MAMMALIAN SPECIES No. 252, pp. 1–4, 3 figs.

Euphractus sexcinctus.

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Published 13 December 1985 by The American Society of Mammalogists

Euphractus Wagler, 1830

Euphractus Wagler, 1830:36. Type species *Dasypus sexcinctus* Linnaeus designated by Thomas (1911:141).
Encoubertus McMurtrie, 1832:104 (as subgenus of *Dasypus* Linnaeus). Type species *Dasypus sexcinctus* Linnaeus.
Pseudotroctes Gloger, 1842:112. Type species *Dasypus setosus* Wied-Neuwied (=*Dasypus sexcinctus* Linnaeus).
Scleropleura Milne-Edwards, 1872:1. Type species *Scleropleura bruneti* Milne-Edwards (=*Dasypus sexcinctus* Linnaeus), by monotypy.

CONTEXT AND CONTENT. Order Xenarthra (=Edentata), Suborder Cingulata, Superfamily Dasypodoidea, Family Dasypodidae, Tribe Euphractini. The genus *Euphractus* contains one species.

Euphractus sexcinctus (Linnaeus, 1758)

Yellow Armadillo

Dasypus sexcinctus Linnaeus, 1758:51. Type locality Para, Brazil, designated by Thomas (1911:141).
Loricatus flavimanus Desmarest, 1804:28. Type locality Paraguay (based upon tatou poyou of d'Azara, 1801:142).
Dasypus flavipes G. Fischer, 1814:122. Type locality Para, Brazil, based upon *D. sexcinctus* Linnaeus.
Dasypus gilvipes Lichtenstein, 1818:215. A naming of *Dasypus gilvipes* Illiger, a *nomen nudum*.
Dasypus encoubert Desmarest, 1822:pl. 26, fig. 4. Type locality Paraguay.
Dasypus setosus Wied-Neuwied, 1826:520. Type locality Bahia, Brazil.
Scleropleura bruneti Milne-Edwards, 1872:1. Type locality vic. San Antonio, Ceará, Brazil.

CONTEXT AND CONTENT. Context noted in the generic and specific comments above. Five subspecies are recognized by Cabrera (1958:215–216), Wetzel (1982:357), and Yepes (1928):

E. s. boliviae (Thomas, 1907:165). Type locality Santa Cruz (de la Sierra), Santa Cruz, Bolivia.
E. s. flavimanus (Desmarest, 1804), see above (*encoubert* Desmarest and *gilvipes* Lichtenstein are synonyms).
E. s. setosus (Wied-Neuwied, 1826), see above (*bruneti* Milne-Edwards a synonym).
E. s. sexcinctus (Linnaeus, 1758), see above (*flavipes* Fischer a synonym).
E. s. tucumanus (Thomas, 1907:166). Type locality Tapia, Tucumán, Argentina.

DIAGNOSIS. *Euphractus sexcinctus* is the largest species of Euphractini; adults have a head and body more than 400 mm long and condylonasal length of skull more than 100 mm. *E. sexcinctus* differs from other euphractines in the following characteristics: at the anterior margin of the scapular shield there is no moveable band; the hair on the carapace is sparse, pale, and buffy-white (not tan, brown, or black, or the dense pale hair of high-altitude *Chaetophractus*); the carapace (Fig. 1) is a pale yellow, pale tan, or reddish tan (not brown or brownish black); the headshield is relatively narrow (for euphractines) with widths ranging between 69 and 80% of length; the pinna are long, extending posteriorly to the second or third complete band of scales on the anterior scapular shield; the zygomatic arch is elongate and slender with the jugal (malar) never twice as high as the overlying anterior edge of the squamosal (Fig. 2); there are 9 pairs of maxillary and 10 pairs of mandibular teeth in adults (as in *Chaetophractus* but not *Zaedyus*); and there are two to four openings for scent glands in the middorsum of the pelvic shield as in some *Chaetophractus villosus* (Desmarest) but in no other armadillo (Wetzel, in press).

GENERAL CHARACTERS. Among extant armadillos, *E. sexcinctus* is exceeded in size only by *Priodontes maximus* (Kerr) and *Dasypus kappleri* Kraus. As with other euphractines (*Chaetophractus* and *Zaedyus*) and the pichiciegos (*Chlamyphorus* sp.), *E. sexcinctus* has a tympanic bulla and an ossified external auditory meatus. It also shares with other euphractines a broad head; a single row of large nuchal scutes immediately behind the headshield that are no wider than the space between the ears; prominent, stout hairs (bristles) on the carapace; and such conservative features as five complete toes with unmodified claws, strong muscles for mastication, little variation in tooth number, and large, strong teeth (Redford, in press *a*; Wetzel, in press).

Mean (extremes and sample size in parentheses) measurements (in mm), for mixed sex, adult samples from western Goias, Brazil (Redford, in press *a*) are: length of head and body, 453 (401 to 495; 14); length of tail, 220.5 (119 to 241; 13); length of hindfoot, 86.1 (78 to 92; 14); length of ear, 39 (32 to 47; 14); body mass, 4.68 kg (3.2 to 6.5; 14). Measurements for yellow armadillos from throughout the range (Wetzel, in press) are: ratio of headshield width to length, 0.74 (0.69 to 0.80; 23); length of largest nuchal scute, 15.3 (13.5 to 18.4; 23); number of moveable bands, 6.3 (6 to 7; 22); condylonasal length, 114.5 (109.0 to 125.5; 44); zygomatic width, 68.6 (61.7 to 74.5; 44).

DISTRIBUTION. *Euphractus sexcinctus* occurs in the savannas of southern Surinam and their continuation in adjacent Para, Brazil, probably intergrading on the Brazilian shield with *E. s. setosus* (Wied-Neuwied, 1826) of southeastern Brazil and with *E. s. flavimanus* (Desmarest, 1804) in the Brazilian state of Mato Grosso. The subspecies *E. s. flavimanus* occurs from Mato Grosso through eastern Paraguay, northeastern Argentina, and Uruguay, probably intergrading with *E. s. setosus* in extreme southeastern Brazil. The subspecies *E. s. boliviae* is distributed in the Gran Chaco and probably intergrades on the southwest with *E. s. tucumanus* of the Argentinian Provinces of Tucuman and Catamarca (Fig. 3).

FOSSIL RECORD. Fossil *Euphractus sexcinctus* or near *E. sexcinctus* are known from P. W. Lund's reports and collections from the Pleistocene to the Recent in the caverns of Lagoa Santa, valley of Rio Velhas, Minas Gerais, Brazil (Paula Couto, 1970:5, 1979:220) and the Pleistocene of Tarija, Bolivia (Hoffstetter, 1963: 196) and as the genus *Euphractus* from the Middle Pleistocene (Ensenadense) and Upper Pleistocene (Lujanense) of the province of Buenos Aires, Argentina (Scillato Yane, 1975:458).

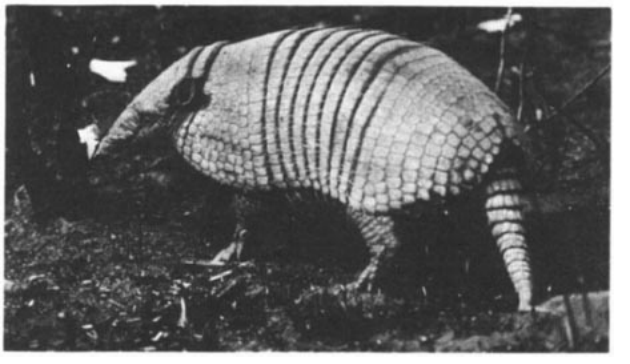

FIG. 1. Wild *Euphractus sexcinctus* in Goias, Brazil, 1981 (photo by K. H. Redford).

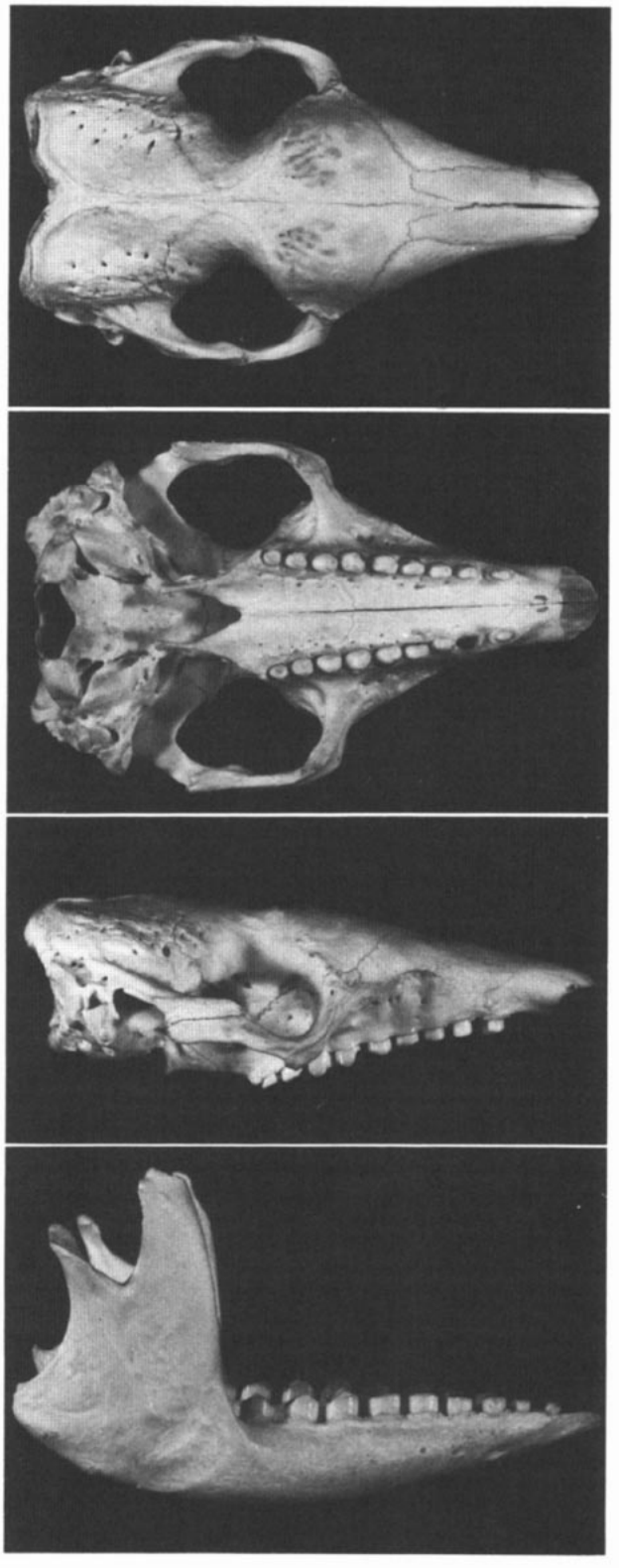

FIG. 2. Dorsal, ventral, and lateral views of cranium and lateral view of lower jaw of *E. sexcinctus* from Goias, Brazil. Total length is 117 mm.

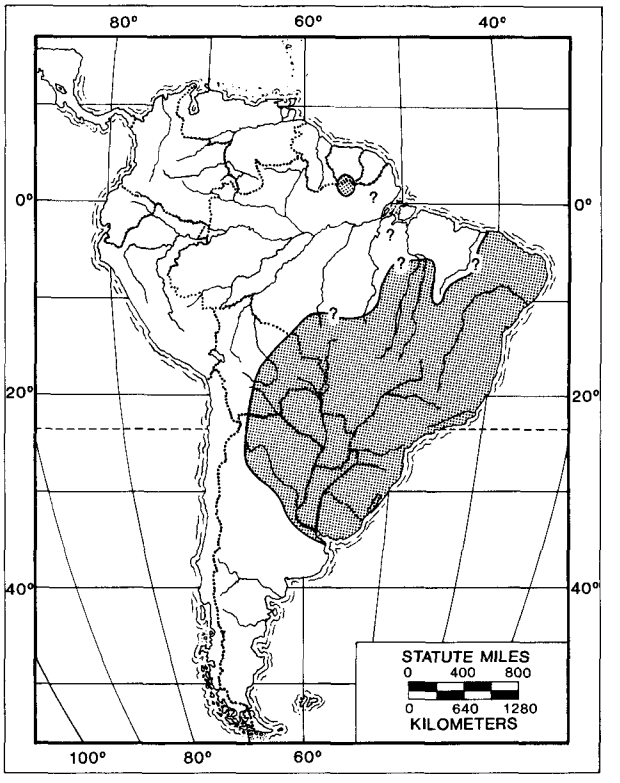

FIG. 3. Distribution of *E. sexcinctus* (after Wetzel, in press).

FORM AND FUNCTION. Typical of euphractines, the skull of *E. sexcinctus* is heavy and the teeth and mandibles are stouter than those of most other armadillos (Grassé, 1955). The teeth lack enamel (Silva Sasso and Della Serra, 1965). The skeleton is heavy (Kuhlhorn, 1938) and the ribs are uniformly expanded, resembling the myrmecophagid pattern, possibly associated with digging (Jenkins, 1970).

The pelvic shield of both males and females contains two to four ill-defined holes opening into shallow pits that are associated with scent glands (Grassé, 1955; Pocock, 1913; Redford, in press *b*).

Euphractus sexcinctus has a body temperature of 34°C (McNab, 1980; Roig, 1969). It has a bicornate uterus (Benirschke et al., 1969), a simple penis (Watson, 1878), and a ring-shaped placenta (Chapman, 1901). The testes of yellow armadillos are histologically similar to those of *Dasypus novemcinctus* and spermatogenesis takes place in four stages (Persona and Bustos-Obregon, 1983). Females have two pectoral nipples (Barlow, 1965).

ONTOGENY AND REPRODUCTION. Litter size ranges from one to three and litters are composed of both sexes (Gucwinska, 1971; Kuhlhorn, 1954; Sanborn, 1930). In captivity, the female builds a nest before giving birth; young can be born throughout the year after a gestation of 60 to 64 days. When a female with young is disturbed she tries to hide or move the young and responds aggressively to disruption. At birth, each young weighs 95 to 115 grams, has a delicate carapace, is hairless, and has closed eyes. They can produce both soft clicks and squeaks and the mother retrieves young displaced from the nest (Eisenberg, 1981). The eyes open after 22 to 25 days; the young quadruple their weight in 30 days and reach maturity in 9 months (Gucwinska, 1971). Gucwinska (1971) supplied information on hand-rearing and reported that young will take solid food at 1 month. Two pregnant females were found in September and October in Central Brazil and in January in Uruguay (Barlow, 1965).

ECOLOGY AND BEHAVIOR. *Euphractus* is largely diurnal though occasionally it is active at night (Redford, in press *b*; Schaller, 1983). It is a good digger and builds burrows with a single inverted U-shaped entrance that, unlike the case with some other armadillos, frequently are reused. One male used a single burrow for 18 days (Carter and Encarnação, 1983). In the eastern Brazilian campo-cerrado, yellow armadillo burrows averaged 21 cm wide and 19 cm high at the mouth and 16 cm high and 10 cm wide at 21 cm into the burrow (Carter and Encarnação, 1983). E. Storrs (pers. comm.) reported that captive animals mark the corners of their cages with the secretions from their pelvic-shield scent gland, indicating that this gland is probably used to mark burrows.

Euphractus is omnivorous and consumes a broad range of animal and plant foods that include carrion, small vertebrates, insects, particularly ants, bromeliad fruits, tubers and palm nuts (Redford, in press *a*). Plant material can compose a significant proportion of the diet as pointed out by Schaller (1983), who found that 7 of 10 stomachs contained more than 90% by volume plant material. In captivity *E. sexcinctus* kill and eat large rats (*Rattus rattus*) when given the chance. They are inefficient predators because they lack a killing bite. They tear apart prey by standing on it and ripping off pieces held in their jaws (Redford, in press *b*). *Euphractus* are active, alert animals. They provide the impression of a small carnivore as they trot along, search the ground with their noses, and stop frequently to dig shallow foraging holes. They have poor eyesight, thus relying on smell to locate food and warn of predators. Unlike most armadillos, *Euphractus* runs to escape and bites when handled.

In common with other euphractines, *Euphractus* can accumulate large amounts of subcutaneous fat; captive animals have weighed 8 kg (McNab, 1980), and Roig (1969) reported that one male weighed 11.3 kg. McNab (1980) suggested that the fat-storing ability may be related to seasonal scarcity in food.

The yellow armadillo is most commonly found in savannas, campo-cerrados and forest edges. It appears to use higher, drier habitats and is rarely seen in marsh habitats (Schaller, 1983), though Barlow (1965) reported them as most common in ecotonal situations, especially near streams.

Schaller (1983) reported *Euphractus* as composing two-thirds of the armadillo biomass at his study area in Mato Grosso State, Brazil (18.8 kg/km² for the entire study area). In cerrado vegetation it occurred at 0.48 kg/km²; in secondary forest at 0.59/km²; in gallery forest at 2.0/km²; and at 2.9/km² in deciduous forest.

Yellow armadillos are hunted for meat, particularly in northeastern Brazil, though some people dislike the meat because of its strong flavor (Mares et al., 1981*b*). *Euphractus* tails are used by Argentinian Indians to carry firemaking tools and to strike with flint for sparks (Mares et al., 1981*a*). Brazilians of the caatinga inhale snuff through the hollowed tail (Shoumatoff, pers. comm.).

Sampaio and Braga-Dias (1977) reported that *Euphractus* contracts Jorge Lobo's disease and can be used as an experimental animal for studying the disease.

Other names for *E. sexcinctus* include six-banded armadillo, tatu peba, and tatu peludo.

GENETICS. Roig's (1964) immunotests indicated distinct separation of the genera *Euphractus*, *Chaetophractus*, and *Zaedyus*, but all three genera were closer to each other than to *Tolypeutes*. The chromosomes of *Euphractus sexcinctus* are 2n = 58, FN = 102, as compared with *Chaetophractus villosus*, 2n = 60, FN = 90, and *Zaedyus pichiy*, 2n = 62, FN = 94 (Benirschke et al., 1969; Jorge et al., 1977).

REMARKS. Comparisons of recent Euphractini by Jorge et al. (1977; karyotypes), Roig (1964; immunology), and Wetzel (in press; morphology) suggest that the genera *Chaetophractus* Fitzinger and *Zaedyus* Ameghino should not be included in the genus *Euphractus*. We therefore follow Cabrera (1958), Talmage and Buchanan (1954), Wetzel (1982, in press), Yepes (1928), but not Moeller (1968, 1975).

Dasyphractus brevirostris Fitzinger, although chiefly referable to *Chaetophractus vellerosus* (Cabrera, 1958:214; Thomas 1894:72), is a partial junior synonym of *E. sexcinctus* because of the reference by Fitzinger (1871:265) to Schomburgk's (1840) *Dasypus villosus* for "British Guiana." The only euphractine in the Guianas (actually the Sipaliwini savannas of southern Surinam), or even north of the Amazon River, is *Euphractus sexcinctus*. *Scleropleura bruneti* Milne-Edwards (1872:1) was considered by Winge (1941:391) to be based upon a deformed *Euphractus sexcinctus*. *Tatus gilvipes* Illiger (1815:108), published without indication or reference, is a *nomen nudum*. We did not attempt to determine the senior synonym of the several names that were based upon it, *Dasypus gilvipes* Lichtenstein (1818:215) and *Dasypus gilvipes* Olfers (1818:219). *Euphractus mustelinus* Fitzinger (1871:259) is not included in our synonymy because its basis, Grew's (1681:19) "weesle-headed armadillo," is probably one of the *Chaetophractus* sp. and not *Euphractus sexcinctus*. We could have included a portion of *Dasypus villosus* as broadly used by Krieg (1929:166) in the synonyms for *E. sexcinctus*.

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