows. Although by inference the name *B. variegatus* will replace *B. infuscatus* elsewhere in its range, a broader geographic list of synonymies will be deferred until the senior author has completed his study of the three-toed sloths. Holotypes examined by the senior author are cited with the following abbreviations indicating their repositories: BMNH = British Museum (Natural History), London; NRMS = Naturhistoriska Riksmuseet, Stockholm; SMF = Natur-Museum und Forschungsinstitut Senckenberg, Frankfurt am Main; and ZSM = Zoologische Sammlung des Bayerischen Staates, Munich.

Bradypus variegatus Schinz

Brad. [ypus] variegatus Schinz, 1825:510.

Bradypus tridactylus.—of authors, not of Linné, 1758:34: Schreber, 1775:197 & 279 in part, and Pl. 64; Wied-Neuwied [1823, plate and description], 1826:482; Wagler, 1830:7; Blainville, 1839:762-764; Rüppell [1842b:178]; Gray, 1847:xvi, 74; Cornalia, 1850:303, in part; Ihering, 1894:16; Mertens, 1925:23; Tate, 1939:173 in part, 1947:66; Sanderson, 1949:783, in part; Méndez, 1951:211; Vieira, 1953:210, 218, 1955:401 in part.

Bradypus Ai Wagler, 1831:605, 610; Thomas, 1917:354. Type-locality: Rio Matheus, Espírito Santo (Thomas, *ibid.*).

Bradypus infuscatus Wagler, 1831:605, 611; Wagner, 1844:vii, 148, 149; Schinz, 1845:543; Fitzinger, 1871:338 & 363, in part; Thomas, 1880:402, 1917:354; Pelzeln, 1883:98; Ihering, 1904:424; Vieira, 1949:241, 270; Sanderson, 1949:783; Cabrera, 1958:209. Type-locality: "Brazil versus Peru" on label of holotype, restricted to confluence of Rio Iça and Rio Solimões, Amazonas, by Cabrera (1958:209). Holotype: ZSM 1162.

Bradypus tridactylus Brasiliensis Blainville [1840:64, Pls. 3, 4]; Cornalia, 1850:311; Vieira, 1950:335, 1955:401. Type-locality: Rio de Janeiro.

Acheus ustus Lesson, 1840:271. Type-locality: Rio de Janeiro.

- Bradypus torquatus*.—of some authors, in part; not of Illiger, 1811:109 nor of Desmarest, 1816:327; Gray, 1843:192; Fitzinger, 1871:390; Cabrera, 1958:210.
- Bradypus pallidus* Wagner, 1844:vii, 143, 1855:170; Schinz, 1845:543; Fitzinger, 1871:338 & 350, in part; Pelzeln, 1883:97; Thomas, 1917:354. Type-locality: Ipanema, São Paulo (Pelzeln, *ibid.*; Vieira, 1955:401).
- Arctopithecus marmoratus* Gray, 1849:71, 1862:291, 1869:364, 1871:439, 443, 1873:5; Turner, 1851:208. Type-locality: restricted to "Pará" by Cabrera (1958:210). Holotype: BMNH skin 42.4.29.20, skull 49.4.13.2.
- Arctopithecus problematicus* Gray, 1849:73, Pl. 11, Fig. 5, 1862:290, 1869:365, 1871:439; Thomas, 1917:354. Type-locality: "Pará" (Gray, 1849:73). Holotype: BMNH 44.10.9.34.
- Bradypus trivittatus* Cornalia, 1850:303, 310, 311. Type-locality: Rio Amazonas to Rio Napo.
- Arctopithecus blainvillii*.—Gray, in part: ?1862:291, 1869:365, 1871:439, 441-442, 1873:4; not of Gray, 1849:71 and holotype BMNH 49.5.5.1.
- Arctopithecus flaccidus*.—Gray, in part: 1871:439, 448, 1873:5; not of Gray, 1849:72, Var. 1 and 2, nor 1869:365, Var. 1 *Dysoni* (holotype: BMNH skin 47.7.18.3, skull 49.4.13.3) and Var. 2 *Smithii* (holotype: BMNH skin 45.3.11.5, skull 49.5.5.2).
- Bradypus brachydactylus* Wagner, 1855:173; Fitzinger, 1871:372 in part; Pelzeln, 1883:97; Thomas, 1917:354. Type-locality: Borba, Rio Madeira, Amazonas (Pelzeln, *ibid.*; Vieira, 1955:402).
- Bradypus dorsalis* Fitzinger, 1871:355, in part; Thomas, 1917:354. Type-locality: Pernambuco (Thomas, *ibid.*).
- Bradypus marmoratus*.—Fitzinger, 1871:367, in part; Pelzeln, 1883:98; Goeldi and Hagmann, 1904:90; Hagmann, 1908:27; Thomas, 1917:354; Lönnberg, 1942:13, in part; Sanderson, 1949:783.
- Bradypus unicolor* Fitzinger, 1871:362, in part; Thomas, 1917:354. Type-locality: Pará to Rio Grande do Norte; restricted to "Pará" by Vieira (1955:402).
- Bradypus speculiger* Fitzinger, 1871:372 as synonym of *B. brachydactylus*; Thomas, 1917:354.
- Bradypus ustus*.—Liais, 1872:341.
- Bradypus brasiliensis*.—Thomas, 1917:354; Cabrera, 1917:59; Sanderson, 1949:783.
- Bradypus smithii*.—Thomas, 1917:354; not of Gray, 1869:365.
- Bradypus blainvillei*.—Thomas, 1917:354; Krumbiegel, 1941:53, 55; not of Gray, 1849:71.
- Bradypus macrodon* Thomas, 1917:356; Krumbiegel, 1941:53, 55. Type-locality: Sarayacu, Pastaza, Ecuador. Holotype: BMNH 80.5.6.56.
- Bradypus tridactylus flaccidus*.—Pittier and Tate, 1932:254, in part; not of Gray, 1849:72.

- Bradypus flaccidus*.—Krumbiegel, 1941:53, 55; Sanderson, 1949:783 as *B. flaccions*; not of Gray, 1849:72.
- Bradypus tocaninus* Lönnberg, 1942:5. Type-locality: Cametá, Rio Tocantins, Pará. Holotype: NRMS 501.
- Bradypus miritibae* Lönnberg, 1942:8. Type-locality: Miritiba, Maranhão. Holotype: NRMS 9.
- Bradypus marmoratus codajazensis* Lönnberg, 1942:15. Type-locality: Codajáz, Amazonas. Holotype: NRMS 1054.
- Bradypus infuscatus subjuranus* Lönnberg, 1942:21. Type-locality: Lago Grande, Rio Juruá, Amazonas. Holotype: NRMS 2474.
- Bradypus tridactylus infuscatus*.—Vieira, 1955:401.
- Bradypus tridactylus miritibae*.—Vieira, 1955:402.
- Bradypus tridactylus tocaninus*.—Vieira, 1955:402.
- Bradypus infuscatus brasiliensis*.—Cabrera, 1958:208.
- Bradypus infuscatus flaccidus*.—Cabrera, 1958:209 in part; Ojasti and Mondolfi, 1968:447, Fig. 30; not of Gray, 1849:72.
- Bradypus infuscatus marmoratus*.—Cabrera, 1958:210.

Holotype: SMF 4313, male, museum exhibit mount and separated skull.

Type-locality: Brazil, possibly Bahia (Mertens, 1925:23).

Range: All suitable habitats in Venezuela east of the Andes except for the Guyana Highlands (state of Bolívar and highland portion of T. F. Amazonas) and the delta of the Río Orinoco (T. F. Amacuro), continuing through the forests east of the Andes in Colombia and Ecuador, to eastern and southern Brazil and the province of Misiones, Argentina. The northern limits of the species in Brazil are the islands of Mexiana and Marajó in the east, westerly along the Rio Amazonas (occasionally also on the north bank of the Amazonas to the Rio Negro), where it overlaps with *B. tridactylus* to Manaus, and throughout the forests of northern Brazil west of the Rio Negro. A statement of the distribution of the three-toed sloths in Bolivia and northwestern Argentina (*Bradypus boliviensis* Gray) or those west of the Andes from Venezuela to Central America will not be attempted until the relationship of those sloths with *B. variegatus* is clarified.

Comments: *Bradypus variegatus* Schinz has a continuous brown pelage on the shoulders, neck, throat, and sides of the face. This is in distinct contrast to that of *B. tridactylus* L. whose throat is light or yellowish buff, continuous with the light color of the forehead. Both species have brown shoulders and legs and show considerable variation in the pattern of spots or splotches of lighter color on the back. The presence of foramina in the anterodorsal nasopharynx of *B. tridactylus* and their absence in the much larger skull of *B. variegatus* have been mentioned above. (See also Thomas, 1917:353.)

The reasons for restriction of the name *B. tridactylus* L. have been pointed out by Thomas: The first reference by Linné (1758:34) was to his sixth edition of *Systema Naturae*, which in turn used Seba's thesaurus as first reference. Thomas (1911:132) therefore suggested

that Surinam should be the type-locality for *B. tridactylus* L. In addition, the senior author has examined the skull (BMNH 67.4.12.579) of the specimen determined by Thomas (1892:314) to be that figured by Seba and thus the holotype of *B. tridactylus* L. The skull is similar to those of all other specimens of three-toed sloths from the Guyana Highlands and delta of the Orinoco of Venezuela, all of Guyana, Surinam, French Guiana, and adjoining northeastern Brazil.

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