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## REVIEW OF THE SPIDER MONKEYS

By REMINGTON KELLOGG and E. A. GOLDMAN

Field studies have shown that the forest-inhabiting spider monkeys of the New World are subject to plasmodial infections under natural conditions and consequently, since they are readily obtainable, are now being used in laboratory studies of the malaria plasmodium. Spider monkeys are readily tamed and very adaptable to a life in captivity. Owing to their docility they are easily handled by laboratory assistants, and it is not difficult to provide suitable vegetable food for them. For these reasons it is important to establish, if possible, the valid geographic races of these monkeys, to determine in so far as available collections permit the geographic ranges of the recognized forms, and to set forth the characteristics by which the several races can be recognized with some degree of certainty.

The spider monkeys form a compact group, or subfamily, the Atelinae, of the primate family Cebidae. They are characterized by slender body, very long, slender limbs, and long tail, naked beneath distally and prehensile; the hand has only four functional fingers, the thumb being usually vestigial or absent.

These monkeys, in structure and habits, show high specialization and adaptation to a strictly arboreal life. They are limited in range to the unbroken tropical forests from southern Mexico to northern Matto Grosso, Brazil, and central Bolivia in South America. In the forest areas inhabited, often including steep mountain slopes, large trees have interlocking branches through which the spider monkeys are able to travel in long leaps at amazing speed, using the tail constantly as a powerful grasping organ for balancing, and swinging to differing levels. A spider monkey in a cage is seen at a disadvantage

compared, for example, with so active an animal as the gibbon, but the reason for this seems to be that room is lacking for the exercise of its full powers. It is interesting to speculate on the comparative speed that might be attained under natural conditions by these widely different but both outstandingly active New World and Old World representatives, respectively, of the order to which they belong. In following spider monkeys in the forest a man may keep up by running if the ground is clear, but if impeded by having to go around underbrush he is quickly left behind. Spider monkeys are considered very good to eat by the native populations of many countries and are, therefore, in danger of extermination.

Many names for spider monkeys have been based on inadequate descriptions of animals from unknown localities, and if a type specimen was used it may no longer be extant. The result has been great confusion in the literature bearing on the identification of material, and of the distribution of the nominal species recognized little has been known.

The status even of the generic name *Ateles* has been open to question. The spider monkey *S[imia] Sapajus paniscus* was included among the 14 monkeys allocated to *Sapajus* when this subgenus was proposed by Kerr (The Animal Kingdom, Cl. I, Mammalia, p. 76, 1792). No genotype seems to have been designated for the subgenus *Sapajus* Kerr, unless the statement made by J. A. Allen (Bull. Amer. Mus. Nat. Hist., vol. 7, p. 181, June 20, 1895) that *Sapajus* of Kerr is equivalent to *Cebus* Erxleben, 1777, can be interpreted as restricting the application of the term *Sapajus* to the species of *Cebus* included among the 14 monkeys mentioned above. In order to eliminate any possible misinterpretation, the genotype of *Sapajus* Kerr is here designated as *S[imia] Sapajus capucinus* Kerr (*op. cit.*, p. 78, 1792), which is the same as *S[imia] capucina* Linnaeus, 1766 (*nec* 1758). Inasmuch as the genotype of *Cebus* Erxleben, 1777, has been fixed (Elliott, Field Columbian Mus. Publ. 115, zool. ser., vol. 8, p. 560, Mar. 4, 1907) by subsequent designation as *Simia capucina* Linnaeus, 1766 (*nec* 1758), which in turn is equivalent to *Cebus nigrivittatus* Wagner (see Cabrera, Rev. Soc. Argentina Cienc. Nat., vol. 16, pp. 21-22, 1939), *Sapajus* Kerr is herewith relegated to the synonymy of *Cebus* Erxleben.

Neither opinion 147 (On the principles to be observed in interpreting article 34 of the International Code in relation to the rejection, as homonyms of generic and subgeneric names of the same origin and meaning as names previously published, Opinions and declarations rendered by the International Commission on Zoological Nomenclature, London, vol. 2, pt. 14, pp. 123-132, Sept. 30, 1943) nor article 34 (International rules of zoological nomenclature, Proc. Biol. Soc. Washington, vol. 39, p. 86, July 30, 1926) contains an express ruling as to whether a

given generic name is a homonym of another previously published generic name that has the same origin and meaning but that differs from the latter in more than one letter. If the "one letter" rule is strictly adhered to, then *Sapajou* Lacepède (Tableau des divisions, sous-divisions, ordres et genres des mammifères, p. 4. Published as supplement to Discours d'ouverture et de clôture du cours d'histoire naturelle, et tableaux méthodiques des mammifères et des oiseaux, 1799) is the oldest available name for the spider monkeys. The genotype of *Sapajou* Lacepède is *Sapajou paniscus* Lacepède = *Simia paniscus* Linnaeus. Pending an opinion from the International Commission on Zoological Nomenclature, the generic name *Ateles* E. Geoffroy (Ann. Mus. Hist. Nat. Paris, vol. 7, p. 262, 1806), of which the genotype is likewise *Simia paniscus* Linnaeus, is here retained for the spider monkeys.

We have been unable to reach any satisfactory conclusions regarding the identity of one of the described spider monkeys allocated to this genus. The "Antigua Monkey" was described by Pennant (History of quadrupeds, vol. 1, p. 206 (no. 212), 1781) as follows:

M[onkey] with a short nose; black face, hair on each side long; back and sides orange and black, intimately mixed; belly white; outside of legs black; inside ash-colored; tail of a dusky ash; its length 20 inches; that of body eighteen.

Lately in possession of Richard Morris, Esq. of the Navy-Office; brought from Antigua; but its native place uncertain; very good-natured, lively, and full of tricks; frequently hung by its tail.

This monkey subsequently became the basis for [*Simia*] *Sapajus variegatus* Kerr (The Animal Kingdom, p. 79, 1792) and *Simia antiquana* Bechstein (Thomas Pennant's Allgemeine Uebersicht der vierfüssigen Thiere, vol. 1, p. 227, footnote, 1799). In our judgment these names apply clearly to a spider monkey, and quite likely to one of the Middle American subspecies, but since the characters given are not sufficient to identify the race positively, we believe both should be held unidentifiable. Since *Ateles variegatus* (Kerr) antedates *Ateles variegatus* Wagner, the latter being preoccupied must be supplanted by *Ateles belzebuth* E. Geoffroy, which also has priority.

Despite strongly contrasting patterns of color, differing lengths of pelage, and to some extent varying tail and foot proportions, the striking similarity of all the spider monkeys in the more essential cranial features seems to indicate close relationships. The nominal species are here reduced to four, and it seems to us probable that additional study of the genus based on more complete collections may result in a further lessening of the number. The most divergent forms are the black *paniscus* of French Guiana and the silvery-bellied *yucatanensis* of Quintana Roo. Perhaps the most clearly defined line of demarcation between species, as we understand them, is in eastern Panama, where the range of the deep reddish *panamensis*, a member of the

*geoffroyi* group, meets or closely approaches the range of the nearly all black *robustus*. The Rio Amazonas, however, seems to be an effective barrier separating the ranges of *A. paniscus paniscus* and *A. belzebuth marginatus*.

Several large series of specimens from the same locality have afforded us much information concerning the range of individual variation that may be expected in the genus *Ateles*. The thumb is normally represented by a short metacarpal, which ordinarily is not visible externally. When, in occasional individuals, a short proximal phalanx is retained it constitutes the vestigial nailless thumb. In two specimens of *vellerosus* (U. S. N. M. Nos. 74662, 74663) from Santa Efigenia, Oaxaca, and in one of the same form (A. M. N. H. No. 123282) from Cantoral, Honduras, these thumbs are present on one hand and not on the other. In one of *panamensis* (A. M. N. H. No. 141980) from Cañas Gordas, Costa Rica, the thumbs are present on both hands. In a specimen of *hybridus* from Guaimaral, Colombia, vestigial thumbs on both hands bear small nails. Lönnberg (Arkiv för Zool., vol. 32A, No. 25, p. 8, July 18, 1940) describes a well-developed thumb with a well-developed nail on one hand only in a specimen of *paniscus*, a small thumb present on the other hand being nailless. All three specimens of *paniscus* (A. M. N. H. Nos. 94134, 94135, 94136) from Rio Jamundá, near Faro, on the north bank of the Rio Amazonas, have thumbs on both hands, as already recorded by Tate (Bull. Amer. Mus. Nat. Hist., vol. 76, p. 215, Oct. 20, 1939). Two others from Lago Cuipeúa, farther east on the same bank of this river, however, are thumbless. Lönnberg (*op. cit.*) refers to the absence of thumbs in specimens of *Ateles ater* [= *chamek*] from various localities, but they are present on both hands in a skin (C. M. No. 2775) from Río Yapacani, Santa Cruz, Bolivia. The evidence thus presented indicates that vestigial thumbs occur irregularly throughout the genus, and no specific significance is attached to their presence or absence.

Certain cranial details believed by some authors to represent distinctive characters prove to be too variable to be of much value. As Lönnberg (*op. cit.*) has pointed out, some of the features mentioned as characters by Tate (*op. cit.*) in comparing species are subject to a wide range of variation. The antorbital or "malar foramen" varies from one or two "pin-holes" to rounded openings 5 mm. in diameter through the jugal. These often differ in size and number on the two sides of the same skull. Tate also refers to "small, triangular pterygoids without pointed tips" as a cranial character in *paniscus*. In the Cebidae the fossae between the true pterygoids and their external reduplications are large and deep in *Cebus*, reduced to a vestige in *Alouatta*, and entirely wanting in *Ateles*. The external reduplications of the pterygoids have the tips broken off in the

specimens of *paniscus* examined by Tate, but these winglike thin plates are in reality larger and more extended posteriorly in these and in other specimens of *paniscus* from the Amazonian region than usual in this genus. Other characters that have been ascribed by Tate to *paniscus* but that have not been found to be constant are the small size of postglenoid processes, unexpanded zygomata of nearly uniform depth, and narrow teeth. The maxillary tooth rows in the genus as a whole are normally straight and convergent anteriorly, although skulls with parallel or arcuate tooth rows are less frequently observed. All the teeth in the maxillary tooth rows may be large or small, and the individual teeth vary in size in relation to one another. The posterior molars appear to be the most variable. They are usually similar to the first premolars in crown area but may be either larger or smaller. Examination of a large number of spider-monkey skulls shows that the cranial and dental features mentioned are subject everywhere to about the same wide range of individual variation. Schultz (*Journ. Mammalogy*, vol. 7, No. 4, pp. 286-305, Nov. 1926) has discussed the relative ranges of variation in skull measurements and in the formation of the forehead in a series of *Ateles* taken in the immediate vicinity of one camp on the bank of the Río Yoya in Nicaragua.

Beyond the general similarity and the range of the usual individual variation in the forms of *Ateles* there are, however, a few cranial features that seem to be worthy of consideration. All the races of *Ateles geoffroyi* agree closely in the more important cranial details, but in the more northern subspecies *vellerosus* and *yucatanensis* the brain case is slightly narrower than in *panamensis* and other Middle American races. The South American species *A. paniscus* and *A. belzebuth* have a longer rostrum, a more strongly inclined backward facial profile, and more elongated nasal openings than *geoffroyi*. In *paniscus*, which appears to be the most divergent in cranial details, the posterior upper molars scarcely reach the transverse plane of the anterior roots of the zygomata, while in *geoffroyi* they normally pass well beyond this plane; other peculiar characters in *paniscus* are the broad, somewhat swollen base of the rostrum and the posterior extension of the external reduplications of the pterygoids. In cranial details, as well as in geographic position, *Ateles fusciceps robustus* is somewhat intermediate between *geoffroyi* and *paniscus*.

Specimens examined in series have shown that although spider monkeys present considerable variation in color the variation is within limits beyond which it does not normally pass, except as the usual intergradation that may be expected between regional races or subspecies. The coloration, length of pelage, and other external features, when determined by examination of specimens in sufficient numbers, prove to be more reliable indices to subspecific relationship

than any cranial characters found by us. In Middle America, for example, skulls of *vellerosus* from Mexico are distinctly narrower, with less noticeable widening of the brain case, than those of *panamensis*, but differ little in other respects and despite great differences in color are obviously assignable to the same species. Unlike many other primates the sexes in the spider monkeys differ little, if at all, in size. One of the largest skulls of *geoffroyi* is that of an old female from Lavalá, Nicaragua.

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In lists of specimens examined, the following abbreviations are employed:

- A. H. S., Collection of Dr. Adolph H. Schultz.
- A. M. N. H., American Museum of Natural History.
- C. D., Collection of Donald R. Dickey.
- C. M., Carnegie Museum.
- C. M. N. H., Cleveland Museum of Natural History.
- M. C. Z., Museum of Comparative Zoology.
- U. M. M. Z., University of Michigan, Museum of Zoology.
- U. S. N. M., United States National Museum.

All measurements are in millimeters. The external measurements were taken in the flesh by the collector as follows: *Total length*, nose to end of terminal vertebra; *tail*, upper base of tail to end of terminal vertebra; *hind foot*, back of heel to end of longest nail on digit. The following cranial measurements of typical adults, unless otherwise stated, were taken with vernier calipers by the authors: *Greatest length*, distance from anterior tip of premaxillae to inion or extreme posterior median point of brain case; *orbital* width, distance between outer margins of orbits; *postorbital constriction*, least width at constriction behind orbits; *width of brain case*, greatest width of brain case at or over mastoids; *zygomatic breadth*, greatest distance between outside surfaces of zygomata; *maxillary tooth row*, distance from front of canine to back of posterior upper molar at alveolar borders.

The following treatment is based on a review of the scattered literature and an examination of 251 specimens representing all the recognized species. The work has been done at the request of the Board for the Coordination of Malarial Studies of the National Re-

search Council in the laboratories of the Division of Mammals and of the U. S. Fish and Wildlife Service in the United States National Museum. The maps were drawn by Mrs. Katheryne C. Tabb, of the Fish and Wildlife Service. This review is intended to afford a working knowledge of the genus, pending more exhaustive revision as the species become better known.

### KEY TO SPIDER MONKEYS (GENUS ATELES)<sup>1</sup>

- A. General coloration of entire back chiefly black.
- B. Back and belly, as well as limbs and tail, wholly deep glossy black.
- C. Hairs on head wholly black (except for short, white mustache whiskers on upper lip and sparse, short, white chin whiskers); pelage deep glossy black.
- D. Foot rather large (length, heel to end of longest toe, 190–220 mm.).
- E. Tail normally bushy in adult (especially on upper basal half, longest hairs on upperside 50–100 mm. in length); face normally flesh color, occasionally freckled or black; hairs on back silky, lax, and long (majority of hairs on midline of back 75–150 mm. in length); tail often more than twice length of head and body. (North bank of Amazon east of Manáos and north to Caribbean coast of Guianas.)  
**paniscus**
- EE. Tail much less bushy but more densely furred in adult (longest hairs on upperside 40–65 mm. in length); face wholly black; hairs on back shorter (majority of hairs on midline of back 75 mm. or less); tail often more than twice length of head and body. (Western Matto Grosso, eastern Bolivia, and north-eastern Peru to Rio Solimões and Rio Juruá, Brazil.)-- **chamek**
- DD. Foot smaller (length, heel to end longest toe, 160–170 mm.); tail not noticeably bushy (the longest hairs on upperside 30–50 mm. in length); face wholly black, except for short, white mustache whiskers on upper lip and sparse, short, white chin whiskers; hairs on back harsh and of medium length (majority of hairs on midline of back 40–70 mm. in length); tail variable in length, occasionally nearly twice as long as head and body. (Serranía del Darién, Panama, to southwestern Colombia.)----- **robustus**
- CC. Hairs on head not wholly black; semilunar forehead patch and side whiskers on face white; remainder of body, limbs, and tail deep glossy black; foot medium (length, heel to end longest toe, 170–185 mm.); tail variable in length, occasionally more than twice as long as head and body. (State of Pará, Brazil, south of Amazon, between Rios Tapajós and Tocantins.)----- **marginatus**
- BB. Back and belly, as well as limbs and tail, not wholly deep glossy black; hairs on back black at base, and either black distally or with tips tinged with either burnt umber or seal brown.
- F. Crown cap tawny-olive, yellowish wood brown, or with black hairs tipped with burnt umber; underparts similar in color to upperparts; entire body, including limbs and tail, covered with black hairs tinged distally with burnt umber; foot small (length, heel to end longest toe, 150–170 mm.); tail variable in length, usually one-fifth or more longer than head and body. (Pacific side of cordillera of Ecuador.)---- **fusciceps**

<sup>1</sup> Colors mentioned in this key are shown in Robert Ridgway's "Color Standards and Color Nomenclature," 43 pp., 53 pls. Washington, 1912.

*FF.* Crown cap black, not tawny-olive, yellowish wood brown, or with hairs tipped with burnt umber; underparts conspicuously lighter in color than upperparts, line of demarcation between upperparts and underparts being sharply defined; general coloration of crown cap on head as well as rest of upperparts black; in some individuals these black hairs under strong light having a seal-brown tinge; triangular forehead patch yellow, golden, brownish yellow, or white (occasionally either entirely absent or more or less hidden by anterior stiff black hairs); side whiskers on face, when present, whitish or buffy (not present in some specimens); outer surfaces of forelimbs to elbows black; outer surfaces of forearms and wrists generally blackish but occasionally similar to underparts and intermixed with long dusky overhairs; outer surfaces of hind limbs usually blackish to knees or below, but in some specimens (particularly in eastern part of range) outer surfaces of hind limbs, including thighs and region around base of tail, distinctly straw-colored in ground color overlaid with sparse long black hairs (not numerous enough to affect general ground color); hairs on throat normally black, sometimes grayish, more or less concealed by black hairs; remainder of underparts, inner surfaces of fore and hind limbs, as well as under surface of tail, yellow, cinnamon-buff, dull cream-buff, or pale olive-buff; tail normally bicolored, upper surface being black and under surface similar to that of underparts (in occasional specimens upper surface of tail approximately same as that of under surface but more heavily interspersed with long black overhairs); foot large (length, heel to end longest toe, 190-200 mm.); tail variable in length but often almost twice length of head and body. (From near junction of Río Caura with Río Orinoco in Venezuela south to Río Negro in Brazil, westward to Colombia east of Cordillera Oriental (Mambita), Ecuador east of Andes, and northeastern Peru.)----- belzebuth

*AA.* General coloration of entire back not chiefly (jet) black.

*G.* A conspicuous white triangular forehead patch; general coloration of upperparts wood brown, darker on head and upper back and lighter on lumbar region and thighs; underparts, inner surfaces of fore and hind limbs, and under surface of tail whitish or buffy; side whiskers on face variable, sometimes whitish or buffy and sometimes dark wood brown. (Magdalena River Valley and adjacent mountains, Colombia.)----- hybridus

*GG.* No conspicuous white triangular forehead patch; general coloration of upperparts not wood brown.

*H.* General coloration of upperparts, except for head and shoulders on some individuals, tending toward light mahogany red; underside of tail, at least on basal half, deep cinnamon-rufous to ferruginous; back and shoulders grading from dark rusty reddish to ferruginous or burnt sienna, with varying admixture of overlying blackish hairs; underparts similar in color to back but with less noticeable admixture of blackish hairs; face, crown cap on head, and median streak on back of neck blackish; sides of neck covered with a mixture of pinkish-buff, cinnamon-buff, and blackish hairs; outer surfaces of fore and hind limbs either black or blackish to knees and elbows; outer surfaces of limbs below knees and elbows either black or with varying admixture of black and ferruginous hairs; a distinct ferruginous or cinnamon-buff streak along inner surface of arm from armpit to elbow. (Western side of



central cordillera of Costa Rica (Rfo Pirris) south to Cordillera de San Blas (Cerro Azul) of eastern Panama.)-----panamensis

III. General coloration of upperparts, except for head and shoulders, not uniform light mahogany red; underside of tail not deep ferruginous.

I. General coloration of upperparts as well as underparts light buff overlaid with dusky tipped hairs; side whiskers on face silky light buff; dark markings on head and limbs usually inconspicuous; crown cap on head grading from black to buff tinged with brownish; stiff long black hairs above eyes concealing to a variable extent the white or buff triangular forehead patch; elbows and outer sides of forearms more or less distinctly blackish; elongate black patches on knees, the hairs black to roots. (Southern Nicaragua, Greytown to Lake Managua.)-----geoffroyi

II. General coloration of upperparts as well as underparts not light buff.

J. Chest and belly normally near tawny or cinnamon-rufous.

K. General coloration of upperparts golden yellowish to cinnamon-rufous in tone but obscured by numerous overlying black-tipped hairs; crown cap black, the hairs black to base; underparts and flanks near tawny or cinnamon-rufous; tail black above, more or less mixed with tawny below from base to near callosity; side whiskers on face blackish. (Eastern side of central cordillera of Costa Rica.)-----ornatus

KK. General coloration of upperparts lighter or duller than preceding.

L. General coloration of upperparts, except for head and shoulders, clear tawny, intermixed with black-tipped hairs; sides, thighs, and belly paler, tawny or cinnamon-buff, with somewhat paler tone extending downward to wrists and ankles on inner surfaces of fore and hind limbs; shoulders and outer surfaces of fore and hind limbs black; tail sharply bicolored, black above to tip, and tawny below; crown cap either black or dusky (individual hairs buff or cinnamon-buff at base); side whiskers on face cream color. (Azucero Peninsula, Panama.)-----azuereensis

LL. General coloration of upperparts, except for head and shoulders in some individuals, buckthorn brown to Mars brown, sparsely or noticeably intermixed with blackish hairs (especially on midline of back in some individuals); belly honey yellow to tawny, extending downward on inner surfaces of hind limbs to ankles, and a lighter tone extending downward on inner surfaces of forelimbs to wrists; outer surfaces of fore and hind limbs usually black (in some individuals restricted more or less to elbow and knee patches); tail usually sharply bicolored, black or dusky above to tip and tawny below (when otherwise, mixed light and dark hairs cover tail above and below); anterior part of crown patch more or less suffused with cinnamon-buff, owing to light basal color of hairs and tending to form a transverse band across forehead; side whiskers on face light buff to cream-buff. (Northwestern Costa Rica and higher portions of northern Nicaragua.)-----frontatus

JJ. Chest and belly normally neither tawny nor ochraceous-rufous.

M. Upper back distinctly darker than lumbar region of back; top of head, neck and upper back, and outer surfaces of fore and hind limbs varying from blackish to brownish black.

- N.* Underparts normally silvery whitish; brownish black of head and neck passing gradually through cinnamon-drab on upper back to near olive-buff on lumbar region, the light drab extending along median line to base of tail; side whiskers on face whitish. (Quintana Roo, Yucatán, and northeastern Guatemala.) ----- yucatanensis
- NN.* Underparts not normally silvery whitish.
- O.* Upperparts dark, especially on head, neck, and upper back, and more uniformly overlaid with black; lumbar region more or less noticeably suffused with cinnamon; pelage typically longer and denser; underside of neck and throat mixed brownish and buffy; rest of underparts including at least inner surfaces of upper portions of limbs pinkish buff to cinnamon-buff, becoming cinnamon or rusty along sides of body; crown cap blackish; side whiskers on face blackish. (Alta Vera Paz, Guatemala.) ----- pan
- OO.* Upperparts lighter, distinctly bicolored; head, neck, and upper back brownish black; lumbar region cinnamon-buff or cinnamon, darkened along midline by overlying blackish hairs; underside of neck and throat varying from grayish to a mixture of buff-gray and brown; underparts, including inner surfaces of arms in a strip narrowing from armpit to a point near elbows and on inner surfaces of legs to near ankles, varying from pinkish buff to cinnamon, becoming near cinnamon on sides of body; crown cap blackish; side whiskers on face dull whitish or yellowish. (Honduras and El Salvador northward through Guatemala to southeastern Oaxaca and the Isthmus of Tehuantepec and along east coast of Mexico to eastern San Luis Potosí.) ----- vellerosus
- MM.* Upper back not distinctly darker than lumbar region of back; general coloration of upperparts, including outer surfaces of fore and hind limbs, as well as upper surface of tail, dusky, the darker hairs nearly sooty black on distal two-thirds and old gold on basal third, and thinly interspersed with these on head, neck, back, thighs, and upper surface of tail are old gold or silvery hairs; coloration of upperparts further modified by lighter hair bases showing through; a partially concealed buffy spot on forehead; hairs on belly, inner surfaces of hind limbs, and under surface of tail dull cinnamon-buff tipped with sooty black. (Río Tuyra Valley of eastern Panama.) ----- grisescens

## ATELES PANISCUS PANISCUS (Linnaeus)

## GUIANA BLACK SPIDER MONKEY; LE COAITA

- [*Simia paniscus* LINNAEUS, *Systema naturae*, ed. 10, vol. 1, p. 26, 1758.
- Sapajou paniscus* LACEPÈDE, *Tableau des divisions, sous-divisions, ordres et genres des mammifères*, p. 4, 1799. [Published as supplement to *Discours d'ouverture et de clôture du cours d'histoire naturelle, et tableaux méthodique des mammifères et des oiseaux*.]
- Ateles pentadactylus* E. GEOFFROY, *Ann. Mus. Hist. Nat. Paris*, vol. 7, p. 269, 1806. Type locality, Cayenne, French Guiana. (Description based on female collected by Martin.)
- Ateles subpentadactylus* DESMAREST, *Encyclopédie méthodique (Zoologie), Mammalogie*, pt. 1, p. 73, 1820. Type locality, "La Guyane française, la côte de Bancet au Pérou" (part).
- A[teles] ater* F. CUVIER, *Histoire naturelle des mammifères*, vol. 3, livr. 39, p. [1], pl. —, Mar. 1823. Type locality, Cayenne, French Guiana (see I. Geoffroy, 1851, *Catalogue méthodique de la collection des mammifères*, pt. 1 (Catalogue des Primates), p. 48). ("Le Cayou" is based on a rather young female.)
- [*Cebus paniscus*] *surinamensis* FISCHER, *Synopsis mammalium*, p. 39, 1829. Type locality, not designated.
- [*Cebus paniscus*] *guyannensis* FISCHER, *Synopsis mammalium*, p. 39, 1829. Type locality, "Guyana Gallica."

*Type locality*.—"South America: Brazil" ["La Guyane" given as the "Patrie" by E. Geoffroy, *Catalogue Mammifères Mus. Nat. Hist. Nat. Paris*, p. 6, 1803. Here restricted to French Guiana.]

*Type specimen*.—Unknown.

*Distribution*.—North side of Amazon River east of Manáos and north to Caribbean coast of the Guianas.

*General characters*.—A black monkey with face normally flesh-colored; pelage silky, lax, and very long (majority of hairs on midline of back 75–150 mm. in length, and on upper basal half of tail 50–100 mm. in length); hind foot large (190–220 mm.); tail often more than twice length of head and body. Differs from *chamek* of Peru mainly in normally flesh-colored instead of normally black face and in longer pelage (majority of hairs on midline of back less than 75 mm. in length and on upper base of tail less than 50 mm. in length in *chamek*). Differs from *A. belzebuth belzebuth* of Venezuela in much longer pelage and nearly uniform black instead of contrasting colors of upper and underparts. Differs from *A. belzebuth marginatus* of the Rio Tapajóz region of the southern side of the Rio Amazonas, Brazil, in longer pelage, larger foot, and lack of the semilunar white forehead patch present in *marginatus*.

*Color*.—Entire pelage deep glossy black; face normally flesh-colored.

*Skull*.—Skull large, with anterior profile strongly inclined backward to vault of brain case; premaxillae, when viewed from above, relatively broad; nasal opening much elongated. Very similar to skulls of *chamek* and *belzebuth*, but brain case somewhat less highly arched than either; rostrum broader, the sides more inflated at base and

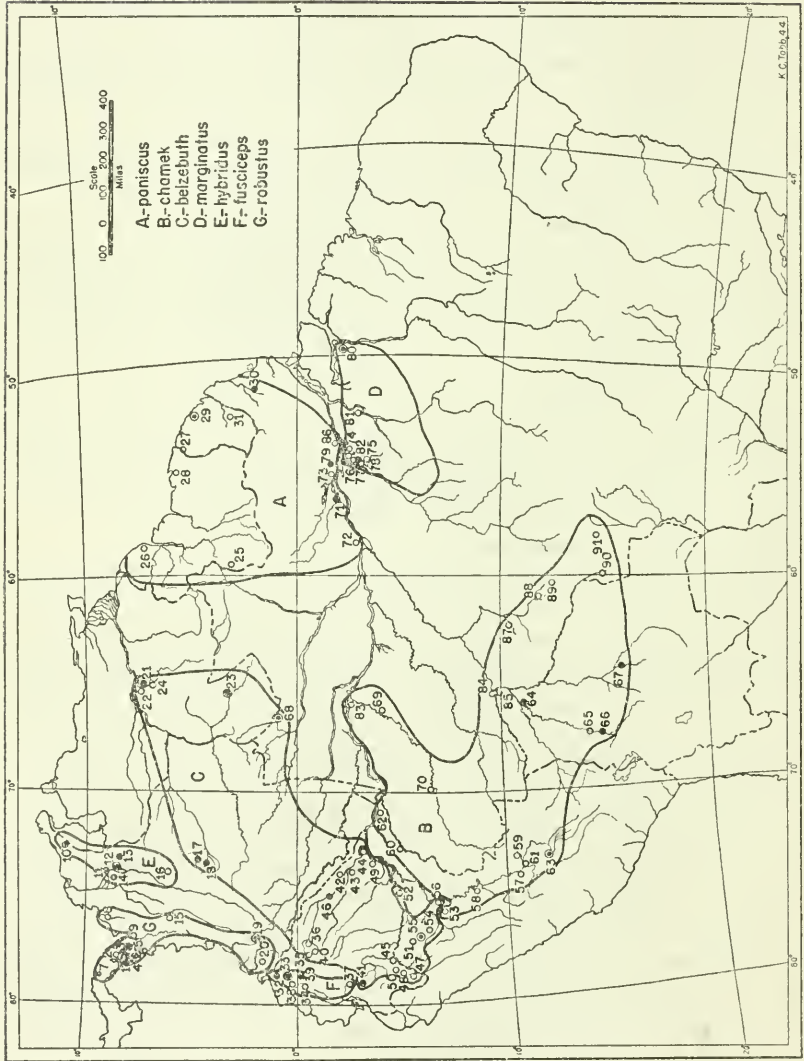


FIGURE 1.—Distribution of the forms of spider monkeys (*Atelax*) in South America. See opposite page for key to localities.

LOCALITIES SHOWN ON MAP, FIGURE 1

PANAMA

1. Chepigana
2. Río Lara
3. Río Tuyra
4. Cituro
5. Tapalisa
6. Mount Pirre
7. Río Bayano

COLOMBIA

8. Cereté
9. Río Atrato
10. Las Marimondas
11. Puerto Estrella
12. La Gloria
13. Río Tarra
14. Norosí
15. Concordia

16. Belívar
17. Mambita
18. Villavicencio
19. Gallera
20. Barbacoas

VENEZUELA

21. El Llagual
22. Río Mato
23. Esmeralda
24. La Unión

BRITISH GUIANA

25. Maripá
26. Río Supinaam

DUTCH GUIANA

27. Marowijne River
28. Paramaribo

FRENCH GUIANA

29. Cayenne
30. Río Lunier
31. Rivière Camopi

ECUADOR

32. Cordillera de Chillurí
33. Hacienda Chinipamba
34. Santo Domingo de los Colorados
35. Baeza
36. San José
37. Chimbo
38. Guala
39. Mindo
40. Cordillera Galeras

41. Jima
42. Tarapoto
43. Boca Río Curaray
44. Puerto Indiana
45. Río Santiago

ECUADOR—continued

46. Río Napo
47. Tompenda
48. Tutumberos
49. Iquitos
50. Huarandosa

PERU

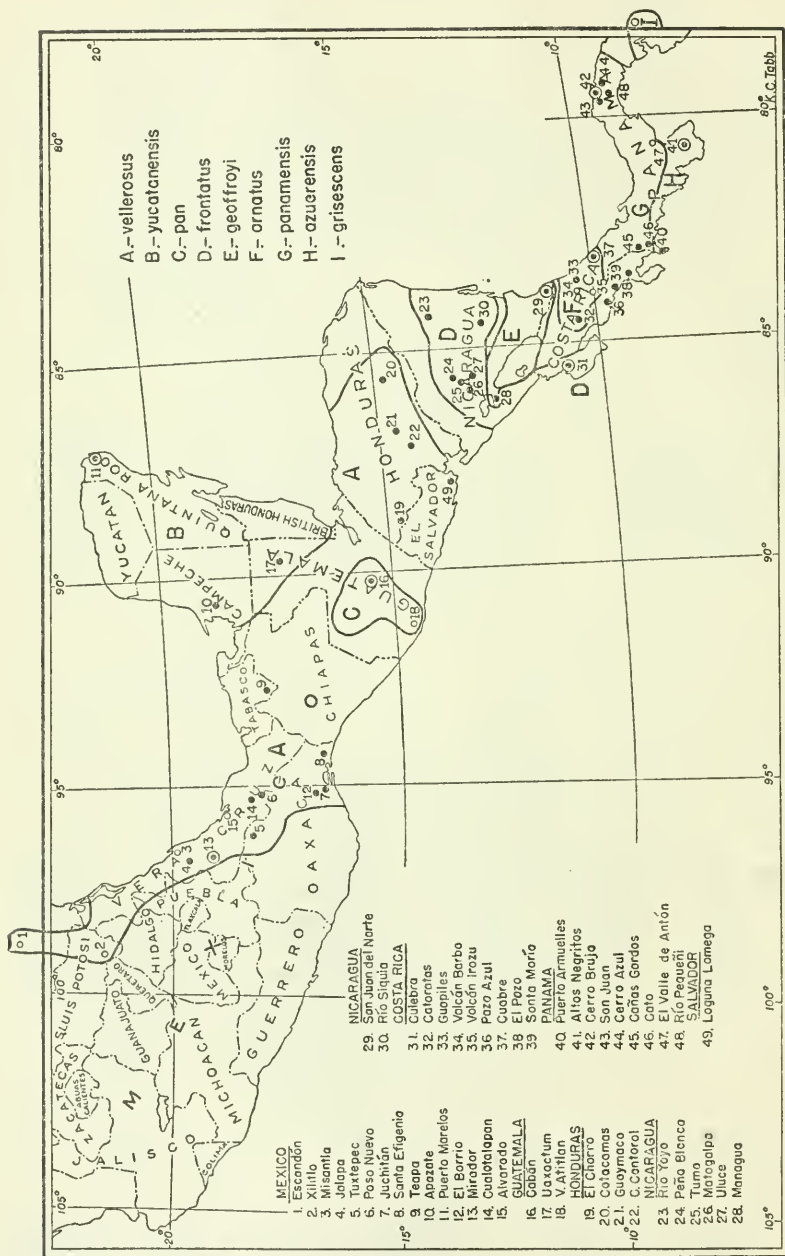
51. Cahuapanas
52. Elvira
53. Cerro Azul
54. Lamas
55. West of Chayavitas
56. Sarayacu
57. Chicosa
58. Río Aguaytia
59. Río Inuya
60. Río Javari
61. Mouth of Río Urubamba
62. Peruaté
63. Río Comerciato

BOLIVIA

64. Ibon [= Ivon]
65. Puerto Salinas
66. Santa Helena
67. Río Yapacani

BRAZIL

68. Serra de Cueny
69. Jaburu
70. São Felipe [= João Pessoa]
71. Río Jamundá near Faro
72. Igarapé Anibá
73. Obidos
74. Santarém
75. Aracú
76. Piquiatuba
77. Caxiricatuba
78. Tauary
79. Lago Cuipetá
80. Cameté
81. Altamira
82. Belterra
83. Lago Grande
84. Río Madeira
85. Mouth of Río Abuña
86. Paitaná
87. Jarú
88. Barrão de Melgaço
89. Cabeceiras do Pirocoluina
90. Río Sararé
91. Serra dos Paracis

FIGURE 2.—Distribution of the forms of spider monkeys (*Atelaj*) in Middle America.

sloping outward more gradually to zygomata; maxillae forming a more distinct ridge behind posterior molars; thin external reduplications of pterygoids extending farther posteriorly, the posterior borders less deeply concave behind the internal spinelike hamular processes; posterior plane of posterior upper molars barely reaching anterior plane of temporal fossae.

*Measurements.*—Two adult females from Rio Jamundá, near Faro, north bank of Rio Amazonas, Pará, Brazil, respectively: Total length, 1,330, 1,339 mm.; tail, 870, 920; hind foot, 195, 195. Two adult females from Lago Cuipeúá, north bank of Rio Amazonas, Pará, Brazil, respectively: Total length, 1,450, 1,413; tail, 880, 753; hind foot, 220, 220. *Skull:* Two adult females from Rio Jamundá, near Faro, Brazil, respectively: Greatest length, 118.8, 116.8; orbital width, 68.3, 63.6; post-orbital constriction, 48.8, 51.3; width of brain case, 64, 63.3; zygomatic width, 68.7, 66.7; maxillary tooth row, 29.9, 29.5. Two adult females from Lago Cuipeúá, Brazil, respectively: Greatest length, 113.6, 122.6; orbital width, 60.2, 68.2; postorbital constriction, 51.4, 51.4; width of brain case, 64.5, 64.6; zygomatic width, 69.4, 70.5; maxillary tooth row, 29.9, 29.5.

*Remarks.*—Linnaeus, in the tenth edition of *Systema Naturae* (vol. 1, p. 26, 1758) combined the previously published descriptions of a spider monkey and of a howler monkey in formulating his diagnosis of [*Simia*] *paniscus*. The spider monkey is described in the following words: “*Simia fusca major, palmis tetradactylis, cauda prehensili ad apicem subtus nuda.*” and this is a word-for-word quotation from the account of the “four-fingered monkey” published by Browne (*The civil and natural history of Jamaica*, p. 489, 1789; edition of 1756 not consulted). The longer diagnosis at the end of Linnaeus’s account of *paniscus* seems to be based mainly on the accounts of the “Guariba” published by Maregrave (*Historiae rerum naturalium*, p. 226, 1648; and *Historia natural do Brasil*, p. 226, 1942) and by Ray (*Synopsis methodica animalium quadrupedum et serpentine generis*, p. 153, 1693), supplemented by additional anatomical details which are credited to Hallman and Aymen.

In the twelfth edition, however, Linnaeus (*Systema naturae*, ed. 12, vol. 1, p. 37, 1766) seems to have recognized that the above-mentioned combination was inaccurate, and of the tenth edition references he cited only that of Browne (*op. cit.*, 1756, p. 489) in the synonymy of [*Simia*] *paniscus*. With the exception of “*Pedes & Cauda dimidia exterior brunnea,*” this revised diagnosis applied to the “*coaíta.*” Furthermore, in the twelfth edition Linnaeus (*op. cit.*, p. 37, 1766) placed the references to Maregrave and Ray, which had been cited under *paniscus* in the tenth edition, in the synonymy of the howler monkey, [*Simia*] *belzebul*. We are therefore of the opinion that Linnaeus in

1766 should be regarded as the first reviser and that the references to Marcgrave and Ray should definitely be eliminated in reaching a conclusion concerning the status of *paniscus*.

The "Guariba" of both Marcgrave and Ray is unquestionably the howler monkey, as was recognized by both Pennant (Synopsis of quadrupeds, p. 122, 1771; "preacher") and Goldfuss (Schreber, Die Säugthiere, Theil 1, Heft 7, p. 112, 1774). The bases and type localities of the mammalian species in the tenth edition of Linnaeus were construed as they were by Thomas (Proc. Zool. Soc. London for 1911, pt. 1, p. 127, Mar. 22, 1911) on the assumption that Linnaeus's "quotation of his own earlier writings should be given absolutely overriding importance" and that all others should be ignored. The Linnean quotation under [*Simia*] *paniscus* in the tenth edition is "S. caudata barbata, cauda prehensili, palmis subtetradactylis. Syst. nat. 3," and on referring to the sixth edition of Systema Naturae (p. 3, 1748), it will be noted that Linnaeus altered his original concept of this species by adding "palmis subtetradactylis," since the diagnosis under "*Simia*" in the earlier edition reads "14. Simia caudata barbata, cauda prehensili. Marcgr. bras. 226." On the assumption that the reference to Marcgrave was the primary reference, Thomas designated Pernambuco as the type locality for *paniscus*. In view of the fact that Marcgrave's account of the "Guariba" applies solely to the howler monkey, the designation of Pernambuco as the type locality for *paniscus* cannot be accepted. Browne (*op. cit.*, p. 489, 1789) stated that the "four-fingered monkey" is an inhabitant of the main continent, Linnaeus in the tenth edition gave the habitat of *paniscus* as "America meridionali: Brasilia," and in the twelfth edition after the removal of the references to the "Guariba" Linnaeus restricted the habitat to "America meridionali." Since "La Guyane" has been designated by Geoffroy (*op. cit.*, p. 6, 1803) as the "patrie" of *paniscus*, we hereby restrict the type locality to French Guiana.

The Guiana black spider monkey is readily distinguished from all others by its long, lax, silky pelage and its large foot. It is believed to be restricted to the area between the north bank of the Amazon River and the coast of the Guianas. It was met with by various early travelers, and several names proposed seem clearly to belong in synonymy. In the three specimens from Rio Jamundá, on the north bank of the Amazon, near Faro, Brazil, vestigial thumbs are present as pointed out by Tate (Bull. Amer. Mus. Nat. Hist., vol. 76, p. 215, Oct. 20, 1939). In two from Lago Cuipeúá, also on the north bank of the Amazon, farther to the east, vestigial thumbs are present in the skeleton, as usual in the group, but do not appear to have been discernible in the skin. Tate (*op. cit.*) refers to "small, triangular pterygoids without pointed tips" as a cranial character in *paniscus*. The external reduplications of the pterygoids are broken off in the



specimens examined by Tate, but the thin pterygoid plates in these and in other specimens from that region are in reality larger and more extended posteriorly than usual in spider monkeys. Other characters ascribed by him to *paniscus* are the small postglenoid processes and unexpanded zygomata of nearly uniform depth. Examination of large series of spider monkey skulls shows that these cranial features are everywhere subject to about the same wide range of individual variation.

In Dutch Guiana, Kappler (Popular Sci. Monthly, vol. 32, No. 3, pp. 397-398, Jan. 1888) states that this monkey does not occur on the coast and that it is found only in the higher lands. An adult male collected by Kappler along the Marowijne River [=Río Maroni], Dutch Guiana, is listed by Jentink (Catalogue systématique des mammifères, Mus. Hist. Nat. Pays-Bas, vol. 11, p. 41, 1892). Thomas (Ann. Mag. Nat. Hist., ser. 8, vol. 6, p. 505, Nov. 1910), however, records this monkey from the River Supinaam, lower Essequibo, Demerara, British Guiana. Richard Schomburgk (in Roth, Richard Schomburgk's travels in British Guiana 1840-1844, vol. 2, p. 72, 1923), states that this monkey is found mostly in troupes of 16 to 20 in the highest trees and that one was killed in the vicinity of Maripá at the forks of the upper Río Waku-wau, a tributary of the Río Tacutú, south of the Kanuku Mountains, British Guiana.

In French Guiana, Ménégauz (Bull. Mus. Hist. Nat. Paris, vol. 8, No. 5, p. 296, 1902) has recorded this spider monkey from the Rivière Camopi, a tributary of the Río Oyapock, and from the Río Lunier, a tributary of the Río Carsevenne [=Calsoene].

Lönberg (Arkiv för Zool., vol. 32A, No. 25, p. 8, July 18, 1940) has recorded specimens from the Igarapé [=Río] Anibá, north bank of Río Amazonas opposite mouth of Río Madeira, and from Patuá (or Paitaná), Pará, Brazil.

*Specimens examined.*—Total number, 5, as follows: BRAZIL: Lago Cuipeúá, north bank Río Amazonas, Pará, 2 (M. C. Z.); Río Jamundá near Faro, north bank of Río Amazonas, Pará, 3 (A. M. N. H.).

ATELES PANISCUS CHAMEK (Humboldt)

BLACK-FACED BLACK SPIDER MONKEY

*Simia chamek* HUMBERT, Recueil d'observations de zoologie et d'anatomie comparée, vol. 1, p. 353, 1812.

*Ateles longimembra* J. A. ALLEN, Bull. Amer. Mus. Nat. Hist., vol. 33, p. 651, Dec. 14, 1914. Type locality, Barrão de Melgaço, headwaters of Río Gy-Paraná, Matto Grosso, Brazil.

[*Ateles ater*] *peruvianus* LÖNNBERG, Arkiv för Zool., vol. 32A, No. 25, p. 13, July 18, 1940. Type locality, eastern Peru.

*Type locality.*—Peru. [Here restricted to Río Comerciato, a tributary of Río Urubamba, Cuzco, Peru.]

*Type specimen.*—Unknown.

*Distribution.*—Western Matto Grosso, eastern Bolivia, and north-eastern Peru to the Rio Solimões and Rio Juruá, Amazonas, Brazil.

*General characters.*—Entirely black, with pelage of moderate length, the hairs on midline of back 75 mm. or less, and on upperside of tail 40–65 mm. Similar in general to *paniscus* of French Guiana, but face black instead of flesh color; pelage shorter, the majority of hairs on midline of back 75 mm. or less, instead of 75 to 150; tail often more than twice length of head and body and hind foot large as in *paniscus*; skull differs from that of *paniscus* in detail. Similar in color to *A. fusciceps robustus* of southeastern Colombia, but pelage entirely black without the short, sparse white hairs on chin and about the mouth of the latter that while inconspicuous appear to be important as a distinguishing character; cranial details also different. Differs from *A. belzebuth belzebuth* of Venezuela in uniform black instead of contrasting black and buffy upper and underparts.

*Color.*—Epidermis of face normally black and entire pelage deep, glossy black.

*Skull.*—Similar in size to that of *paniscus*, but brain case slightly more highly arched; rostrum narrower, less inflated at base and sloping outward more abruptly to zygomata; premaxillae more distinctly pinched-in behind incisors, the sides being almost parallel; maxillae more truncate instead of prolonged in a distinct ridge behind posterior molars; external reduplications of pterygoids less extended posteriorly, the posterior borders more deeply concave; palate narrower; posterior plane of last molars reaching farther posteriorly into anterior plane of temporal fossae. Differs from that of *robustus* as follows: Premaxillae more extended anteriorly beyond canines, the sides more constricted and more nearly parallel at diastema between incisors and canines; nasal opening more elongated. Compared with that of *belzebuth* the skull is very similar in general, but the premaxillae differ in narrowness in about the same way as from *robustus*.

*Measurements.*—An adult male and female from Río Comerciato, Peru, respectively: Total length, 1,270, 1,380 mm.; tail, 820, 880; hind foot, 190, 202. Two adult females from Río Yapacani, Bolivia, respectively: Total length, 1,320, 1,320; tail, 800, 800; hind foot, 220, 220. *Skull:* Adult male and female from Río Comerciato, respectively: Greatest length, 117.5, 117; orbital width, 48.9, 50.8; width of brain case, 64.7, 59.8; zygomatic breadth, 68, 67.8; maxillary tooth row, 33, 29. Two adult females from Río Yapacani, respectively: Greatest length, 121.1, 118.8; orbital width, 63.8, 59.2; postorbital constriction, 50.1, 48.7; width of brain case, 65.4, 64.7; zygomatic breadth, 71.3, 68.2; maxillary tooth row, 31.4, 31.5.

*Remarks.*—The large black spider monkey here treated as *A. paniscus chamek* appears to be distinguished as the most completely black

form in the group. It agrees closely in large size with *paniscus* but differs in having black instead of flesh-colored face, shorter pelage, and cranial details pointed out. The general resemblance of *chamck* to *A. fusciceps robustus* of Colombia is very close, but the short white hairs on the chin and about the mouth, together with the smaller foot of the latter, are distinctive.

Specimens collected by Johann Natterer in 1825 on the Rio Sararé while en route from Matto Grosso (Villa Bella de Santissima Trinitade) to São Vicente and in 1829 on the Rio Madeira above the mouth of the Rio Abuña probably are referable to this race (Wagner, Abh. math.-phys. Cl. bayer. Akad. Wiss. München, vol. 5, Abt. 2, p. 418, 1848). Similarly the specimens described by Miranda Ribeiro (Comissão de Linhas Telegraphicas Estrategicas de Matto Grosso ão Amazonas, Anexo No. 5, Hist. Nat., Zool., Mamíferos, p. 8, May 1914) from Cabeceiras do Pirocoluina and Jarú on Rio Juruá, a tributary of the Gy-Paraná, are likewise referred to this race. This spider monkey is reported to occur also in the Serra dos Parecis in central Matto Grosso. The specimens mentioned by Lönnberg (Arkiv för Zool., vol. 32A, No. 25, p. 10, July 18, 1940) from Puerto Salinas and Desierto on the Río Beni, Bolivia, may belong here since three specimens (C. M. Nos. 2772, 2774, 2775) taken by José Steinbach on the Río Yapacani, a tributary of the Río Mamoré, seem referable to this form.

Under the name of *Ateles ater* [= *paniscus*], Thomas (Ann. Mag. Nat. Hist., ser. 10, vol. 2, p. 251, Sept. 1928) listed specimens from Cerro Azul, altitude 2,000 feet about 35 miles west of Río Ucayali, and from Chicosa, upper Río Ucayali, Peru, about 35 miles below junction of Urugamba and Tambo Rivers, altitude 1,500 feet. A similar allocation has been made by Thomas (Proc. U. S. Nat. Mus., vol. 58, p. 220, Nov. 10, 1920) of specimens (U. S. N. M. Nos. 194337-38 and -40) from Río Comerciato, a tributary of Río Urubamba, Cuzco, Peru, altitude 3,000 feet, and from Pachitea.

According to Bartlett (Proc. Zool. Soc. London for 1871, pt. 1, p. 218, June 1871) the black-faced spider monkey inhabits the forests on the Río Ucayali and the low districts of the valley of the Amazonas in Peru. A specimen from Peruaté on Río Marañón is recorded by Cabrera (Trabajos Mus. Nat. Cienc. Nat. Madrid, ser. zool., No. 31, p. 46, Oct. 28, 1917). A female obtained by Castelnau and Deville on the banks of the Río Javari near its mouth on the Río Amazonas is listed by L. Geoffroy (Catalogue méthodique de la collection des mammifères, pt. 1 (Catalogue des Primates), p. 48, 1851).

It is possible that this black-faced spider monkey may range down the Río Marañón and the Solimões to the Rio Juruá in Brazil since Lönnberg (Arkiv för Zool., vol. 32A, No. 25, p. 10, July 18, 1940) lists as *ater* specimens from Lago Grande west of mouth of Rio Juruá on Rio Solimões, from Jaburú and João Pessoa on the lower Rio Juruá

and from Santo Antonio on the Rio Eirú, a tributary of the upper Rio Juruá. The specimens described by Von Ihering (Rev. Mus. Paulista, vol. 6, p. 409, 1904) from below São Felipe on the Rio Juruá should belong to the same race.

Although Wallace (Proc. Zool. Soc. London for 1852, pt. 20, p. 108, May 23, 1854) remarks that another spider monkey, "probably *Ateles ater*, inhabits the West Brazil district on the river Purus," recent work in Brazil has not confirmed this statement.

*Specimens examined.*—Total number, 9, as follows: BOLIVIA: Ibon [=Ivon], Río Beni, 1; Río Yapacani, 4 (1 skull only; C. M.); Santa Helena (upstream from Rurrenagaque), Río Beni, La Paz, 1. PERU: Río Comerciato, a tributary of Río Urubamba, Cuzco, 3.

ATELES BELZEBUTH BELZEBUTH E. Geoffroy

MARIMONDA SPIDER MONKEY

*Ateles belzebuth* E. GEOFFROY, Ann. Mus. Hist. Nat., Paris, vol. 7, p. 272, pl. 16, 1806.

*Le chuva de Bracamorros* HUMBOLDT, Recueil d'observations de zoologie et d'anatomie comparée, vol. 1, p. 8, 1812; "*Ateles marginatus*," p. 341 (Province de Jaén de Bracamoros, on the banks of Río Santiago and Río Amazonas [=Río Marañón] between the cataracts of Yariquisa and of Patourumi, Departamento de Amazonas, northern Peru; specimen brought by Indians from Tutumbero, opposite Pongo de Cacangares, seen in house of governor at Tomependa, on Río Marañón near mouth of Río Chinchipe.)

*A[teles] marimonda* OKEN, Lehrbuch der Naturgeschichte, Theil 3, Zool., Abt. 2, p. 1201, 1816. Type locality, Orinoco.

*Ateles fuliginosus* KUHL, Beiträge zur Zoologie und vergleichenden Anatomie, Abth. 1, p. 25, 1820. Type locality, unknown. [Based on specimen in Mus. Nat. Hist. Nat. Paris.]

*Cebus brissonii* FISCHER, Synopsis mammalium, p. 40, 1829. Type locality, Río Orinoco, Venezuela.

*A[teles] variegatus* WAGNER, Schreber's Die Säugthiere, Suppl., Abt. 1, p. 313, 1840. Type locality, Cocuy [=Cucui or Cucuy], Río Negro, northern Amazonas, Brazil, at the Venezuelan boundary (*vide* Wagner, 1847, Abh. math.-phys. Cl. bayer. Akad. Wiss. München, vol. 5, Abth. 1, p. 421)=Serra de Cocoi, upper Río Negro (*vide* Sclater, Ann. Mag. Nat. Hist., ser. 4, vol. 6, p. 472, Dec. 1870). (Preoccupied by *Simia variegatus* Kerr, 1792=*Ateles variegatus* (Kerr), unidentifiable.)

*Ateles bartlettii* GRAY, Ann. Mag. Nat. Hist., ser. 3, vol. 20, No. 118, p. 300, Oct. 1867. Type locality, Brazil, the upper part of the Amazons ["Eastern Perú, near Xeberos"]=Jeberos or Jeveros, Loreto (see Gray, Proc. Zool. Soc. London for 1867, pt. 3, No. 63, p. 992, pl. 47, Apr. 1868)=Forests of northwestern Perú at highest point of mountains on forest trail between Moyobamba and Chayavitos, three days' journey from the latter (see Bartlett, Proc. Zool. Soc. London for 1871, pt. 1, No. 14, p. 217, June 1871.)

*Ateles chuva* SCHLEGEL, Mus. Hist. Nat. Pays-Bas, vol. 7, livr. 12 (Monogr. 40: Simiae), p. 175, 1876. Type locality, not designated. [Based in part on "*Le chuva de Bracamorros*" of Humboldt, 1812; *Ateles variegatus* of Wagner, 1840; *Ateles bartlettii* of Gray, 1868; and two mounted female specimens, one from Peru, in the Leiden Museum.]

*Atles problema* SCHLEGEL MS., in Jentink, Catalogue systématique des mammifères, Mus. Hist. Nat. Pays-Bas, Leiden, vol. 11, p. 42, 1892 (*nomen nudum*).

*Type locality*.—Unknown. [Here restricted to Esmeralda, west of the mouth of Río Guapo, on Río Orinoco, and south of Mount Duida, Venezuela (see Humboldt, Recueil d'observations de zoologie et d'anatomie comparée, vol. 1, livr. 7, p. 326, 1812).]

*Type specimen*.—A specimen exhibited at public fairs until after its death, when it passed into the possession of Réaumer, constituted the basis of "Le Belzelut" of Brisson (Regnum animale, p. 211, 1756); this stuffed specimen, the description of Buffon, and two living spider monkeys in the menagerie were combined as the basis for Geoffroy's name.

*Distribution*.—Ranges in the vast lowlands from near the junction of the Río Orinoco and Río Caura in central Venezuela south to the valley of the Rio Negro, westward to Colombia east of the Cordillera Oriental (Mambita), Ecuador east of the crest of the Andes, and to northeastern Peru (Sarayacu).

*General characters*.—Distinguished by unusual color pattern, the black upperparts contrasting strongly with pale buffy underparts, there being a sharp line of demarcation along lower part of sides. This marked contrast in coloration extends to the outer and inner surfaces of its limbs, although these vary in detail, and a triangular forehead patch varying from white to golden or brownish yellow is normally but not invariably present. Foot large (190–200 mm.); tail variable in length but often almost twice the length of head and body. Differs conspicuously in color, but similarity in cranial details indicates close relationship to *hybridus* of Colombia. Differs notably from *A. paniscus paniscus* of French Guiana in much shorter pelage and in contrasting colors of upper parts and underparts.

*Color*.—Face and eyebrows black, a triangular forehead patch varying from white to golden, yellow, or brownish yellow (occasionally entirely absent or more or less hidden by stiff upturned black hairs over eyes and opposing black frontal tuft from crown); crown cap and upperparts generally black to a sharp line of demarcation with underparts (in some individuals the black hairs under strong light have a seal-brown tinge); underparts, in general, including inner surfaces of fore and hind limbs, and underside of tail varying from cinnamon-buff, yellow, or dull cream-buff to pale olive-buff; side whiskers on face, when present, whitish or buffy (absent in some specimens); outer surfaces of forelimbs to elbows black; outer surfaces of forearms to wrists generally blackish, but occasionally similar to underparts and intermixed with long dusky overhairs. Outer surfaces of hind limbs usually blackish to knees or below, but in some specimens (particularly in eastern part of range) the outer surfaces of hind limbs, as well as thighs and region around base of tail, are distinctly straw-colored in

ground color thinly overlaid with long black hairs (not numerous enough to materially affect the general ground color); hairs on throat normally black, sometimes grayish, more or less concealed by black hairs; tail normally bicolored, the upper surface black and the under surface similar to that of underparts (in occasional specimens the upper surface is about the same as that of the under surface, but more heavily interspersed with long black overhairs).

*Skull*.—About as in that of *hybridus*. Very similar in general to that of *paniscus* but brain case somewhat narrower; posterior borders of external reduplications of pterygoids more deeply concave.

*Measurements*.—An adult male and female from El Llagual, Caura District, Venezuela, respectively: Total length, 1,257, 1,317 mm.; tail, 823, 810; hind foot, —, 193. An adult male and female from Valle de los Monos, Mount Duida, Venezuela, respectively: Total length, 1,110, 1,330; tail, 695, 840; hind foot, 185, 195. *Skull*: An adult male and female from El Llagual, Venezuela, respectively: Greatest length, 109.5, 117.7; orbital width, 60.2, 61.8; postorbital constriction, 50, 51; width of brain case, 59.7, 59.8; zygomatic width, 68.3, 66.7; maxillary tooth row, 29.8, 28.8. An adult male and female from Valle de los Monos, Venezuela, respectively: Greatest length, 119.4, 113.2; orbital width, 61.6, 61; postorbital constriction, 52, 52.1; width of brain case, 61, 63.2; zygomatic width, 71.9, 68.4; maxillary tooth row, 29.9, 30.

*Remarks*.—This well-marked and widely dispersed spider monkey has evidently been described under various names which appear to be assignable to the synonymy of *belzebuth*. Humboldt (Recueil d'observations de zoologie et d'anatomie comparée, vol. 1, livr. 7, p. 353, 1812) observed that it was found along the banks of the Río Orinoco but always above the Raudal de Atures and the Raudal de Maipures in Venezuela. Allen records specimens from La Unión on the Río Caura (Bull. Amer. Mus. Nat. Hist., vol. 20, No. 29, p. 344, Oct. 8, 1904) as well as from the Río Mato, a tributary of the Río Caura (Bull. Amer. Mus. Nat. Hist., vol. 28, No. 12, p. 148, May 27, 1910) and from El Llagual on the Río Caura, Venezuela (Bull. Amer. Mus. Nat. Hist., vol. 30, No. 10, p. 272, Dec. 2, 1911). Johann Natterer in February 1831 obtained a male, three females, and a young of this spider monkey at Serra de Cocoli on the upper Río Negro, Brazil, one female of which was exchanged with the British Museum of Natural History (Sclater, Proc. Zool. Soc. London for 1871, pp. 39, 225, 1871).

According to Bartlett (Proc. Zool. Soc. London for 1871, p. 217), this spider monkey is found in Peru in the interior forest on the mountain range between Lamas (north of Río Mayo, a tributary of Río Huallaga) and Saravacu on Río Ucayali; on the lower spurs of the mountains between Moyobamba and the Río Huallaga; at Cahuapanas on the headwaters of the Río Cahuapanas, a tributary of the Río Marañón; near the native village of Chamicuros (Parinari District) on

the Río Chamicuro [= Río Samiria], a tributary of the Río Marañón; and on the Río Tigre, a northern tributary of the Río Marañón west of Nauta. It has been reported also from Puerto Indiana on the Río Marañón just west of mouth of the Río Napo by Tate (Bull. Amer. Mus. Nat. Hist., vol. 76, p. 216, Oct. 20, 1939), and from Elvira on the Río Marañón above the mouth of the Río Chambira by Bartlett (Proc. Zool. Soc. London for 1882, p. 373).

Specimens are also listed by Goeldi and Hagemann (Bol. Mus. Goeldi, vol. 4, p. 42, 1904) from Iquitos, on the Río Marañón above mouth of the Río Napo, by Cabrera (Trabajos Mus. Nat. Cienc. Nat. Madrid, ser. zool., No. 31, p. 46, Oct. 28, 1917) from Tarapoto (Nueva Florencia) on the Río Napo, and by Lönnberg (Arkiv för Zool., vol. 14, No. 4, p. 6, June 7, 1921) from below Baeza on the Río Quijos, a tributary of the Río Coca in eastern Ecuador. Festa (Boll. Mus. Zool. ed Anat. Comp. Univ. Torino, vol. 18, No. 435, p. 4, Feb. 11, 1903) identifies as *Ateles variegatus* several specimens collected by him in Ecuador in the valley of the Río Santiago and at San José on the Río Suni and remarks that he had found this spider monkey to be abundant in the forests bordering the Paute, Zamora, and Santiago Rivers.

A specimen of this monkey (U. S. N. M. No. 3332) collected by William E. Moore in 1857 somewhere along the Río Napo in eastern Ecuador has yellowish underparts and a golden brow patch.

*Specimens examined*.—Total number, 9, as follows: COLOMBIA: Mambita (Llanos) on Río Guavio, a tributary of Río Meta, 1 (M. C. Z.); Villavicencio, western Río Meta, 1. ECUADOR: Río Napo, 1; Jima (southwest of Sigsig) on headwaters of Río Pamar, a tributary of Río Paute, 1 (skull only, M. C. Z.). PERU: No definite locality, 1 (U. M. M. Z.). VENEZUELA: El Llqual [= Yagual], 2 (A. M. N. H.); Valle de los Monos, Mount Duida, 2 (A. M. N. H.).

ATELES BELZEBUTH MARGINATUS E. Geoffroy

WHITE-WHISKERED SPIDER MONKEY

*Ateles marginatus* E. GEOFFROY, Ann. Mus. Hist. Nat. Paris, vol. 13, p. 92, pl. 10, Mar. 1809.

*Ateles frontalis* BENNETT, Proc. Zool. Soc. London for 1830-31, pt. 1, No. 4, p. 38, Apr. 6, 1831. Type locality, unknown.

*Ateles albifrons* H. SCHINZ, Systematisches Verzeichniss aller bis jetzt bekannten Säugethiere oder Synopsis Mammalium, vol. 1, p. 68, 1844. [This name appears in the synonymy of *Ateles marginatus* and apparently is based on Coalta à front blanc, *Ateles marginatus* Fr. Cuvier, Histoire naturelle des mammifères, vol. 7, livr. 62, pages unnumbered, Apr. 1830.]

*Type locality*.—"Les parties du Brésil, arrosées par le Rio-Janeiro" [= Pará, Brazil, and the borders of the Río Orinoco, Venezuela; see E. Geoffroy, Ann. Mus. Hist. Nat. Paris, vol. 19, p. 106, 1812. Here restricted to Cametá, Rio Tocantins, Pará, Brazil.]

*Type specimen*.—Muséum National d'Histoire Naturelle, Paris.

*Distribution.*—South side of Rio Amazonas, between the Rio Tapajóz and Rio Tocantins, state of Pará, Brazil.

*General characters.*—A deep, glossy-black spider monkey, with a white semilunar forehead patch and a few white side whiskers on face. Similar in general to *belzebuth*, which it resembles in the possession of a conspicuous forehead patch, but the pelage is longer (longest hairs on back about 90 instead of 50 mm.) and it differs notably in the extension of black over entire body and limbs. Differs from *paniscus* of the opposite side of the Rio Amazonas in smaller size, especially the smaller foot, shorter pelage, and in the conspicuous white forehead patch (absent in *paniscus*); cranial details also different.

*Color.*—An adult male from Caxiricatuba, east bank of Rio Tapajóz, Pará, Brazil: Face flesh-colored, at least around eyes and on nose; side whiskers white mixed with black; a narrow strip across brow just above eyes thinly clothed with erect black hairs behind which is a white semilunar forehead patch overlapped behind by black hairs from crown; rest of upper and underparts deep, glossy black.

*Skull.*—Very similar to that of *belzebuth* but interorbital region more depressed. Compared with that of *paniscus* the interorbital region is more depressed and the anterior profile rises more steeply to vault of brain case; it also differs notably in the lesser posterior extension of the external reduplications of the pterygoids and the smaller winglike tips.

*Measurements.*—An adult male from Caxiricatuba, east bank of Rio Tapajóz, Pará, Brazil: Total length, 1,250 mm.; tail, 750; hind foot, 108 (188 ?). Three females from Marai, right bank of Rio Tapajóz as stated by Lönnberg (Arkiv för Zool., vol. 32A, No. 25, p. 7, July 18, 1940), respectively: Total length, 1,114, 1,190, 1,245; tail, 770, 613, 740; hind foot, 190, 189, 190. *Skull:* Adult male from Caxiricatuba, Rio Tapajóz, Pará, Brazil: Greatest length, 114.1; orbital width, 61.3; postorbital constriction, 49.5; width of brain case, 59.6; zygomatic breadth, 69.7; maxillary tooth row, 31.9.

*Remarks.*—*A. b. marginatus* is readily distinguished by the white semilunar forehead patch combined with black general coloration. It appears to be most closely allied to *belzebuth* but differs in color pattern and in longer pelage. In length of pelage it suggests *paniscus*, which inhabits the opposite bank of the Rio Amazonas, but is less extreme, as the longer hairs on the middle of the back in that form exceed 100 mm. in length. In cranial characters also it agrees more closely with *belzebuth* than *paniscus*.

This black spider monkey with white semilunar patch on forehead and white side whiskers seems to be most abundant between the Rio Tapajóz and the Rio Xingú. Specimens in the Museu Goeldi at Belém were obtained at Altamira on the Rio Xingú and at Santarém at the mouth of the Rio Tapajóz. Lönnberg (Arkiv för Zool., vol. 32A,



No. 25, p. 7, July 18, 1940) records this monkey from Marai on the right bank of the Rio Tapajóz, and Bates (The naturalist on the river Amazona, p. 217, 1875) found it at Aracú on the Rio Cupary, a tributary of the Rio Tapajóz. It was found by Sieber at Cametá on the left bank of Rio Tocantins.

*Specimens examined*.—Total number, 3, as follows: BRAZIL: Caxiri-catuba, east bank of Rio Tapajóz, a few miles below Tauary, Pará, 1 (M. C. Z.); no definite locality, 2 (1, C. M.).

ATELES BELZEBUTH HYBRIDUS I. Geoffroy

HYBRID SPIDER MONKEY

*Ateles hybridus* I. GEOFFROY, Mém. Mus. Hist. Nat. Paris, vol. 17, p. 168, 1829.

*Ateles albifrons* GRAY, Catalogue of monkeys, lemurs and fruit-eating bats in the collection of the British Museum, p. 44, 1870. Type locality, South America.

[*Ateles belzebuth*] *brunneus* GRAY, Catalogue of monkeys, lemurs and fruit-eating bats in the collection of the British Museum, p. 44, 1870. Type locality, "Brazil."

*Amer-anthropoides loysi* MONTANDON, Comptes Rendus Acad. Sci., Paris, vol. 188, No. 11, p. S17, Mar. 11, 1929. Type locality, left affluent of upper Río Tarra, a tributary of the Río Catatumbo, which flows into Lake Maracaibo, Venezuela.

*Type locality*.—Valley of Río Magdalena, Colombia. Here restricted to La Gloria on the Río Magdalena, southern Magdalena Department, Colombia.

*Type specimen*.—Cotypes, 2 males and 1 female, Muséum National d' Histoire Naturelle, Paris; presented by M. Plée in 1826.

*Distribution*.—Serranía de Valledupar (Las Marimondas) and southward along the Río César to the Río Magdalena (Puerto Estrella), and south in the Cordillera Oriental at least to latitude 6° N. in Santander (Bolívar), Colombia.

*General characters*.—Distinguished by wood-brown general coloration of upperparts and a white triangular forehead patch. Apparently closely allied to *belzebuth* of Venezuela, but contrasting strongly in brownish instead of black upperparts. Differs from its geographic neighbor, *A. fusciceps robustus*, of western Colombia, in brownish upperparts and white forehead patch instead of nearly all black coloration, larger foot, and cranial details.

*Color*.—Face and upturned hairs on anterior part of forehead just above eyes black, partially concealing a white triangular forehead patch; coloration of upperparts in general wood brown, darker on head and upper back, becoming lighter and near avellaneous on lumbar region and hips; outer surfaces of forelimbs, thighs, and upperside of tail wood brown; underparts, inner surfaces of fore and hind limbs, and under surface of tail whitish or buffy; side whiskers on face varying from whitish or buffy to dark wood brown.

*Skull*.—About as in *belzebuth*. Similar to that of *A. paniscus paniscus* but variable, the premaxillae in some individuals less produced

anteriorly and the nasal opening less elongated. Compared with that of *A. fusciceps robustus* the premaxillae tend to be more produced anteriorly beyond plane of canines and the nasal opening more elongated.

*Measurements.*—Three adult males from Río Guaimaral, Valledupar, Magdalena, Colombia, respectively: Total length, 1,248, 1,238, 1,211 mm.; tail vertebrae, 750, 739, 741; hind foot, 177, 178, 172. Three adult females from same locality, respectively: Total length, 1,330, 1,247, 1,257; tail vertebrae, 856, 778, 809; hind foot, 185, 187, 187. *Skull:* Three adult males already mentioned, respectively: Greatest length, 113.9, 114.4, 116.6; orbital width, 60, 65, 63.3; postorbital constriction, 50.9, 49.2, 49.4; width of brain case, 65.6, 59.7, 65.3; zygomatic breadth, 71.4, 728, 74.1; maxillary tooth row, 30.3, 30.9, 33.3. Three adult females already mentioned, respectively: Greatest length, 116.9, 109.9, 110.7; orbital width, 64.8, 59.9, 61.3; postorbital constriction, 50.3, 48.1, 49.2; width of brain case, 61.6, 60.7, 60.8; zygomatic breadth, 70.2, 69, 69; maxillary tooth row, 32.2, 32.6, 29.2.

*Remarks.*—*Ateles hybridus* was based on specimens presented to the Paris Museum by M. Plée in 1826. They were collected in the valley of the Río Magdalena, Colombia, but no definite locality was given. It is now known to be a well-marked form with an extensive range, and for precision we restrict the type locality to La Gloria, on the Río Magdalena in the southern part of Magdalena Department, Colombia, where the animal appears to be typical. *Ateles albifrons* Gray was described from South America without definite locality. According to Elliot (A review of the Primates, vol. 2, p. 45, June 15, 1913), the type in the British Museum is stated on the ticket to be from Medellín, Colombia. That important town was for many years a headquarters for dealers in natural-history specimens, many of which labeled as from there are known to have been collected elsewhere, and it is not improbable that the type of *albifrons* may have been taken at some other locality. At any rate, descriptions of the type agree so well with *hybridus* that the name may be assumed to belong in synonymy under it.

Another spider monkey, [*Ateles belzebuth*] *brunneus*, was described by Gray (Catalogue of the monkeys, lemurs and fruit-eating bats in the collection of the British Museum, p. 44, 1870) as the fourth color variety of *belzebuth*. The original description of this specimen, which was stated to have come from Brazil, is as follows: "Brown, or brown-washed grey; cheek, loins, and outside of the thighs whiter; chest, throat, inside of limbs pale grey; crown, outside of limbs, and upper surface of tail darker brown." Philip Hershkovitz has recently examined the type of *brunneus* at our request and writes that it is identical with *hybridus*. The type has been exhibited as a mounted specimen and is considerably faded.

In cranial characters *hybridus* seems to be identical with *belzebuth*, and the similarity in color pattern strongly indicates that the two are

conspecific. On the other hand, the cranial details as well as color differences point to a departure from *robustus*, a geographic neighbor on the west. This monkey has been reported from as far south as Bolívar in the Cordillera Oriental of Santander Department.

Montandon (La Nature, Paris, No. 2809, vol. 1, p. 440, May 15, 1929; Comptes Rendus Acad. Sci. Paris, vol. 188, No. 11, p. 817, March 11, 1929) has described a monkey under the name of *Amer-anthropoides loysi*, typifying an assumed new family Amer-anthropoidae, from a left affluent of the upper Río Tarra, a tributary of the Río Catatumbo, which flows into Lake Maracaibo, Venezuela. The collector, Dr. François de Loys, observed two individuals and killed the female, and although an effort was made to save the skin and the skull these were subsequently spoiled by humidity. The description was based on notes and a photograph (Montandon, Journ. Soc. Amér. Paris, new ser., vol. 21, pp. 183-195, pl. 5, 1929) of the animal. The absurdity of the conclusions reached by Montandon is pointed out in detail by Cabrera (Rev. Soc. Argentina Cienc. Nat., vol. 10, pp. 204-209, July 12, 1930). The animal photographed seems to be unquestionably an *Ateles* with a triangular white patch on the forehead. Specimens examined by us from the San Calisto district of the upper Río Tarra proved to be *Ateles belzebuth hybridus*, to which the name *Amer-anthropoides loysi* is here relegated in synonymy.

*Specimens examined*.—Total number, 17, as follows: COLOMBIA: La Gloria, Río Magdalena, 2; Las Marimondas, eastern Andes, Fonseca, Magdalena, 5; Puerto Estrella, Río Magdalena, Magdalena, 2; Río Guaimaral, Valledupar, Magdalena, 6; Río Tarra, San Calisto, Santander, 2.

#### ATELES FUSCICEPS FUSCICEPS Gray

##### BROWN-HEADED SPIDER MONKEY

*Ateles fusciceps* GRAY, Proc. Zool. Soc. London for 1865, pt. 3, No. 47, p. 733, Apr. 1866.

*Ateles fusciceps* SCLATER, Proc. Zool. Soc. London for 1872, pt. 2, No. 42, p. 663, pl. 54 (col.), Nov. 1872. (Specimen collected by Clarence Buckley in Trans-andean Ecuador.)

*Type locality*.—South America. [Here restricted to Hacienda Chinipamba, near Peñaherrera (west of Ibarra), Intag District, Imbabura Province, northwestern Ecuador; altitude 1500 meters.]

*Type specimen*.—British Museum (Natural History) No.———.

*Distribution*.—Pacific side of cordillera of Ecuador.

*General characters*.—A black or brownish-black spider monkey, with top of head more distinctly brownish than body; foot small (150-170 mm.); pelage rather coarse; tail variable in length, usually one-fifth or more longer than head and body, clothed with hair of moderate length. Closely allied to *robustus* of Colombia but more brownish, especially on the head. Compared with *paniscus*, especially as repre-

sented by *A. paniscus chamek* of Peru, the brownish head is distinctive; other differences are the short whitish hairs on chin (chin nearly naked and white hairs absent in *chamek*); shorter, coarser pelage, the crown patch less projecting over forehead, the shorter-haired tail, smaller foot, and cranial details.

*Color*.—Face and upturned hairs on forehead black; crown cap tawny-olive, yellowish wood brown, or with black hairs tipped with burnt umber; remainder of body, including limbs and tail, covered with black hairs tinged with burnt umber.

*Skull*.—Skull of medium size and proportions; premaxillae moderately extended anteriorly; rostrum rather short and nasal opening of medium length; auditory bullae somewhat flattened. Skull similar to that of the related form *robustus*. Compared with that of *paniscus*: Premaxillae less produced anteriorly beyond plane of canines and anterior nasal opening less elongated.

*Measurements*.—An adult male and female from Hacienda Chini-pamba, near Peñaherrera, Ecuador, respectively: Total length, 1,090, 1,281 mm.; tail, 720, 770; hind foot, 160, 169. An adult female from Cordillera de Chilluri, Ecuador: Total length, 1,194; tail, 655; hind foot, 152. *Skull*: An adult male and female from Hacienda Chini-pamba, near Peñaherrera, Ecuador, respectively: Greatest length, 113.7, 117.2; orbital width, 63.6, 62.5; postorbital constriction, 50.4, 48.9; width of brain case, 61.2, 61.7; zygomatic breadth, 73, 71.2; maxillary tooth row, 32.6, 32.2. An adult female from Cordillera de Chilluri, Ecuador: Greatest length, 113.8; orbital width, 58; postorbital constriction, 47; width of brain case, 59.7; zygomatic breadth, 69.6; maxillary tooth row, 30.2.

*Remarks*.—*Ateles fusciceps* was based on a specimen from an unknown locality. Another specimen of this well-marked monkey was collected by Clarence Buckley in Transandean Ecuador, as recorded by Sclater (*op. cit.*), who also published a colored plate. For precision in regard to the type locality, however, the name is restricted by us to the form occurring at Hacienda Chinipamba, near Peñaherrera (west of Ibarra), Intag District, Imbabura Province, northwestern Ecuador, where the altitude is given as 1,500 meters.

Lönnerberg (Arkiv för Zool., vol. 14, No. 4, p. 5, June 7, 1921) has recorded specimens from near Guala (alt. 4,000 feet) and Santo Domingo de los Colorados (alt. 2,000 feet) on the upper tributaries of Río Esmeraldas, northwestern Ecuador.

*Specimens examined*.—Total number, 8, as follows: ECUADOR: Carolina Ibarra, Imbabura Province, 1 (skull only, U. M. M. Z.); Cordillera de Chilluri, 1 (U. M. M. Z.); Guala (near), Pichincha Province, altitude 3,000–4,000 feet, 1 (M. C. Z.); Hacienda Chinipamba, near Peñaherrera, Intag District, Imbabura Province, 2 (U. M. M. Z.); Mindo (below), Pichincha Province, altitude 4,000 feet, 1 (M. C. Z.); Par-

amba, Imbabura Province, 1 (skull only, U. M. M. Z.); no definite locality, 1 (U. M. M. Z.).

## ATELES FUSCICEPS ROBUSTUS J. A. Allen

## COLOMBIAN BLACK SPIDER MONKEY

*Ateles robustus* J. A. ALLEN, Bull. Amer. Mus. Nat. Hist., vol. 33, art. 43, p. 652, Dec. 14, 1914.

*Ateles dariensis* GOLDMAN, Proc. Biol. Soc. Washington, vol. 28, p. 101, Apr. 13, 1915. Type locality, near head of Río Limón, Mount Pirre, eastern Panama; altitude 5,200 feet.

*Type locality*.—Gallera, Department of Cauca, western Andes, Colombia; altitude, 5,000 feet.

*Type specimen*.—Male adult, skin and skull, American Museum of Natural History No. 32354, collected July 13, 1911, by Leo E. Miller.

*Distribution*.—Western cordillera of Andes from southwestern Colombia northward on west side of Río Cauca to eastern Panama (Mount Pirre).

*General characters*.—All black, except for a slight brownish tinge on forehead of one individual and a few inconspicuous white hairs on chin and about mouth; hairs on back harsh and of medium length (majority of hairs on midline 40–70 mm. in length); tail variable in length, occasionally nearly twice as long as head and body; hind foot small (160–170 mm.); tail hairs of moderate length (30–50 mm. on upperside). Closely allied to *fusciceps* of Ecuador but more nearly uniform black in color, without the distinctly brownish head of *fusciceps*. Similar in color to *paniscus* of northern Brazil, but with a few white hairs on chin (chin nearly naked and white hairs absent in *paniscus*): foot smaller; hair on back and tail shorter; skull differing in detail. Differs from *geoffroyi* and subspecies of Middle America in nearly uniform black, instead of diverse coloration, varying from light buff to ferruginous.

*Color*.—Face and entire pelage deep glossy black, except in some specimens having a slight brownish tinge on the forehead and a few whitish hairs on chin and about mouth.

*Skull*.—About as in the related form *fusciceps*. Very similar to that of *paniscus*, but premaxillae less produced anteriorly beyond plane of canines; anterior nasal opening less elongated. Closely resembling that of *geoffroyi*, but rostrum longer; anterior profile rising less steeply from ends of premaxillae; auditory bullae usually more flattened.

*Measurements*.—Type (from original description): Total length, 1,220 mm.; tail, 630; hind foot, 160. Two adult female topotypes, respectively: Total length, 1,150, 1,260; tail, 600, 750; hind foot, 155, 160. *Skull*: Two adult female topotypes, respectively: Greatest length, 115.3, 111.7; orbital width, 58.9, 62.2; postorbital constriction,

47.9, 44.7; width of brain case, 59.1, 57.2; zygomatic breadth, 65.9, 69.1; maxillary tooth row, 28.8, 31.1.

*Remarks.*—*Ateles dariensis* was based on a single specimen from eastern Panama, exhibiting characters that prove to be inconstant in additional specimens examined, and the name must be relegated to the synonymy of *robustus*. Despite the marked contrast in color between this black form and the red monkey of eastern Panama, the agreement in nearly all cranial details suggests close relationship. The auditory bullae are usually more flattened in *robustus*, but even this feature is not always distinctive. To the southward, on the other hand, close alliance with *fusciceps* is indicated by the slight brownish tinge on the forehead in at least one individual, and apparent identity in cranial details. Allen (Bull. Amer. Mus. Nat. Hist., vol. 35, p. 235, May 31, 1916) records a specimen of this spider monkey from Barba-coas, Nariño Department, southwestern Colombia.

Gray (Ann. Mag. Nat. Hist., ser. 4, vol. 11, No. 66, p. 468, June 1873) has recorded "*Ateles ater*" from the vicinity of Concordia, Antioquia, Colombia. Elliot (A review of the Primates, vol. 2, p. 30, June 15, 1913) under the same name lists Cereté on the Río Sinú, Bolívar, Colombia, as a locality record. Festa (Boll. Mus. Zool. ed Anat. Comp. Univ. Torino, vol. 18, No. 435, p. 4, Feb. 11, 1903) likewise identifies a female taken in forest near the Río Lara, which empties into an arm of Golfo de San Miguel, Panama, as *Ateles ater*. Anthony (Bull. Amer. Mus. Nat. Hist., vol. 35, No. 20, p. 375, June 9, 1916) refers to two specimens collected at Tapalisa, Panama.

It is therefore evident that this black spider monkey ranges from the Serranía del Darién (Cerro Pirre and Tapalisa) southward along the mountain ranges bordering the Río Sinú in Bolívar to the mountain range west of the Río Cauca (Concordia), and southward at least to southwestern Colombia (Barbacoas).

*Specimens examined.*—Total number, 7, as follows: COLOMBIA: Gallera (type locality), 2 (A. M. N. H.). PANAMA: Cituro, 1 (A. M. N. H.); Mount Pirre, 1; Tapalisa, 1 (A. M. N. H.); Río Bayano, 1 (skull only, M. C. Z.); Río Tuyra, 1 (skull only, M. C. Z.).

#### ATELES GEOFFROYI GEOFFROYI Kahl

##### NICARAGUAN SPIDER MONKEY

*Atele[s] geoffroyi* KUHLE, Beiträge zur Zoologie und vergleichenden Anatomie, Abth. 1, p. 26, 1820. (Printed also on same page as "*Ateles* Geoffroy. *mihii* species inedita.")

*Ateles melanochir* DESMAREST, Encyclopédie méthodique (Zoologie), Mammalogie, pt. 1, p. 76, 1820. [Based on specimen in Mus. Nat. Hist. Nat. Paris.] Type locality, unknown.

*Ateles melanochir* SCLATER, Proc. Zool. Soc. London for 1875, pt. 3, No. 27, p. 419, pl. 48 (col.), Oct. 1875.

*Ateles melanocercus* SCHLEGEL MS., in Jentink, Catalogue systématique des mammifères, Mus. Hist. Nat. Pays-Bas Leiden, vol. 11, p. 43, 1892 (*nomen nudum*).

*Type locality.*—Unknown [Here restricted to San Juan del Norte (Greytown), Nicaragua; see "*Ateles hybridus*" Sclater, Proc. Zool. Soc. London for 1862, pt. 2, No. 12, p. 186, Sept. 1862 (specimen from Río Rana, Gorgon Bay, near San Juan del Norte); and Salvin in Alston, *Biologia Centrali-Americana, Mammalia*, vol. 1, pp. 9–10, Sept. 1879.]

*Type specimen.*—Female adult, Muséum National d'Histoire Naturelle, Paris (menagerie specimen acquired in 1819; see I. Geoffroy, *Catalogue méthodique de la collection des mammifères*, pt. 1 (Catalogue des Primates), p. 49, 1851.)

*Distribution.*—Coastal region bordering San Juan del Norte or Matina Bay, southeastern Nicaragua; probably ranging across through the lowlands to the Pacific coast.

*General characters.*—Distinguished by light buff, overlaid with dusky tipped hairs, in general coloration; dark markings on head and limbs variable and inconspicuous as a rule. Most closely resembling *frontatus* of northwestern Costa Rica, but lighter and dark markings much more restricted. Contrasts strongly with *ornatus* of eastern Costa Rica in light buff instead of rich rufescent coloration. Differs from *A. fusciceps robustus* of eastern Panama and western Colombia in diverse instead of nearly uniform black coloration.

*Color.*—Face and eyebrows varying from blackish to a mixture of black and buffy hairs, those on the brows directed upward to form a thin ruff; top of head thinly overlaid with blackish or brownish hairs directed forward, the under color usually light buff. Crown cap grading from black to buff tinged with brownish; stiff long black hairs above eyes concealing to variable extent the white or buff triangular forehead patch; upperside of neck, entire dorsal area, upperpart of arms all around and of legs to ankles all around, except knees, light buff thinly intermixed with long black or brownish hairs; narrow areas usually extending 2 or 3 inches up and down over knees black, the hairs black to roots, but in one specimen the knee patches are limited to a few overlying dusky hairs; elbows and outer sides of forearms more or less distinctly blackish; throat and sides of face and neck silky light buff to light ochraceous-buff; underparts dull light buff; hands and feet blackish; tail above about like back, below somewhat paler along basal portion, but with a narrow line of dusky hairs bordering callosity near tip. In one specimen all the darker areas are reduced and the general pelage is suffused with light ochraceous-buff, becoming near cinnamon-buff on inguinal region. In another individual small cinnamon-buff areas appear on shoulders, inner sides of wrists, sides of feet, and near middle of underside of tail.

*Skull.*—Very similar to that of *ornatus* but apparently smaller.

*Measurements.*—No external measurements available. *Skull:* An adult and a subadult female from Nicaragua, respectively: Greatest

length, 103.7, 101.5 mm.; orbital width, 58.7, 52.7; postorbital constriction, 46.8, 45.9; width of brain case, 55.7, 56.2; zygomatic width, 61.6, 56.8; maxillary tooth row, 28. 26.2.

*Remarks.*—*A. geoffroyi* appears to be the first identifiable name applied to a spider monkey from Middle America. At the time it was described the locality from which the type specimen came was unknown. Much general evidence, however, indicates that this is the so-called gray spider monkey, also described as *A. melanochir*, now known to inhabit southeastern Nicaragua, and that this general gray (really light buff) style of monkey may range across through the lowlands of the Río San Juan to the vicinity of Lake Managua and Lake Nicaragua. It is interesting to note that a very young example of *frontatus* as figured by Gray (Zool. Voy. *Sulphur*, vol. 1, No. 1, Mammalia, pt. 1, pl. 1, Apr. 1843) has essentially the same light-gray color pattern as that of the adult of *geoffroyi*. It is probable that the type of *geoffroyi* came from San Juan del Norte, and for precision we restrict the name to the animal that occurs in the vicinity of that locality. A specimen from Río Rana, Gorgon Bay, near San Juan del Norte (Sclater, *op. cit.*, p. 186, 1862) was subsequently listed by Gray (Catalogue of monkeys, lemurs and fruit-eating bats in the collection of the British Museum, p. 43, 1870) as "*Ateles hybridus*" from "St. Juan, Nicaragua." A very good description of this spider monkey, based on field observations, was given by Salvin to Alston (*Biologia Centrali-Americana*, Mammalia, vol. 1, pp. 9–10, Sept. 1879). Confusion of the Nicaraguan race with *A. hybridus* by Gray was undoubtedly due to external resemblance, which is rather striking; but cranial characters indicate close alliance with geographic neighbors that are markedly different in coloration. A specimen (M. C. Z. No. 29626) from El Valle del Antón, near the Pacific coast east of the Azuero Peninsula in Panama, agrees closely in general coloration with those from Nicaragua, but the black on the crown patch and on forearms is more extensive. Whether this animal was native to the locality or brought from some other region seems somewhat uncertain.

*Specimens examined.*—Total number, 10, as follows: NICARAGUA: Managua, 6; no definite locality, 4 (1, A. M. N. H.).

ATELES GEOFFROYI VELLEROSUS Gray

MEXICAN SPIDER MONKEY

*Ateles vellerosus* GRAY, Proc. Zool. Soc. London for 1865, pt. 3, No. 47, p. 773, Apr. 1866.

*Ateles vellerosus* SCLATER, Proc. Zool. Soc. London for 1872, pt. 1, No. 1, p. 5, pl. 2 (col.), June 1872. (Believed by A. Boucard to have been procured near Acapulco, Mexico.)

*Ateles neglectus* REINHARDT, Vid. Medd. Nat. Foren. Kjöbenhavn, ser. 3, vol. 4 (1872), Nos. 6–9, p. 150, 1873. Type locality, Mirador, Veracruz, Mexico.



*Ateles tricolor* HOLLISTER, Proc. Biol. Soc. Washington, vol. 27, p. 141, July 10, 1914. Type locality, Hacienda Santa Efigenia, 8 miles north of Tapanatepec, southeastern Oaxaca.

*Type locality*.—?Brazil. [Here restricted to Mirador, about 15 miles northeast of Huatusco, Veracruz, Mexico; altitude 2,000 feet.]

*Type specimen*.—No. ———, British Museum (Natural History).

*Distribution*.—Unbroken forests of Veracruz and eastern San Luis Potosí and southeastward through Tabasco, across the Isthmus of Tehuantepec in eastern Oaxaca, to Honduras and El Salvador, except for highlands of Guatemala.

*General characters*.—A subspecies distinguished by combination of black or brownish-black top of head, neck, and shoulders, in contrast with buffy lumbar region, and pinkish-buff to cinnamon-buff underparts. Differs from *yucatanensis* of Quintana Roo in deeper buff underparts (underparts in *yucatanensis* silvery white or light buff). Differs from *pan* of Guatemala in greater contrast in colors of upperparts (in *pan* the upper back and lumbar region are more nearly uniform blackish in tone).

*Color*.—Top of head, neck, shoulders, outer surfaces of fore and hind limbs, and forearms all around varying from black to brownish black, passing near middle of back into cinnamon-buff or cinnamon and extending across lumbar region and including hips, the latter colors somewhat darkened along median line by overlying brownish hairs; underparts in general, including inner sides of arms in a strip narrowing from armpit to a point near elbows and on inner sides of legs to near ankles, varying from pinkish buff to cinnamon-buff, becoming near cinnamon on sides of body; underside of neck varying from grayish to a mixture of buffy-gray and brown; face blackish, but lips and small tufts near sides of mouth are dull whitish in some specimens; hands and feet black; tail above black or brownish black, mixed below with buffy hairs in a median line gradually narrowing from base to near callosity.

*Skull*.—Rather narrow, but closely similar in general to those of the other subspecies. Compared with *yucatanensis* the frontal region of the skull is slightly flatter, less convex along median line anteriorly, as shown in profile.

*Measurements*.—Two adult males from Santa Efigenia, Oaxaca, respectively: Total length, 1,200, 1,260 mm.; tail vertebrae, 760, 765; hind foot, 176, 178. Average of 7 adult females from Santa Efigenia, Oaxaca: Total length, 1,204 (1,140–1,301); tail vertebrae, 751 (700–780); hind foot, 179 (178–185). *Skull* (three adult males from Santa Efigenia, respectively): Greatest length, 110.1, 112.5, 110.9; orbital width, 60, 56.3, 57.2; postorbital constriction, 51.3, 47.6, 47; width of brain case, 59.3, 58.5, 59.6; zygomatic width, 70.5, 63.9, 68.5; maxillary tooth row, 28.9, 29.9, 29.9. Average of 7 adult females

from Santa Efigenia, Oaxaca: Greatest length, 108.2 (105.2–113.4); orbital width, 56.2 (54.5–58.8); postorbital constriction, 46.7 (45.5–48.7); width of brain case, 58 (55.9–60.2); zygomatic width, 63.5 (59.2–66.9); maxillary tooth row, 28.5 (27.2–29).

*Remarks.*—*A. vellerosus* was originally assigned by Gray to Brazil, but this appears to have been an error, as pointed out by Alston (*Biologia Centrali-Americana, Mammalia*, vol. 1, p. 10, Sept. 1879). By some subsequent authors, including Alston, the name was applied to spider monkeys from Mexico without definite locality. Incidentally, the plate illustration of Sclater (*op. cit.*) closely resembles this form. It represents a specimen believed by Boucard to have been procured near Acapulco, Guerrero, where it could not have been native, as no monkeys occur in that general region. Under the name *velerosus* Thomas (*Proc. Zool. Soc. London* for 1890, pt. 1, p. 72, June 1890) recorded specimens taken in Veracruz at the following localities: Raya de Boca Agustín, Misantla; boundaries of Misantla and Jalapa; and Hacienda de Tortugas, Jalapa. At the time *A. tricolor* from southeastern Oaxaca was described (*op. cit.*) by Hollister, *velerosus* was not recognized by him, and the name *A. neglectus* of Veracruz was overlooked. The following year, however, Hollister (*Proc. Biol. Soc. Washington*, vol. 28, p. 142, 1915) regarded *tricolor* and *neglectus* as identical. The various descriptions of *velerosus* apply well to the series of specimens now available from both Veracruz and Oaxaca, under which we, therefore, include both *neglectus* and *tricolor* as synonyms. For precision we would restrict the name *velerosus* to the form known to occur near Mirador, Veracruz, the type locality, incidentally of the later name, *neglectus*.

The range of subspecies *velerosus* marks the northern limit of the group in Middle America. It inhabits unbroken forested regions from near sea level to about 4,000 feet altitude, including some of the areas of heaviest and most continuous rainfall in Mexico. William Lloyd, a field agent of the former Biological Survey, writing of the mammals of the vicinity of Victoria, Tamaulipas, in 1891, stated that "a monkey has been said to have been taken a little south of here, but the most authentic information says they are not found north of a point west of Escandon, rather more than 50 leagues south." It is possible that spider monkeys ranged north into southern Tamaulipas, but information obtained in 1898 indicated that the northern limit was then near Xilitla, southeastern San Luis Potosí.

The German naturalist Ferdinand Deppe, in 1825, purchased a live *Ateles* in Alvarado, Veracruz, which had been caught by a Mexican about 20 hours distant from that city. Afterward, Deppe (Sclater, *Nat. Hist. Rev.*, vol. 1, No. 4, pp. 508–509, Oct. 1861) while en route from Caxaia to Alvarado, observed a "great number" of *Ateles* in a forest near Valle Real.

One specimen from Juchitán, Oaxaca, has silvery whitish underparts, and another from the same locality is normally colored. A very young individual from Santa Eligenia, Oaxaca, does not differ appreciably in color from adults from the same locality. One very young one from Tehuantepec has the upperparts normally colored, and another from the same locality is unusually dark, the lumbar region nearly as dark as the upper back.

*Specimens examined.*—Total number, 59, as follows: MEXICO: Oaxaca: Juchitán, 3 (A.M.N.H.); Oaxaca, without definite locality, 4 (A. M. N. H.); Santa Eligenia, 13; Tehuantepec, 4 (one skull without skin, A.M.N.H.; one skull without skin, U.M.M.Z.); Tuxtepec, 2. Tabasco: Teapa, 1. Veracruz: Barranca de Boca, Canton de Jalapa, 1 (skin only); Cuatotolapan, 2 (skulls only, U. M. M. Z.); Pasa Nueva, 19 (2 skulls without skins, A. M. N. H.). HONDURAS: Tegucigalpa: Cantoral, 1 (A.M.N.H.); Guaymaca, 2 (A.M.N.H.). Olancho: Catacamas, 1 (A.M.N.H.). Ocotepeque: El Chorro, east side of Ocotepeque, 4,500 feet, 1 (skin only, A.M.N.H.). EL SALVADOR: San Miguel; Lake Olomega [=Laguna Lomego], 5 (C. D.).

ATELES GEOFFROYI YUCATANENSIS, new subspecies

YUCATÁN SPIDER MONKEY

*Type locality.*—Puerto Morelos, northeast coast of Quintana Roo, Mexico; altitude 100 feet.

*Type specimen.*—Male adult, skin and skull; U. S. N. M. No. 108531 (Biological Surveys collection); collected April 2, 1901, by E. W. Nelson and E. A. Goldman; original number 14652.

*Distribution.*—Forests of the Yucatán Peninsula, northeastern Guatemala, and probably adjoining parts of British Honduras; doubtless intergrading to the southward with *vellerosus*.

*General characters.*—A rather small, slender, light-colored race, with entire underparts silvery whitish or very pale buff, pelage short and thin. Size about as in *vellerosus* of Veracruz but decidedly paler, especially on underparts where in typical specimens a whitish silvery tone extends to neck and inner sides of limbs; underside of tail cream-buff to near callosity; frontal outline of skull more prominent.

*Color.*—Type: Top of head, neck, and outer surfaces of forelimbs brownish black, passing gradually through cinnamon-drab and light drab on shoulders and anterior part of back to near olive-buff on hips, the light drab extending along median line to base of tail; face mainly dusky, but cheeks whitish; knees brownish black; rest of outer surfaces of hind limbs cinnamon-drab; entire underparts including underside of neck, inner surfaces of limbs to wrists and ankles thinly haired, between cream-buff and silvery whitish; hands and feet blackish; tail cinnamon-drab above and on sides, becoming cream-buff below along median line from base to near callosity.

*Skull*.—Similar in size to that of *vellerosus*, but frontal profile more convex anteriorly; dentition rather light.

*Measurements*.—Type: Total length, 1,150 mm.; tail vertebrae, 766; hind foot, 181. Two adult male topotypes, respectively: Total length, 1,141, 1,090; tail vertebrae, 744, 817; hind foot, 167, 174. Three adult female topotypes: Total length, 1,176, 1,150, 1,056; tail vertebrae, 756, 766, 713; hind foot, 169, 171, 165.

*Skull* (type and two adult male topotypes, respectively): Greatest length, 109.7, 105.7, 107.8; orbital width, 57.2, 53.9, 55.6; postorbital constriction, 47.8, 44.8, 45.8; width of brain case, 59.5, 56.8, 57.3; zygomatic width, 65.3, 61, 66.3; maxillary tooth row, 27.3, 27.5, 28. Three adult female topotypes, respectively: Greatest length, 104.8, 108.5, 104.8; orbital width, 52.8, 54.1, 53.1; postorbital constriction, 44.6, 45.8, 45.6; width of brain case, 55.1, 57.2, 57; zygomatic width, 58.3, 60.2, 60.3; maxillary tooth row, 25.7, 29.8, 28.7.

*Remarks*.—The spider monkey of the Yucatán Peninsula is readily distinguished by the silvery whitish underparts. Specimens from Apazote, Campeche, and Uaxactum, Guatemala, are referable to the present form, but in slightly darker and more buffy underparts they indicate gradation toward *vellerosus*. One topotype and a young without definite locality have sparse white hairs on the anterior part of the crown and a vestige of a white forehead patch partially concealed by stiff black hairs.

*Specimens examined*.—Total number, 16, as follows: MEXICO: Campeche: Apazote, 1. Quintana Roo: Puerto Morelos, 6. GUATEMALA: Uaxactum, 8 (U. M. M. Z.). No definite locality, 1 (A. M. N. H.).

ATELES GEOFFROYI PAN Schlegel

GUATEMALAN SPIDER MONKEY

*Ateles pan* SCHLEGEL, Mus. Hist. Nat. Pays-Bas Leiden, vol. 7, livr. 12 (Monogr. 40, Simiæ), p. 180, 1876.

*Type locality*.—Cobán, Alta Vera Paz, Guatemala.

*Type specimen*.—Cotypes, adult male and two adult females, Muséum d'Histoire Naturelle des Pays-Bas, Leiden.

*Distribution*.—Mountains of central Guatemala; doubtless intergrading with *vellerosus*.

*General characters*.—A very dark spider monkey with lumbar region only slightly, if at all, lighter than shoulders and thus lacking the contrasting dorsal areas presented by *vellerosus* and other Middle American races; pelage long and dense.

*Color*.—Face, top of head, shoulders, outer surfaces of limbs, forearms all around, feet, and entire tail black or brownish black. In one specimen the dark color extends nearly uniformly over all of the upperparts, but in two others the lower part of the back is suffused with cinnamon partially concealed by overlying dusky hairs; under-

side of neck and throat thinly covered with mixed brownish and buffy hairs; rest of underparts, including a strip narrowing from armpit to a point near inner side of elbow, and inner sides of hind limbs to ankles between pinkish buff and cinnamon-buff, becoming deep cinnamon or rusty along sides of body.

*Skull*.—About as in *vellerosus*.

*Measurements*.—No external measurements available. *Skull*: Two adult females from Guatemala, respectively: Greatest length, 109.1, 105.1; orbital width, 57.3, 59.4; postorbital constriction, 48, 50; width of brain case, 60.2, 62.4; zygomatic width, 66.8, 68.8; maxillary tooth row, 27.8, 27.5.

*Remarks*.—Three specimens exhibited by the Guatemalan Government at the World's Columbian Exposition were presented to the U. S. National Museum. These were labeled "Guatemala" without definite locality but are believed to be from Alta Vera Paz and probably represent typical *Ateles pan.* Aside from the very dark coloration, the coat is long and heavy, indicating that they came from a high elevation in the mountains. The skulls indicate close agreement with *vellerosus* in size and general details.

*Specimens examined*.—Total number, 3, as follows: GUATEMALA: Alta Vera Paz, 3.

ATELES GEOFFROYI FRONTATUS (Gray)

BLACK-FOREHEADED MIRIKI OR SPIDER MONKEY

*Eriodes frontatus* GRAY, Ann. Mag. Nat. Hist., ser. 1, vol. 10, No. 65, p. 256, Dec. 1842.

*Brachyteles frontatus* GRAY, Zoology of the voyage of H. M. S. *Sulphur*, vol. 1, No. 1, Mammalia, pt. 1, p. 9, pl. 1 (col.), Apr. 1843.

*Type locality*.—South America [=harbor of Culebra, León=Culebra, Bay of Culebra, Guanacaste, northwestern Costa Rica, *vide* Gray, Zool. Voy. H.M.S. *Sulphur*, vol. 1, No. 1, Mammalia, pt. 1, p. 10, Apr. 1843.]

*Type specimen*.—Female adult with young shot by Capt. Sir Edward Belcher; British Museum (Natural History) No. ———.

*Distribution*.—Northwestern Costa Rica and extreme western and northern Nicaragua.

*General characters*.—Similar in pattern of coloration, that is, the normal restriction of black areas to top of head and irregularly to outer surfaces of limbs, to *geoffroyi* of southeastern Nicaragua, but body darker, the ground color of upperparts near buckthorn brown or Mars brown and of underparts honey yellow to tawny, instead of light buff. Differs from *panamensis* of Panama in brownish instead of deep ferruginous general body color. Differs from *vellerosus* of Veracruz in the restriction of black areas on anterior part of back and more yellowish tone of lumbar region.

*Color.*—Face, forehead, top of head, and in some specimens back of neck and shoulders black; anterior part of crown patch more or less suffused with cinnamon-buff, owing to light basal color of hairs, and tending to form a transverse band across forehead; side whiskers on face light buff to cream-buff; upperparts in general buckthorn brown to Mars brown, sparsely or noticeably intermixed with blackish hairs (especially on midline of back in some individuals); belly honey yellow to tawny, extending downward on inner surfaces of legs to ankles, and a lighter tone near cinnamon-buff extending downward on inner surfaces of arms to wrists; outer surfaces of arms and legs usually black (in some individuals restricted more or less to elbow and knee patches); side whiskers on face light buff to cream buff; tail usually sharply bicolor, black or dusky above to tip and tawny below to callosity (when otherwise, mixed light and dark hairs cover the tail above and below).

*Skull.*—About as in *panamensis*, averaging somewhat broader than in *geoffroyi* or *vellerosus*.

*Measurements.*—No external measurements available. *Skull:* An adult male from Peña Blanca: Greatest length, 109.3; orbital breadth, 59.4; postorbital constriction, 49; width of brain case, 58.6; zygomatic breadth, 69.6; maxillary tooth row, 28.4. Two adult females from Lavalá and Tuma, Nicaragua, respectively: Greatest length, 117.3, 112; orbital width, 64.2, 60.2; postorbital constriction, 51.1, 51; width of brain case, 62.8, 59.8; zygomatic breadth, 71.4, 65; maxillary tooth row, 29.6, 28.4.

*Remarks.*—*A. geoffroyi frontatus* is assumed to be a recognizable subspecies, although aside from the type in the British Museum, from northwestern Costa Rica, little is definitely known of its characters or distribution. Certain specimens from Costa Rica without definite locality, and from various localities in Nicaragua, are tentatively referred to *frontatus*, although in none of these is the black on the head so restricted as in the type as figured by Gray (*op. cit.*). The color pattern in this form suggests close relationship to *geoffroyi*, which might also be expected on geographic grounds. A very young individual (U. S. N. M. No. 61208) from Costa Rica, without definite locality, closely resembles Gray's figure just mentioned in light coloration. A skull of an old female from Lavalá, Nicaragua (A. M. N. H. No. 28419), is one of the largest examined from anywhere in Middle America.

*Specimens examined.*—Total number, 38, as follows: COSTA RICA: 3 (without definite locality). NICARAGUA: Lavalá, 2 (skulls only, A. M. N. H.); Peña Blanca, 3 (A. M. N. H.); Río Siquia, 2 (skulls only, U. M. M. Z.); Río Yoya, a tributary of Río Principolca, 25 (skulls only, A. H. S.); Tuma, 2 (skulls only, A. M. N. H.); Uluce, 1 (A. M. N. H.).

## ATELES GEOFFROYI ORNATUS Gray

## COSTA RICA ORNATE SPIDER MONKEY

*Ateles ornatus* GRAY, Catalogue of monkeys, lemurs and fruit-eating bats in the collection of the British Museum, p. 44, 1870.

*Type locality*.—Unknown. [Here restricted to Cuabre, Talamanca region, southeastern Costa Rica.]

*Type specimen*.—British Museum (Natural History) No. ———.

*Distribution*.—Eastern slope of central cordillera of Costa Rica; doubtless intergrading with *panamensis* on Pacific side of the central mountain range.

*General characters*.—A dark golden-yellowish subspecies, the upperparts in strong light having a glossy, golden-yellow sheen, owing to the yellowish subterminal bands of hairs. Resembling *panamensis* of Panama and western Costa Rica but brighter, more golden yellowish in tone, the back, however, more obscured by overlying black-tipped hairs, throat lighter, underside of tail and inner side of upper arm lacking the deep "ferruginous" of *panamensis*. Differs from *frontatus* of Guanacaste, northwestern Costa Rica, in greater extension of black area on limbs and over back of neck and shoulders, and black-tipped hairs overlying and tending to modify the golden-yellowish tones on back. Contrasting strongly in golden yellowish, instead of light buffy coloration, with *geoffroyi* of the coast region of southeastern Nicaragua.

*Color*.—Face, top of head, forearms all around, outer sides of legs, hands, and feet black; upperparts from shoulders to hips and base of tail glossy golden-yellow or apricot buff, varying in some specimens to cinnamon-rufous, more or less overlaid with blackish hairs; chest near cinnamon-buff, the rest of underparts and flanks becoming near tawny or cinnamon-rufous, this general color extending down along inner sides of legs in some specimens nearly to ankles; throat and underside of neck near pinkish buff; tail black above, more or less mixed with tawny below from base to near callosity.

*Skull*.—About like that of *panamensis*; similar to that of *geoffroyi*, but apparently somewhat larger.

*Measurements*.—No external measurements available. *Skull*: Three adult males from Talamanca region, Costa Rica, respectively: Greatest length, 110.2, 111.2, 113.8 mm.; orbital width, 63.3, 61.7, 62; postorbital constriction, 45.2, 45.7, 49.6; width of brain case, 61.6, 58, 61.7; zygomatic breadth, 71.5, 68.2, 71.9; maxillary tooth row, 27.6, 30.9, 27.9. Average of 6 adult females from Talamanca region, Costa Rica: Greatest length, 108.1 (104.5–114.4); orbital width, 61.6 (56.4–64.1); postorbital constriction, 47.4 (44.8–49.1); width of brain case, 58.7 (55.7–61.3); zygomatic width, 66.8 (63.7–70.7); maxillary tooth row, 27.5 (26.3–29.5).

*Remarks*.—Much confusion has existed regarding the status of this brightly colored subspecies. Specimens that we believe belong here

have commonly been referred somewhat doubtfully to *A. geoffroyi* Kuhl. The description of *A. ornatus* by Gray (*op. cit.*), from an unknown locality, applies so well to specimens from eastern Costa Rica that their identity seems unmistakable. A more detailed description of the type than that published by Gray is given by Elliot (A review of the Primates, vol. 2, p. 45, June 1913). The glossy quality as well as bright colors of the pelage suggests the propriety of the name *ornatus*. The contrast in color with plain buffy *geoffroyi* of southeastern Nicaragua is very great, but close agreement in cranial characters and other evidence indicate probable intergradation.

*Specimens examined.*—Total number, 14, all from COSTA RICA as follows: Cataratas, Río San Carlos, 2 (A. M. N. H.); Cuabre, Talamanca region 1 (A. M. N. H.); Guapiles, Limón Province, 1 (A. M. N. H.); Santa María, 37 miles south of San José, 3 (skulls only, A. M. N. H.); Talamanca region, 7.

ATELES GEOFFROYI PANAMENSIS, new subspecies

RED SPIDER MONKEY; MONO COLORADO

*Type locality.*—Cerro Brujo, about 15 miles southeast of Portobello, Province of Colón, Panama; altitude 2,000 feet.

*Type specimen.*—Female adult, skin and skull, U. S. N. M. No. 171489 (Biological Surveys collection); collected June 8, 1911, by E. A. Goldman; original number, 21165.

*Distribution.*—Forested regions of Panama east of the Canal Zone (Cordillera de San Blas), and west through Chiriquí to central western Costa Rica.

*General characters.*—A rather large, deeply rufescent race. Very similar to *ornatus* of the Caribbean slope of Costa Rica, but reddish tone more intense, the back less obscured by overlying dusky hairs; inner side of upper arm pinkish cinnamon to ferruginous. Differs from *azuerensis* of Azuero Peninsula, Panama, in deep reddish instead of cinnamon or tawny general coloration.

*Color.*—Type: Upperparts from back of shoulders to base of tail, backs of thighs, and sides of body ferruginous, slightly obscured by black tips of hairs; outer surfaces of fore and hind limbs either black or blackish to knees and elbows; outer surfaces of limbs below knees and elbows either black or with varying admixture of black and ferruginous hairs, the hairs banded but black at tips; underparts thinly haired, pinkish cinnamon on chest and along inner sides of hind limbs to ankles, becoming deep, clear ferruginous or dark dusty reddish over abdomen; face, crown cap on head, and median streak on back of neck blackish; sides of neck covered with a mixture of pinkish buff, cinnamon-buff, and blackish hairs; chin nearly naked; throat and under side of neck thinly clothed with light cinnamon-drab or light brownish hairs; tail above ferruginous heavily mixed with black on basal two-



thirds, becoming clear black toward tip, below deep ferruginous to near callosity where blackish hairs extend all around. The ground color of body in other specimens grades from dark rusty reddish to ferruginous or burnt sienna, and a narrow ferruginous or cinnamon-buff streak usually extends long inner side of upper arm from armpit to elbow.

*Skull*.—Very similar to that of *geoffroyi*, but brain case rather broad.

*Measurements*.—Type: Total length, 1,280 mm.; tail vertebrae, 840; hind foot, 194. An adult male and female from Cerro Azul, respectively: Total length, 1,280, 1,225; tail vertebrae, 786, 785; hind foot, 183, 176. *Skull* (type): Greatest length, 112.8; orbital width, 62; postorbital constriction, 52.4; width of brain case, 61.2; zygomatic breadth, 68; maxillary tooth row, 27.3. An adult male and female from Cerro Azul, respectively: Greatest length, 114.2, 109.1; orbital width, 62.7, 59.4; postorbital constriction, 53, 50.3; width of brain case, 63.2, 61.4; zygomatic width, 70.2, 69.6; maxillary tooth row 31, 28.1.

*Remarks*.—This is the monkey commonly known as "mono colorado" in Panama and western Costa Rica. It is the most intensely red of all the races of Middle America, but despite this it has been generally confused with the light buffy form, *geoffroyi*, of Nicaragua. While the ground color of most of the body appears to be ferruginous to burnt sienna in ordinary light, in strong light and particularly in direct sunlight individual hairs on the upperparts are seen to have glossy subterminal bands giving that part of the pelage a golden-yellowish sheen, a peculiarity still more pronounced in *ornatus* and not shared with the more northern races. The specimens from Chiriquí and as far west as central-western Costa Rica agree closely in color with those from the Canal Zone in the vicinity of the type locality. In one specimen of a series of six skins from Pozo Azul, Costa Rica, a white patch on the forehead is nearly concealed in front by longer black-tipped hairs and the cheeks are dull whitish or pale buffy.

*Specimens examined*.—Total number, 24, as follows: COSTA RICA: Cañas Gordas, Puntarenas, 3 (A. M. N. H.); El Pozo, 12 miles above mouth of Río Grande de Terraba, 1 (skin only, A. M. N. H.); Pozo Azul, 10 miles above mouth of Río Grande de Pirris, 12 (3, C. M.; 4 skins with skulls and 5 extra skulls, A. M. N. H.). PANAMA: Cerro Azul, near head of Chagres River, 2; Cerro Brujo (type locality), 1; Coto, Chiriquí, 2 (M. C. Z.); Río Pequeñi, Canal Zone, 2 (M. C. Z.); San Juan, Chagres River, 1.

ATELES GEOFFROYI AZUERENSIS Bole

AZUERO SPIDER MONKEY

*Type locality*.—Altos Negritos, 10 miles east of Montijo Bay (part of the spur forming south drainage divide of Río Negro), Mariato Suay Lands, Azuero Peninsula, Veraguas Province, Panama; altitude, 1,500 feet.

*Type specimen*.—Female adult, Cleveland Museum Natural History No. 1235.

*Distribution*.—Forested mountains of the Azuero Peninsula, Panama, probably in deeper forests on both slopes, but known only from the western (Veraguas) side from the vicinity of Ponuga southward. Possibly ranging west to Burica Peninsula on Panama-Costa Rican boundary.

*General characters*.—A subspecies distinguished from neighboring forms by lighter tawny or ochraceous-tawny general coloration.

*Color*.—Face blackish; top of head and back of neck varying from deep black to a mixture of black and cinnamon-buff, with black predominating; upperparts in general ochraceous-tawny thinly intermixed with black-tipped hairs; shoulders and outer surfaces of arms and legs black; belly similar to back, but paler owing to absence of black-tipped hairs; throat and chest cinnamon-buff, this general tone extending downward to wrists and ankles on inner surfaces of limbs; tail above black, below tawny to proximal end of callosity.

*Skull*.—Rather small and narrow, but very similar otherwise to that of *panamensis*.

*Measurements*.—An adult male and female from type locality, respectively: Total length, 1,170, 1,166 mm.; tail, 720, 701; hind foot, 177, 168. *Skull* (type, from original description): Greatest length, 110.8; width of brain case, 56.8; zygomatic breadth, 65.1; maxillary tooth row, 27.7. An adult male from type locality: Greatest length, 109.8; orbital width, 57.7; postorbital constriction, 44.1; width of brain case, 58.7; zygomatic breadth, 67; maxillary tooth row, 29.7.

*Remarks*.—This subspecies is definitely known only from the heavily forested mountains of the Azuero Peninsula, where it appears to be isolated, but may prove to have a more extended range near the Pacific coast of western Panama. A series of 25 skulls from the Burica Peninsula, near the Panama-Costa Rican boundary, said to be from light-colored skins not saved and, therefore, not available for examination by us, are indistinguishable from those inhabiting regions as far north as Nicaragua. For reasons of geography and light color reported we refer them, tentatively, to *azuereensis*.

*Specimens examined*.—Total number, 27, all from PANAMA, as follows: Altos Negritos, Azuero Peninsula (type locality), 2 (C. M. N. H.); Río La Vaca, near Puerto Armuelles, Burica Peninsula, 25 (skulls only, A. H. S.).

## ATELES GEOFFROYI GRISESCENS Gray

## HOODED SPIDER MONKEY

*Ateles griseescens* GRAY, Proc. Zool. Soc. London for 1865, pt. 3, p. 732, Apr. 1866.

*Ateles cucullatus* GRAY, Proc. Zool. Soc. London for 1865, pt. 3, p. 733, Apr. 1866.

Type locality, unknown.

*Ateles cucullatus* SCLATER, Proc. Zool. Soc. London for 1871, pt. 1, p. 223, pl. 14 (col.), June 1871.

*Ateles melanochir* SCLATER, Proc. Zool. Soc. London for 1875, pt. 3, p. 419, pl. 49 (col.), Oct. 1875.

*Type locality*.—Unknown. [Here restricted to Río Tuyra, southeastern Panama.]

*Type specimen*.—British Museum (Natural History) No. —.

*Distribution*.—Presumably the valley of Río Tuyra and probably southeastward through the Serranía del Sapo of extreme southeastern Panama and the Cordillera de Baudo of northwestern Colombia.

*General characters*.—Adults apparently characterized by long, lax pelage and peculiar dusky coloration, with a general admixture of yellowish gray or golden hairs, the hairs on upperparts golden at the base. The skull indicates close relationship to *panamensis*, despite the contrast in the deep reddish color of the latter.

*Color (type of cucullatus)*.—Skin around orbits and on nose bare and of a brownish flesh color with darker freckles intermixed; cheeks and lower jaw nearly bare of hair, but skin more decidedly of a black shade (Murie, Proc. Zool. Soc. London for 1865, pt. 3, p. 739, Apr. 1866). Hairs very long and lax, those on head projecting forward over forehead; crown and neck black; rest of body above and below, limbs, and tail black intermixed with yellowish-gray or golden hairs, so numerous as to give a pale yellowish-brown coloration to back (not far removed from color on the bases of the hairs in similar parts of *A. griseescens*); hands and feet black, bases of hairs on hands golden, but not on those of feet which are black to the roots (Elliot, A review of the Primates, vol. 2, pp. 38-39, June 1913). Barbour (Journ. Mammalogy, vol. 13, No. 4, pp. 367-368, Nov. 1932) has commented on the skin and skull of a spider monkey (M. C. Z. No. 27490) obtained at Chepigana in Darién, Panama. In this immature specimen, the entire upperparts, including the outer surfaces of fore and hind limbs as well as the upper surface of the tail, are dusky, the darker hairs nearly sooty black on the distal two-thirds and thinly interspersed with these on head, neck, back, thighs, and upper surface of tail are old gold or silvery hairs; the coloration of the upperparts is further modified by a lighter suffusion resulting from the old-gold color of the basal third of these hairs showing through. A partially concealed buffy spot is present on the forehead. The throat and chest are thinly covered with sooty black hairs. On the belly, inner surfaces of hind limbs, and under surface of tail the hairs are dull cinnamon-buff tipped with sooty

black. The inner surfaces of fore limbs are noticeably lighter than the outer and also somewhat lighter than chest. The hairs on hands and feet are lighter at the base than at the tip. The hairs on the forehead project forward as on the type specimen.

*Skull*.—Similar to that of *panamensis*.

*Measurements*.—An adult male (type of *cucullatus*): Head and body, 431±mm.; tail, 698; hind foot, 159 (*vide* Murie, 1866, *op. cit.*, p. 739). *Skull*: Immature specimen from Chepigana: Greatest length, 103; orbital breadth, 52.3; postorbital constriction, 47.6; width of brain case, 55.6; zygomatic breadth, 60; maxillary tooth row, 26.8.<sup>2</sup>

*Remarks*.—A somewhat grizzled spider monkey obtained by E. Greey, an officer on the Royal West-Indian Mail Co.'s steamship *Shannon* at St. Thomas, Virgin Islands, for the Zoological Society of London became the basis of *A. griseescens* of Gray. After the death of the animal, the skin and skull were acquired by the British Museum (Natural History), and the skin was compared by Sclater (*Proc. Zool. Soc. London* for 1871, pt. 1, p. 223, June 1871) with the skin of a somewhat similar half-grown male purchased from a London dealer in 1869. This specimen, also evidently of unknown native origin, he regarded as probably identical. The type of this spider monkey, according to Elliot (*A Review of the Primates*, vol. 2, p. 37, June 1913), is entirely black except for the yellowish-brown tint of the underside of the tail, but intermixed with the hairs of the upperparts are long, gray silvery or golden hairs. The latter are not sufficiently numerous to affect the general blackish coloration except on the shoulders, lower back, and the limbs where the hairs are yellow or golden at the base.

The type of *cucullatus*, a male now in the British Museum (Natural History), had a small tubercle representing the thumb, and Sclater (*op. cit.*, 1871, p. 224) remarked that he had "some reason to suppose it may be from the northern coast of Colombia, as . . . a black spider monkey with long hair over its head is occasionally brought for sale into Cartagena."

Attention is here directed to two black-handed spider monkeys figured by Sclater (*op. cit.*, 1875, pl. 49), which were received likewise from officers of the West Indian Mail Co. The color of the face and nose closely resembles that described for *griseescens*, and in addition the distal black color of the hairs on the upperparts does not entirely conceal the yellowish basal color of these hairs. If these specimens are correctly allocated to *griseescens*, it would seem that this spider monkey is subject to considerable variation in external appearance. Owing to the lack of adequate material for study the status of this form remains uncertain.

*Specimens examined*.—Total number, 2, as follows: PANAMA: Chepigana, Darién, 1 (M. C. Z.) No definite locality, 1 (yg., A. M. N. H.).

<sup>2</sup> Hindermost molar has not erupted.

## INCERTAE SEDIS

(?) *ATELES RUFIVENTRIS* Sclater

*Ateles vellerosus* SCLATER, Proc. Zool. Soc. London for 1871, pt. 2, p. 478, Aug. 1871 (nec Gray).

*Ateles rufiventris* SCLATER, Proc. Zool. Soc. London for 1872, pt. 2, p. 688, pl. 57 (col.), Nov. 1872.

*Type locality*.—Río Atrato, Darién, Colombia.

*Type specimen*.—British Museum (Natural History) No.———.

*Remarks*.—Sclater (Proc. Zool. Soc. London for 1871, pt. 2, p. 478, Aug. 1871) stated that the type of *Ateles rufiventris*, a young female, with body length 12 inches, tail 15 inches, was obtained at Colón, Panama, by an officer of the Royal West Indian Mail Co. and that it had been brought from the Río Atrato by one of the American party (presumably the Darién Exploring Expedition under the command of Comdr. T. O. Selfridge, U. S. N.) engaged on the survey of the isthmus for a ship canal. The color of this monkey was described as uniform black except for the flesh-colored face and muzzle and the pale fulvous belly; the color of the latter, however, hardly extending on the inner surfaces of the limbs. A colored illustration for this monkey was subsequently published by Sclater (Proc. Zool. Soc. London for 1872, pt. 2, p. 688, pl. 57 (col.), Nov. 1872). Elliot (A review of the Primates, vol. 2, p. 36, June 15, 1913), however, described this monkey as having the "underparts extending a short distance on inner side of arms and legs, bright rufous," and the line between the color of the underparts and the black of the body as sharply defined.

Determination of the status of the name *Ateles rufiventris* presents some difficulty at the present time. The relative lengths of head and body to that of the short-haired tail, the color pattern, and direction of hair on crown and forehead correspond closely with these features in *Alouatta palliata aequatorialis*, young females of which also lack the bushy beard present on the throat in the males. These resemblances are shown very well by two slightly larger young howlers (U. S. N. M. Nos. 3349, 3359) also from the Río Atrato. It seems unlikely that representatives of both *Ateles* and *Alouatta* with the same color pattern would be found in the same region. Sclater states that the thumb is absent, but examination of skins in the collection shows that the thumb in skins of some young individuals is inconspicuous and might have been overlooked. The hand and feet in the illustration published by Sclater (*op. cit.*) seem more closely to resemble those of *Alouatta* than those of *Ateles*. Elliot (*op. cit.*) states that no skull seems to have been preserved. While all these points may be given consideration final generic allocation must await critical examination of the type, now not available.