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# Myosciurus pumilio.

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## *Myosciurus* Thomas, 1909

*Myosciurus minutus* Thomas 1909:474. Type species: *Sciurus minutus* Du Chaillu, 1860:366 (= *Sciurus pumilio* Le Conte, 1857:11).

**CONTEXT AND CONTENT.** Order Rodentia, Suborder Sciurognathi, Family Sciuridae, Subfamily Sciurinae, Tribe Funambulini, Subtribe Myosciurina (Hoffmann et al., 1993; Moore, 1959). Genus *Myosciurus* is monospecific.

## *Myosciurus pumilio* (Le Conte, 1857)

West African Pygmy Squirrel

*Sciurus pumilio* Le Conte, 1857:11. Type locality listed only as "Western Africa" (= Gabon).

*Sciurus minutus* Du Chaillu, 1860:366. Type locality "Headwaters of the Ovenga River, Gabon." (Preoccupied by *Sciurus minutus* Lartet, a fossil species.).

*Myosciurus minutulus* Hollister, 1921:135. Renaming of *Myosciurus minutus* (Du Chaillu, 1860).

*Myosciurus pumilio* Lang, 1922:119. First use of the current name combination.

**CONTEXT AND CONTENT.** Context as in generic account above. *M. pumilio* is monotypic (Hoffmann et al., 1993).

**DIAGNOSIS.** *Myosciurus pumilio* is distinguished from other African sciurids by its extremely small size (Amtmann, 1977; Nowak, 1991). The greatest length of skull is 25 mm (Fig. 1), with the bony palate not extending posteriorly beyond the ends of the maxillary toothrow; the masseteric tubercule is absent. There is one premolar in the maxillary toothrow. The length of head and body is ≤75 mm; length of tail is ≤60 mm (Amtmann, 1977; Jones and Setzer, 1970).

**GENERAL CHARACTERS.** The fur is soft and drab brown in color; upper parts are buffy umber brown and the underside is a lighter olive white. There are no longitudinal stripes. The edges of the ears and borders of the eyelids are white (Amtmann, 1977; Jones and Setzer, 1970, 1971; Nowak, 1991). Illustrations and descriptions of external and cranial features were presented by Rosevear (1969). Comparisons of external and cranial measurements reveal slight sexual dimorphism in size. Jones and Setzer (1970) listed the following means and ranges of external measurements (mm) of six males: length of head and body, 71.5 (67.2–72.0); length of tail, 55.4 (54.8–60.0); length of hind foot, 19.2 (18.0–20.0); and length of ear from notch, 7.9 (7.0–8.0). They also recorded the following for four females: length of head and body, 74.0 (60.0–94.0); length of tail, 50.0 (50.0–50.0); length of hind foot, 18.5 (10.0–21.0); and length of ear from notch, 7.9 (7.0–8.0). Although overall body size of female West African pygmy squirrels is slightly smaller than that of males, the cranium of females is slightly larger (Jones and Setzer, 1970). Mean and range of cranial measurements of six males are: greatest length of skull, 21.5 (21.0–22.0); condylobasal length, 19.5 (19.0–19.9); zygomatic breadth, 13.5 (13.1–14.1); interorbital breadth, 8.4 (8.1–8.9); braincase breadth, 11.9 (11.8–11.9); length of maxillary, tooth row, 2.6 (2.4–2.7); palatilar breadth, 3.3 (3.0–3.7); and palatilar length, 5.7 (5.4–6.0—Jones and Setzer, 1970). Mean and range of cranial measurements of four females are: greatest length of skull, 22.5 (21.8–22.9); condylobasal length, 20.3 (19.0–21.0); zygomatic breadth, 14.3 (13.8–14.6); interorbital breadth, 8.9 (8.7–9.3); braincase breadth, 12.0 (11.9–12.4); length of maxillary tooth row, 2.7 (2.5–3.1); palatilar breadth, 3.7 (3.5–3.9); and palatilar length, 6.0 (5.6–6.2—Jones and Setzer, 1970). Emmons (1979*a*) reported average mass as 16.5 g ($n$ = 6).

**DISTRIBUTION.** The West African pygmy squirrel is known from Cameroon (Good, 1947; Sanderson, 1940), northwest-

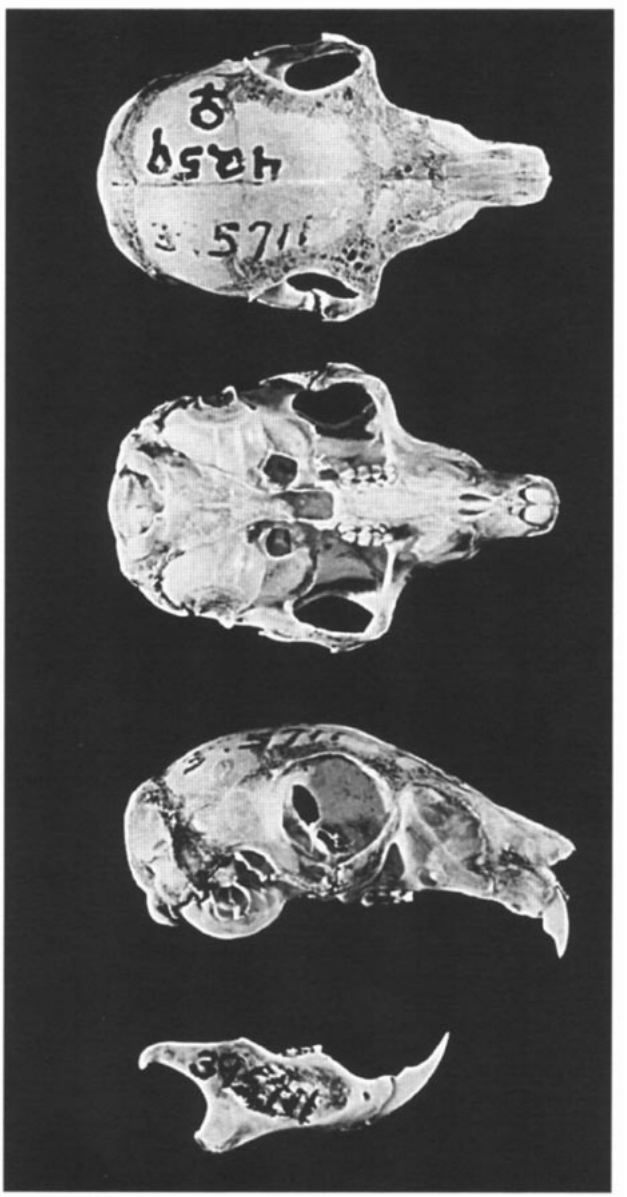

FIG. 1. Dorsal, ventral, and lateral views of cranium and lateral view of mandible of *Myosciurus pumilio* from Engong (10°19′E, 1°37′N), Rio Muni, Equatorial Guinea, West Africa (female, U.S. National Museum of Natural History 395711). Greatest length of cranium is 22.9 mm. Photograph courtesy of Robert D. Fisher.

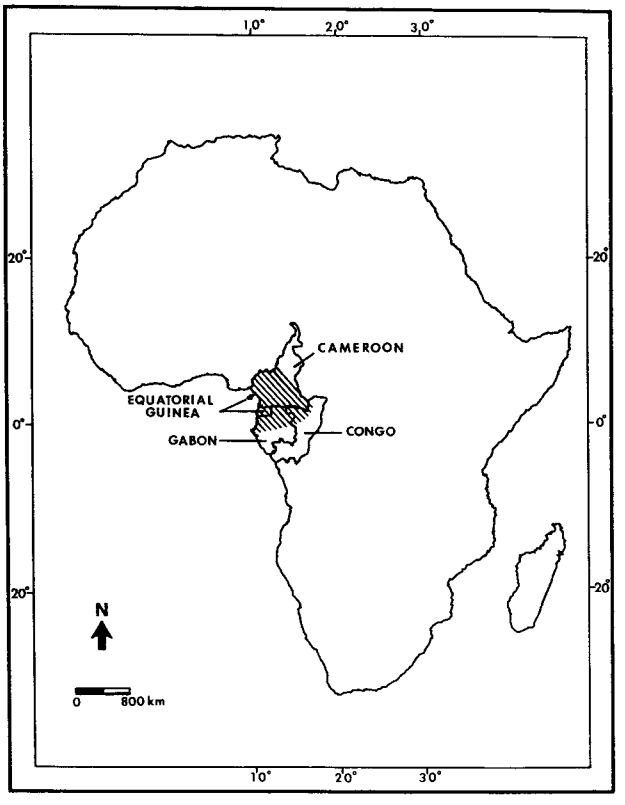


FIG. 2. Distribution of *Myosciurus pumilio* in west Africa. The Island of Bioko (part of Equatorial Guinea) is included in the distribution range.

ern Gabon (Malbrant and Maclatchy, 1949; Sanborn, 1953; Rosevear, 1969), northwestern Congo (Hecketsweiler; 1990), and Equatorial Guinea, including the island of Bioko (= Fernando Poo—Basilio, 1962; Cabrera, 1929; Jones and Setzer, 1970; Fig. 2). Happold (1987) removed this squirrel from the list of Nigerian mammals since Eshobi (5°50′N 9°24′E) is now in Cameroon. There is no fossil record for the species.

**FORM AND FUNCTION.** The manus of *M. pumilio* has elongated digits that are almost of equal length, but the bones of the pollex are reduced so that it is not visible externally (Emmons, 1979*a*; Long and Captain, 1974). The hind foot also has elongated toes that are almost of equal length and a short hallux (Emmons, 1979*a*; Sanderson, 1940). Limbs that are spread out to the sides, elongated digits, and curved claws are believed to be adaptations for arboreal life (Emmons, 1979*a*; Long and Captain, 1974). These features may allow this small squirrel to attach to the bark of trees with "equal pull on the four toes," permitting it to cling with equal ease on both upper and lower sides of branches of various diameters (Emmons, 1979*a*: 432).

Volume of the brain (0.70 cc) of a single animal, relative to either body weight or body length, suggest that *M. pumilio* has a greater relative brain size than other African squirrels (Roth and Thorington, 1982). However, because this individual had a proportionately low body weight and sample size was limited to a single individual, Roth and Thorington (1982) concluded that *M. pumilio* was unlikely to differ greatly from other African squirrels.

A specimen of a lactating female pygmy squirrel from Equatorial Guinea possessed one pair of pelvic mammae, as did a female specimen from Cameroon (Jones and Setzer, 1970). However, Emmons (1980) reported two pairs of mammae on female specimens from Gabon. Other members of the tribe Funambulini have four mammae (Moore, 1961).

**ONTOGENY AND REPRODUCTION.** Little information is available with regard to reproduction of these diminutive tree squirrels. A lactating female was obtained on 28 March 1968 (Jones and Setzer, 1970). A female containing two embryos was reported by Emmons (1979*b*) from Gabon. Another female collected from Bioko had two "hazelnut-sized embryos" Eisentraut (1973: 78).

**ECOLOGY.** *Myosciurus pumilio* is an arboreal squirrel that inhabits all types of forests within its geographic range. These mammals have been observed at all heights in trees, but they occur mainly at low levels (Emmons, 1980). Notes on labels of specimens in the British Museum (Natural History) indicate that these squirrels were captured on trunks of trees. One animal was collected on the trunk of a fallen tree near the edge of a cleared coffee and banana plantation bordered by regenerating vegetation (Jones and Setzer, 1970).

West African pygmy squirrels are bark gleaners; observations have been made of the animals feeding almost continuously on scrapings from the surface of small chips pulled from the outer bark of large living and dead trees. Stomach contents of three specimens included bark fragments, fungus, oil droplets, and a few ants and termites (Emmons, 1980).

*Myosciurus pumilio* has been classified as vulnerable (Schlitter, 1989). It is assumed that its numbers are low and that it could be affected quickly by widespread deforestation (Martin, 1991; Schlitter, 1989).

**BEHAVIOR.** *Myosciurus pumilio* is diurnal with regard to foraging activities (Emmons, 1980; Moore, 1961) and individuals habitually forage in the same trees. Most observations are of solitary individuals, but when two animals are seen together, they tolerate each other, even when in close proximity (Emmons, 1980).

The only sound recorded for *M. pumilio* is a "faint pipping sound" (Emmons, 1978: 29). This is classified as a low-intensity alarm call. Single calls are repeated with little variation in frequency or length of the interval between the calls (Emmons, 1978).

Although other African tree squirrels have been observed on many occasions mobbing snakes, small carnivores, birds of prey, monkeys, and humans, *M. pumilio* has not been observed participating in mobbing with other squirrels. However, it produces an alarm call that draws attention to the source of danger (Emmons, 1978).

**REMARKS.** No information is available on the genetics of this species. A chronological review of the discovery, description, and complicated nomenclatural history of the West African pygmy squirrel was presented by Jones and Setzer (1971). The generic name literally means mouse-squirrel. The specific epithet (*pumilio*) is from the Latin for "pygmy." Both are reflections of the diminutive size of this mammal (Jaeger, 1955).

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## LITERATURE CITED

AMTMANN, E. 1977. Sciuridae. Pp. 1–12, *in* The mammals of Africa, an identification manual (J. Meester and H. W. Setzer, eds.). Smithsonian Institution Press, Washington, D.C., 480 pp.

BASILIO, R. P. A. 1962. La vida animal en la Guinea Española. Instituto de Estudios Africanos, Consejo Superior de Investigaciones Científicas, Madrid, España, 190 pp.

CABRERA, A. 1929. Catalogo descriptivo de los mamíferos de la Guinea Española. Memorias de la Real Sociedad Española de Historia Naturales, Madrid, España, Tomo XVI:5–121.

DU CHAILLU, P. 1860. Descriptions of mammals from equatorial Africa. Proceedings of the Boston Society of Natural History, 7:296–304, 358–367.

EISENTRAUT, M. 1973. Die Wirbeltierfauna von Fernando Poo und WestKamerun. Bonner Zoologische Monographien, 3:1–428.

EMMONS, L. H. 1978. Sound communication among African rainforest squirrels. Zeitschrift für Tierpsychologie, 47:1–49.

———. 1979*a*. A note on the forefoot of *Myosciurus pumilio*. Journal of Mammalogy, 60:431–432.

———. 1979*b*. Observations on litter size and development of some African rainforest squirrels. Biotropica, 11:207–213.

———. 1980. Ecology and resource partitioning among nine spe-

cies of African rain forest squirrels. Ecological Monographs, 50:31–54.

GOOD, A. I. 1947. Les rongeurs du Cameroun. Bulletin de la Societe d'Etudes Camerounaises, 17/18:5–20.

HAPPOLD, D. C. D. 1987. The mammals of Nigeria. Clarendon Press, Oxford, 402 pp.

HECKETSWEILER, P. 1990. La conservation des ecosystèmes forestiers du Congo, basé sur le travail de Philippe Hecketsweiler. International Union for Conservation of Nature and Natural Resources. Gland, Switzerland, 187 pp.

HOFFMANN, R. S., C. G. ANDERSON, R. W. THORINGTON, JR., AND L. R. HEANEY. 1993. Family Sciuridae. Pp. 419–465, *in* Mammals species of the world, a taxonomic and geographic reference. Second ed. (D. E. Wilson and D. M. Reeder, eds.). Smithsonian Institution Press, Washington, D.C., 1206 pp.

HOLLISTER, N. 1921. A new name for the West African pygmy squirrel. Proceedings of the Biological Society of Washington, 34:135.

JAEGER, E. C. 1955. A source-book of biological names and terms. Third ed. Charles C Thomas Publisher, Springfield, Illinois, 323 pp.

JONES, C., AND H. W. SETZER. 1970. Comments on *Myosciurus pumilio*. Journal of Mammalogy, 51:813–814.

———. 1971. The designation of a holotype of the West African pygmy squirrel, *Myosciurus pumilio* (LeConte, 1857) (Mammalia: Rodentia). Proceedings of the Biological Society of Washington, 84:59–64.

LANG, H. 1922. The correct name of the West African pygmy squirrel. Journal of Mammalogy, 3:118–119.

LE CONTE, J. 1857. Descriptions of several new mammals from western Africa. Proceedings of the Academy of Natural Sciences of Philadelphia, 9:10–11.

LONG, C. A., AND J. CAPTAIN. 1974. Investigations on the Sciurid manus, I, some new taxonomic characters and their importance in the classification of squirrels. Zeitschrift für Säugetierkunde, 39:98–102.

MALBRANT, R., AND A. MACLATCHY. 1949. Faune de l'equateur Africain Francais. Encyclopedie Biologique XXXVI, Paul Lechevalier, Éditeur, Paris, Francais, Tome II, Mammifères, 323 pp.

MARTIN, C. 1991. The rainforests of West Africa, ecology—threats—conservation. Birkhaüser Verlag, Basel, Switzerland, 235 pp.

MOORE, J. 1959. Relationships among living squirrels of the Sciurinae. Bulletin of the American Museum of Natural History, 118:155–206.

———. 1961. Geographic variation in some reproductive characteristics of diurnal squirrels. Bulletin of the American Museum of Natural History, 122:1–32.

NOWAK, R. M. 1991. Walker's mammals of the world. Fifth ed. The Johns Hopkins University Press, Baltimore, 1:1–642, 2: 643–1629.

ROSEVEAR, D. 1969. The rodents of West Africa. British Museum (Natural History), London, 604 pp.

ROTH, V. L., AND R. W. THORINGTON, JR. 1982. Relative brain size among African squirrels. Journal of Mammalogy, 63:168–173.

SANBORN, C. C. 1953. Notes sur quelques mammiferes de l'Afrique equatoriale francaise. Mammalia, 17:164–169.

SANDERSON, I. T. 1940. The mammals of the North Cameroons forest area. Being the results of the Percy Sladen expedition to the Mamfe Division of the British Cameroons. Transactions, Zoological Society of London. 24:623–725.

SCHLITTER, D. A. 1989. African rodents of special concern: a preliminary assessment. Pp. 33–39, *in* Rodents: a world survey of species of conservation concern (W. Z. Lidicker, Jr., ed.), Occasional Papers of the International Union for the Conservation of Nature and Natural Resources, Species Survival Commission, 4:1–60.

THOMAS, O. 1909. The generic arrangement of the African squirrels. Annals and Magazine of Natural History, 3:467–475.

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