

The Edentates of the Cerrado

Kent H. Redford

Director, Conservation Science and Stewardship - Latin American Division, The Nature Conservancy
1815 N. Lynn St. Arlington, VA 22209 USA.

Introduction

The edentates (=xenarthrans) are an important part of the mammalian fauna of the cerrado. Three of the four edentate families are represented: anteaters (Myrmecophagidae), three-toed sloths (Bradypodidae), and armadillos (Dasypodidae) with a total of 12 species. The cerrado has been poorly explored biologically and in the future more edentate species may be added to this list. Part of the difficulty in compiling a list of edentates of the cerrado is the inexactness of the cerrado (*sensu lato*) boundaries. Inclusion of the species listed below is based on my personal experience, Wetzel (1982) and Redford and Fonseca (unpubl.).

Myrmecophagidae

Myrmecophaga tridactyla: giant anteater, tamanduá-bandeira.

This anteater is unmistakable because of its large size, long flag-like tail, and its distinctive coloration. The dorsum and tail are dark brown or black, the forelegs are mostly white with black bands at the wrist and above the claws, a thin white band passes from just below the ears back and up to well above the shoulders, descending to where the forelegs meet the body. This white line encloses a broad band of black. The tail which can be nearly as long as the body is uniformly brown with very coarse hair. Giant anteaters have very poor eyesight and fairly poor hearing. Their sense of smell is very acute and the world of a giant anteater is a world of smells. Smell is used to locate the anteaters diet of ants and termites. The nature of the social insect fauna available to a foraging anteater dictates to what extent it feeds on ants versus termites. The most frequent consumed genus of ants is *Camponotus*; termite genera commonly consumed include *Cornitermes*, *Syntermes* and *Velocitermes*. Insects are obtained either by rooting with the nose or digging into nests or mounds with the large front

claws. Feeding only takes place for a very short time at each location, apparently limited by the response of the prey. Interestingly, captive giant anteaters avidly consume nestling mice indicating that this might be a prey type consumed in the wild. Dead, adult rats are not eaten by captive animals because they are too large to fit into the mouth. Giant anteaters can be active throughout the day and night, depending on the temperature. Low temperatures and rain are associated with diurnal feeding. In central Brazil anteaters seem to be dependent on gallery forests, entering them either to drink or sleep. Anteaters sleep in the forest or out in the grassland. In both case a rough declivity is scraped out and the animal lies down, covering itself completely with its tail. *Myrmecophaga* is found in many different habitat types, from tropical forest to grasslands but probably reaches its greatest densities in cerrado and grassland vegetation; population density probably varies with social insect abundance. In Parque Nacional Serra da Canastra Shaw *et al.* calculated a *Myrmecophaga* density of between 1.3 and two per square kilometer. Adults are solitary and except during breeding season ignore each other. Young have been seen throughout the year. A single young is born after a gestation period of 190 days and is carried on its mother's back for about the first six to nine months though it can be left in a "nest" while the female feed (T. Carter and J. Shaw, pers. comm.). After an undetermined period of time it will begin to take solid food, feeding alongside its mother. Adult giant anteaters probably have no serious predators. The major source of mortality seems to be fire, as the long coarse hair is highly inflammable. As many as six giant anteaters have been found burned to death after a hot grassland fire. Anteaters are also killed by people, though usually not eaten.

References: Montgomery and Lubin, 1977; Redford, 1983, 1985a, 1987a; Shaw *et al.*, in press.

Tamandua tetradactyla: southern tamandua, tamanduá-mirim, mixila, meleta.

The tamandua anteater is easily separated from the giant anteater by size, coloration and shape of the tail. Most tamanduas in the cerrado region are golden brown with a black vest covering the dorsum and venter, crossing the shoulders in a black band; however on some individuals the vest may be greatly reduced or even absent. These anteaters are scansorial, and have a very well developed prehensile tail which is only sparsely haired. Though apparently preferring areas with trees, it is possible to find tamanduas foraging in open grassland. They sleep in hollows in trees or abandoned holes such as those made by armadillos. This medium sized anteater feeds on both ants and termites depending on the available prey. Montgomery and Lubin (1977) have shown that there is extensive individual variation in prey choice. The young, feeding with its mother learns her food preference; a fact that may account for the observed individual variation. Tamanduas give birth to a single young which the female leaves in a nest while foraging. When old enough, the young accompanies its mother. Tamanduas have been reported as prey for ocelots and jaguars and as young are probably vulnerable to foxes and other felines. With their ability to escape down armadillo burrows, tamanduas are probably much less susceptible than giant anteaters to fire. They are killed and eaten by humans but are disliked by some because of their strong smell.

References: Montgomery and Lubin, 1977; Redford, 1983.

Cyclopes didactylus: silky anteater, tamanduai.

This is the smallest of the anteaters, weighing only about 250 grams. Its range is centered in the lowland forests of Amazonia and Central America. However, it is probable that *Cyclopes* ranges into the cerrado region, occurring in the forests of the northwest and along gallery forests in the north. This is a small, nocturnal, seldom-collected animal. It has been studied only in Panama where it is strictly arboreal and consumes only ants. A single young is born which stays with its mother until it is half her weight. The young is left in a tree while the female forages.

References: Montgomery, 1983.

Bradypodidae

Bradypus variegatus: brown-throated two-toed sloth; preguiça-marmota.

The brown-throated two-toed sloth is found throughout Brazil and into northern Argentina wherever suitable forest is to be found. It has been rarely collected in the cerrado region and has never been studied there. As a result the habitat requirements of this species are not understood. Because gallery in the cerrado have been poorly collected the biology of all forest-dwelling mammals is virtually unknown. *B. variegatus* has been studied in Panama where animals were found to occupy home ranges averaging 1.6 ha. They are active both day and night are strictly folivorous and favor some species of trees over others. One of the criteria used in choosing trees is a crown that receives abundant sun; sloths behaviorally thermoregulate while resting by moving in and out of the sun. In their study Montgomery and Sunkist (1978) demonstrated that sloths had different preferred trees and that the species involved changed from individual to individual. Young sloths showed the same tree-species preference as their mothers. A single young is born at a time and is nutritionally dependent on the female for about four weeks. It remains with its mother for about six months after which it occupies a portion of the natal home range.

References: Montgomery and Sunkist, 1978.

Dasypodidae

Euphractus sexcinctus: yellow armadillo, tatu-peba, tatu-peludo.

Euphractus is the only one of the euphractine or hairy armadillos found in the cerrado region. Hairy armadillos as a group are characterized by stocky builds, broad heads, stout teeth and prominent coarse hair. *E. sexcinctus*, the largest of the hairy armadillos, has long, coarse, white hair sparsely scattered over its dorsum. It is the only armadillo occurring in the cerrado with the characteristics listed above; and is also the only armadillo that may try to bite when handled. *Euphractus* will also often try to escape by running rather than digging. *Euphractus* is largely diurnal though occasionally active at night. It is a good digger and builds burrows with a single entrance that are frequently reused. The female builds a nest and gives birth to one to three young after a gestation of 60-65 days. The young open their eyes after 22-25 days, take solid food at about one month, and reach sexual maturity about nine months. Adult animals possess

three or four holes in the pelvic region of the shell from which it is possible to express a viscous yellow fluid. E. Storrs (pers. comm.) reports captive animals to mark the corners of their cages with this secretion and undoubtedly used in the wild to mark burrows. Yellow armadillos are omnivorous, consuming a broad range of animal and plant food. They have been reported to eat carrion, small vertebrates, insects, particularly ants, bromeliad fruit, tubers and palm nuts. In captivity they will kill and eat large rats. They are inefficient predators, lacking a killing bite, and tear apart the prey by standing on it and ripping off pieces held with the jaws. *Euphractus* are active, alert animals and give one the impression of a small carnivore as they trot along, searching the ground with their noses, frequently stopping to dig shallow foraging holes. In common with other euphractines *Euphractus* can deposit large amounts of subcutaneous fat; captive animals have been weighed at over eight kilos. *Euphractus* appear to prefer higher, drier habitats and I have rarely seen them in marsh habitat. They are hunted for meat, particularly in northeastern Brazil, though some people dislike the meat for its strong flavor.

References: Carter and Encarnaç o, 1983; Gucwinski, 1971; Redford, 1985b; Redford and Wetzel, 1985; Schaller, 1983.

Priodontes maximus: giant armadillo, tatu-canastra.

The giant armadillo is the most impressive member of the cerrado armadillo fauna. The only armadillos with which *Priodontes* could possibly be confused are those of the genus *Cabassous*. However, unlike these species, *Priodontes* is much larger, has a darker colored shell sharply marked laterally by a buffy border, and has a well armored tail. Like *Cabassous* it possesses a rounded blunt muzzle, a carapace with many narrow bands and large scimitar-shaped foreclaws, the third of which is greatly enlarged. Giant armadillo range over much of South America and are found throughout the cerrado region. They are extremely powerful diggers and highly fossorial. Individuals dig both foraging and sleeping holes which are unmistakable because of their size and usually remain in a burrow for more than 24 hours. Burrows tend to be clumped, are usually found in active or dead termite mounds and rarely occur in gallery forest. *Priodontes* is probably the most myrmecophagous of the armadillos: it has been recorded as eating virtually nothing other than ants and termites. Unlike other armadillos *Priodontes*

often destroys a termite mound when feeding. It is largely nocturnal, which combined with its fossorial habits make it difficult to encounter. It is killed for food and for its claws.

References: Carter, 1983; Carter and Encarnaç o, 1983; Redford, 1985b, 1987b; Wetzel, 1985a.

Cabassous tatouay: greater naked-tailed armadillo, tatu rabo-mole.

Armadillos of the genus *Cabassous* resemble *Priodontes* in having short, blunt muzzles, a carapace with bands and enlarged claws on the forefeet; however, they are much smaller and have pink colored skin. The diagnostic character for this genus is the naked tail: there are either no, or virtually no, scales present. *C. tatouay* is the larger of the two species of *Cabassous* found in the cerrado, weighing up to twice as much as *C. unicinctus*. It is further separable from *C. unicinctus* by the size of its ear: *C. tatouay* has a much larger, funnel-shaped ear that extends well above the top of the head. This species is distributed over the southeastern portion of the cerrado. Very little is known about *C. tatouay* except that it is highly fossorial, digs burrows with single entrances and almost never returns to a burrow. Its diet probably consists of ants and termites like the other species of *Cabassous*.

References: Carter and Encarnaç o, 1983; Wetzel, 1985a.

Cabassous unicinctus: southern naked-tailed armadillo, tatu rabo-mole.

This species is easily distinguishable from *C. tatouay* because of its smaller size and much smaller ear. As in *C. tatouay* it has a naked tail, though more scales are present on the tail of this species. It has a blunt muzzle, can fold its ear back when digging and has large front claws. Like its congener, *C. unicinctus* is a very strong digger and can disappear in soft ground in 45 seconds. It digs round holes with a single entrance and rarely returns to its burrow. Little is known of the biology of this species except that it appears to eat only ants and termites. It occurs over virtually the entire cerrado region, is frequently seen during the day and appears to prefer open, dry, grassy areas.

References: Carter and Encarnaç o, 1983; Redford, unpubl.; Wetzel, 1985a.

Dasyus novemcinctus: common long-nosed

armadillo, tatu-verdadeiro, tatu-folha, tatu-galinha, tatu-veado.

The genus *Dasypus* is distinguishable from other armadillo genera by having a long, slender skull, a smooth, mostly dark carapace, a long, slender, stoutly armored tail, and long slender ears. Two species of *Dasypus* occur in the cerrado and are easily distinguishable on the basis of size: *D. novemcinctus* is one and a half times as long and twice as heavy as *D. septemcinctus*. *D. novemcinctus* also has more movable bands (mean=8.3; range=8-9) compared to *D. septemcinctus* (mean=6.3; range=6-7). *D. novemcinctus* has a larger range than any other xenarthran species, being found from the southeastern United States to Argentina and throughout the cerrado. It occurs in many different habitats in this range but in the cerrado appears to favor moister areas. It is frequently found near gallery forests, nesting along the water course and foraging in the surrounding open habitats. In areas with high water tables it will construct its nest above ground. The nest consists of leaves and grass and frequently a burrow containing an animal is plugged with this foliage. Species in the genus *Dasypus* exhibit a form of reproduction unique among mammals: monozygotic polyembryony where a single fertilized egg divides to form genetically identical young. *D. novemcinctus* produces quadruplets and in the U.S. is a seasonal breeder. Young are weaned about three months of age and attain full growth between three and four years. Adults are largely solitary though littermates may forage together for a while and there are reports of unrelated adults sharing dens. This species forages primarily at night though cold weather or rain may cause it to emerge during the day. In the southern United States *D. novemcinctus* is larger insectivorous although it consumes fruit, carrion and small vertebrates. It will feed on virtually any food item it can find and ingest. With its small mouth, weak dentition and thin mandibles this species is an ineffective predator of larger mobile prey. In the cerrado, preliminary analysis indicates that ants and termites form a large part of the diet of *D. novemcinctus*. Eyesight is very poor in these armadillos and food is located by smell. Most food items are probably taken from the ground surface or just beneath it. The strong claws are used to dig short feeding holes common in the spread of cattle ranching may have increased the numbers of this armadillo species by increasing the availability of prey: insects attracted to cattle dung and open grassy pastures. Common long-nosed armadillos are heavily hunted in much of Central and South

America for their delicate white meat. Unlike most of the other edentate species, *D. novemcinctus*, with its tolerance of human and comparatively large litter size, can probably coexist with humans in rural areas.

References: Galbreath, 1982; Redford, 1987a; Wetzel and Mondolfi, 1979.

Dasypus septemcinctus: Brazilian lesser long-nosed armadillo, muleta, tatu-mula.

This species of *Dasypus* is much smaller than *D. novemcinctus* and has a proportionally shorter tail. It shares with *D. novemcinctus* the smooth carapace, elongate snout, long thin tail and long slender ears. It is a small dark *Dasypus* found throughout the cerrado region in open habitats; with the exception of a small portion of the northwestern region. Nothing is known of its natural history and it has probably frequently been confused with *D. novemcinctus*. T. Carter (pers. comm.) reports that *D. septemcinctus* prefers gallery forest and frequently expands burrows dug by other species of armadillos.

References: Wetzel and Mondolfi, 1979.

Tolypeutes matacus: southern three-banded armadillo, tatu-bola.

The southern three-banded armadillo is primarily a species of southern South America and is found only in the southwest and western portions of the cerrado. It does not overlap its congener *T. tricinctus*, which has a primarily caatinga and southeastern cerrado distribution. The genus *Tolypeutes* is easily distinguishable from all other armadillo genera because of its hard turtle-like shell and its ability to roll into a ball; this is the only armadillo genus capable of doing so. *T. matacus* is distinguishable from *T. tricinctus* by its distribution and the fact that *T. matacus* has three or four toes on the forefeet while *T. tricinctus* has five. Despite the greatly enlarged third claw of *T. matacus* it is not a strong digger and apparently does not dig its own burrows. In fact, unlike most other armadillos except *Euphractus*, it often will run when chased rather than dig. Unlike all other armadillos, *Tolypeutes* will roll into a tight, virtually impenetrable ball when attacked. *T. matacus* seems to feed primarily from the ground surface, occasionally digging shallow foraging holes. It is largely myrmecophagous but will take other softbodied invertebrates. *T. matacus* can be active throughout the day and night though its

major activity peaks are probably dictated by temperature and rainfall. *T. matacus* gives birth to a single young after a gestation of 120 days. The young opens its eyes after about 22 days and suckles for approximately ten weeks. The southern three-banded armadillo, like its congener, is hunted by humans throughout its range. Its habit of rolling up when threatened makes it easy prey for the ever increasing number of humans inhabiting its domain.

References: Meritt, 1971; Redford, 1985b; Schaller, 1983; Wetzel, 1985a.

Tolypeutes tricinctus: Brazilian three-banded armadillo, tatu-bola.

This rare armadillo is known from only a few specimens in collections. As with *T. matacus* it is easily distinguishable from all other armadillos because of its ability to roll into a ball. Unlike *T. matacus*, which has three or four toes on its forefeet, *T. tricinctus* has five. It is primarily an inhabitant of the caatinga region of Brazil. This area has had a long history of human occupation and *T. tricinctus* is apparently very rare or extinct over much of its range, undoubtedly because of human hunting and habitat destruction.

References: Wetzel, 1985a.

Discussion

Edentates are ancient members of the South American fauna. They arose and radiated there, only one species having strayed into North America. The center of contemporary edentate diversity is Paraguay, a fact caused by the high proportion of armadillos species within the order. For armadillos, drier, open vegetation formations were probably ancestral habitat and invasion of wet tropical forests has probably been a recent phenomenon. *Euphractus* is the only one of the euphractine armadillos to make it up onto the Brazilian Shield, but it also ranges north into the savannas of Surinam, where it is undoubtedly a relict of drier Pleistocene periods. *Priodontes* has a huge range and is not confined to the cerrado region. Both species of *Cabassous* are likewise not limited to the cerrado: *C. unicinctus* ranges well into the Amazon basin while *C. tatouay*, a grassland species, is distributed along the eastern portion of mid-South America. *D. novemcinctus* is found from the United States to Argentina while *D. septemcinctus*, another species of the open vegetation formations is found from the caatinga to

the chaco. Finally, the two species of *Tolypeutes* are distributed from southern Argentina to the caatinga. Thus, there are no armadillos species autochthonous to the cerrado.

The only sloth that may occur in the cerrado is *Bradypus variegatus*, a species that ranges from northern Argentina into the forests of Central America. If this species does occur in the cerrado, it will probably be in low densities within some of the gallery forests, or perhaps in the forests fringing the north. It will be confined to forests containing a high proportion of non-deciduous tree species.

Cyclopes, the silky anteater, if it occurs in the cerrado, would also be limited to the gallery forests. As a vegetation type within the cerrado biome, gallery forests are very poorly collected. The frequent occurrence of thorny palms, dense tangles of bamboos and flooded soils have discouraged exploration of this unique habitat. When such exploration does take place, many species of mammals will undoubtedly be added to the cerrado fauna. But for many of these species, the gallery forest is simply an extension of the Amazonian forest that has allowed huge range extensions into the otherwise inhospitable cerrado.

The other two anteaters, *Myrmecophaga* and *Tamandua*, are similar to some of the species of armadillos in ranging over many vegetation types. Both can be found in open grassland and dense tropical forest. However, both probably reach their highest population densities in vegetation formations like the cerrado which support large and diverse populations of social insects. As with the armadillos and the sloths, the cerrado does not have its own anteater species.

Only recently has work begun on the armadillos and anteaters of the cerrado. Much work remains to be done on these fascinating animals which occupy such a prominent place in central Brazil. When biomass estimates are available, the edentates will undoubtedly be shown to be very important members of the cerrado mammalian fauna.

I am also including a table of morphometric data on edentates of Central Brazil, which contains some unpublished information (Table 1).

Suggestions

As is clear from this paper, there is still a great deal of work to be done on the edentates of the cerrado. The ranges of species like *Tolypeutes matacus* and

Cabassous tatouay are poorly known. *Bradypus* is totally unstudied, and almost totally uncollected in the cerrado. Work on edentate food habits, reproductive biology, habitat preference, and ranging behavior is needed. Even for species like *D. novemcinctus* that have been studied in the United States, comparative studies from the cerrado would be of great interest. *Tamandua* has only been studied in Panama and Venezuela, and there are many questions remaining to be answered. *Myrmecophaga* has begun to receive some attention from Jim Shaw and collaborators and myself, but these studies have raised more questions than they have answered.

Tracy Carter and associates have done some very interesting studies of some of the cerrado armadillos, but concentrated primarily on mound construction and use. In summary, all aspects of the natural history of all the edentate species need further study and the cerrado, with its open vegetation and ease of observation would be an ideal place to perform such research.

Acknowledgments

I would like to thank R. Wetzel and T. Carter for help in compiling the mensural data and T. Carter, J. Eisenberg, J. Shaw and R. Wetzel for providing comments on the manuscript.

References

- Carter, T. 1983. The burrows of giant armadillos (*Priodontes maximus*). *Saugetier. Mitteil.* 31: 47-53.
- Carter, T. S. and C. Encarnação. 1983. Characteristics and use of burrows by four species of armadillos in Brazil. *J. Mamm.* 64: 103-108.
- Galbreath, G. 1982. Armadillo, *D. novemcinctus*. In: *Wild Mammals of North America: Biology, Management and Economics* (J. A. Chapman and G. A. Feldhamer, eds.), pp. 71-91. Johns Hopkins University Press. Baltimore, Maryland.
- Meritt, D. A. 1971. The development of the La Plata three-banded armadillo, *Tolypeutes matacus* at Lincoln Park Zoo. *International Zoo Yearbook* 11: 195-196.
- Montgomery, G. 1983. *Cyclopes didactylus*. In: *Costa Rica Natural History* (D. H. Janzen, ed.), pp. 461-463. University of Chicago Press. Chicago, Illinois.
- Montgomery, G. and Y. D. Lubin. 1977. Prey influences on movements of Neotropical anteaters. In: *Proceedings of the 1975 Predator Symposium* (R. L. Philips and C. Jonkel, eds.), pp. 103-131. Montana Forest and Conservation Experiment Station. University of Montana, Missoula, Montana.
- Montgomery, G. and M. E. Sunquist 1978. Habitat selection and use by two-toed and three-toed sloths. In: *The Ecology of Arboreal Folivores* (G. G. Montgomery, ed.), pp. 329-359. Smithsonian Institution Press. Washington, D.C.
- Redford, K. H. 1983. *Mammalian Myrmecophagy Feeding, Foraging and Food Preference*. Ph.D. Dissertation. Harvard University, Cambridge, Massachusetts.
- Redford, K. H. 1985a. Feeding and food preference in captive and wild giant anteaters (*Myrmecophaga tridactyla*). *J. Zool. (London)* 205: 559-572.
- Redford, K. H. 1985b. Food habits of armadillos (*Xenarthra: Dasypodidae*). In: *Evolution and Ecology of Sloths, armadillos, and Vermilinguas*. (G. G. Montgomery, ed.), pp. 287-295. Smithsonian Institution Press.
- Redford, K. H. 1987a. Dietary specialization and variation in the mammalian insectivores. *Rev. Chilena Hist. Nat.* 59(2): 201-208.
- Redford, K. H. 1987b. Patterns of ant and termite eating in mammals. *Current Mammalogy* 1: 349-400.
- Redford, K. H. 1987c. Parque das Emas. *Ciência Hoje* 7(38): 42-48.
- Redford, K. H. and R. M. Wetzel. 1985. *Euphractus sexcinctus*. *Mammalian Species* 252: 1-4.
- Redford, K. H. and G. A. B. Fonseca 1986. Zoogeography of the cerrado mammalian fauna and the role of gallery forests. *Biotropica* 18: 126-135.
- Santos, I. B. 1993. *Bionomia, distribuição geográfica e situação atual do tatu-bola Tolypeutes tricinctus (Linné, 1758) (Dasypodidae, Edentata), no Nordeste do Brasil*. Master's thesis, Instituto de Ciências Biológicas, Universidade Federal de Minas Gerais, Belo Horizonte.
- Schaller, G. B. 1983. Mammals and their biomass on a Brazilian ranch. *Arquivos de Zoologia (Universidade de São Paulo)* 31: 1-36.
- Shaw, J. H., T. S. Carter, and J. C. Machado-Neto. 1985. Ecology of the giant anteater, *Myrmecophaga tridactyla* in Serra da Canastra, Minas Gerais, Brazil: A pilot study. In: *Evolution and Ecology of Sloths, Armadillos, and Vermilinguas* (G. G. Montgomery, ed.), pp. 379-384. Smithsonian Institution Press.
- Wetzel, R. 1982. Systematics, distribution, ecology, and conservation of South American edentates.

- In: *Mammalian Biology in South America* (M. A. Mares and H. H. Genoways, eds.), vol. 6, pp. 345-375. Special Publication Series Pymatuning Laboratory of Ecology, University of Pittsburg, Pittsburg, Pennsylvania.
- Wetzel, R. 1985a. The taxonomy and distribution of armadillos, Dasypodidae. In: *Evolution and Ecology of Sloths, Armadillos, and Vermilinguas* (G. G. Montgomery, ed.), pp. 23-46. Smithsonian Institution Press.
- Wetzel, R. 1985b. The identification and distribution of recent Xenarthra (Edentata). In: *Evolution and Ecology of Sloths, Armadillos, and Vermilinguas* (G. G. Montgomery, ed.), pp. 5-22. Smithsonian Institution Press.
- Wetzel, R and E. Mondolfi. 1979. The subgenera and species of long-nosed armadillos, genus *Dasypus* L. In: *Vertebrate Ecology in Northern Neotropics* (J. F. Eisenberg, ed.), pp. 43-63. Smithsonian Institution Press, Washington D.C.

Table 1. Morphometric data of edentates of Central Brazil (HB = head and body, T = tail, HF = hind foot, E = ear, W = weight in kg, n = number of animals measured).

Species	Source	HB	T	HF	E	W
Myrmecophagidae						
<i>Myrmecophaga tridactyla</i>	B	1265.5 (1100-2000; n=16)	734 (600-900; n=16)	165 (150-180; n=13)	46.7 (35-50; n=9)	32.9 (22-39; n=5)
<i>Tamandua tetradactyla</i>	A	640.5 (594-692; n=6)	458.5 (425-498; n=6)	94.5 (80-105; n=6)	46.6 (41-51; n=6)	6.2 (4.9-7; n=5)
<i>Cyclopes didactylus</i>	B	201.3 (150-230; n=64)	231.5 (165-295; n=64)	38.0 (30-50; n=64)	13.9 (11-17; n=7)	234.7 (175-357; n=8)
Bradypodidae						
<i>Bradypus variegatus</i>	B	521.6 (413-700; n=100)	57.7 (38-90; n=101)	121.6 (90-180; n=101)	13.3 (8-22; n=41)	4.34 (2.25-5.50; n=25)
Dasypodidae						
<i>Euphractus sexcinctus</i>	A	453.6 (401-495; n=14)	220.5 (199-241; n=13)	86.1 (78-92; n=14)	39 (32-47; n=14)	4.68 (3.2-6.5; n=14)
<i>Priodontes maximus</i>	B, E	895.5 (832-960; n=4)	528.2 (510-550; n=4)	190.7 (185-200; n=3)	53.8 (45-60; n=5)	26.82 (18.7-32.3; n=3)
<i>Cabassous tatouay</i>	B, E	457.8 (410-490; n=5)	179.0 (150-200; n=5)	82.2 (80-86; n=5)	41.7 (40-44; n=3)	5.35 (3.4-6.4; n=3)
<i>C. unicinctus</i>	A, E	382.3 (322-425; n=9)	124.9 (111-148; n=9)	71.0 (61-75; n=9)	28.0 (24.32; n=7)	2.78 (2.1-4; n=9)
<i>Dasypus novemcinctus</i>	A	465.9 (431-508; n=15)	312.5 (211-366; n=13)	88.7 (82-8; n=15)	45.5 (33-54; n=15)	4.10 (3.6-4.7; n=15)
<i>D. septemcinctus</i>	C	260.5 (240-305; n=8)	147.5 (125-170; n=7)	60 (45,72; n=2)	30.9 (30-38; n=7)	1.45 (-; n=1)
<i>Tolypeutes matacus</i>	B, D	250.7 (218-273; n=17)	63.7 (60-80; n=15)	42.3 (38-47; n=15)	22.8 (21-32; n=15)	1.1 (1.0-1.15; n=10)
<i>T. tricinctus</i>	F	357 (323-394; n=9)	51 (41-61; n=9)	52 (49-54; n=9)	25 (18-29; n=9)	1.42 (1.10-1.63; n=9)

- A) Redford, unpublished data, Goiás and Distrito Federal;
 B) Wetzel, 1985b;
 C) Wetzel & Mondolfi, 1979;
 D) Schaller, 1983;
 E) Carter, pers. comm., unpublished data;
 F) Santos, 1993.