Orycteropus afer, By Jeheskel Shoshani, Corey A. Goldman, and J. G. M. Thewissen
Published 15 January 1988 by The American Society of Mammalogists

Orycteropus C. Geoffroy, 1796
Orycteropus C. Geoffroy, 1796:102 (not E. Geoffroy). Type species Myrmecophaga afra, Pallas, by original designation.

CONTEXT AND CONTENT. Order Tubulidentata, Family Orycteropodidae, Subfamily Orycteropodinae. The order Tubulidentata is the only mammalian order with a single extant species (Jones, 1984). The genus Orycteropus contains six or more extinct species in addition to the one extant species (Patterson, 1975, 1978).

Orycteropus afer (Pallas, 1766) Aardvark


Orycteropus afer, W. Rothschild, 1907:506. Type locality former German Southwest Africa. First use of current name combination, referred to as O. a. albicaudus.

CONTEXT AND CONTENT. Context noted in generic summary. We follow Meester (1971) and list 18 subspecies:
O. a. adamaiz Grote, 1921:125. Type locality Bannessen, northwestern Cameroon.
O. a. aethiopicus Sundevall, 1843:236, see above.
O. a. afer Pallas, 1766:64, see above.
O. a. albicaudus, W. Rothschild, 1907:506, see above.
O. a. angolensis Zukovsky and Halentower, 1957:126. Type locality Capangombe, west of Schella Mountains, southwestern Angola.
O. a. eriksoni Lebbin, 1906:1, pl. 1, see above.
O. a. faradjius Hatt, 1932:1. Type locality Faradje, haut-Uele, Congo Belge.
O. a. haussanus Matschie, 1900:102, 104, see above.
O. a. kordofanicus W. Rothschild, 1927:512. Type locality Kordofan, Sudan.
O. a. latemani Grote, 1921:123. Type locality Wassi, north of Kondou-Irangi, Masai Plains, Tanganjika Territory.
O. a. leptodon Hirist, 1906:383, see above.
O. a. matschei Grote, 1921:122. Type locality Mikindani, south coast of Tanganjika Territory.
O. a. observatus Grote, 1921:123. Type locality Usangire, northwest of Songoa, northwest coast of Lake Nyassa, Tanganjika Territory.
O. a. ruvanensis Grote, 1921:123. Type locality Ruvana region, southwest coast of Victoria Nyanza, Tanganjika Territory.
O. a. senegalensis Lesson, 1840:225, see above.
O. a. somallaud Lelekker, 1908:466, Type locality Somallaud.
O. a. wadi Lydekker, 1908:467. Type locality northeastern Rhodesia.
O. a. wertheri Matschie, 1898:266, see above.

DIAGNOSIS. Orycteropus afer has a long snout, large ears, and long muscular tail. It is a medium sized piglike mammal with a stocky body, a short neck, and an arched back (Fig. 1). The forelimbs are short and powerful. Four toes are present on the forefoot, five on the hind foot, with shovel-shaped unges. The teeth are unique and consist of many fused minute dentine columns that appear as tubes on the growing base of the tooth. Teeth grow continuously, are without enamel, are covered with cement, and are rootless. The skull has an enlarged olfactory region with nine to 10 endoturbinals (highest number within Mammalia). The tympanic is horseshoe shaped and the lacrimal foramen is located at the facial flange and close to or on the suture of the lacrimal and jugal. The septomaxilla and interparietal are absent, the mesethmoid is present. The minor palatine artery and nerve enter the palate through a foramen in the posterior edge of the palate and there is no alisphenoid canal. The tests are inguinal, baculum absent, the uterus duplex (Coupin, 1926; Jones, 1984; Soutag, 1925; Weber, 1928).

GENERAL CHARACTERS. The skin is thick and sparsely covered with bristly hair, light in color on the body (though usually stained by soil) and darker on the limbs. The head and tail are whitish (Smithers, 1983). Females are slightly smaller than males. In females, the head is lighter and the tail has a bright white tip (Kingdon, 1971). The following measurements (in mm) are compiled from Grassé (1953), Kingdon (1971), Hahn (1972), Lawlor (1976), Smithers (1983), and Nowak and Paradiso (1983): total length, 1,400 to 2,200; tail length, 443 to 710; length of hind foot, 225 to 280; length of ear, 130 to 240; height at shoulder, 600 to 650; body mass, 40 to 100 kg. The body temperature is variable and ranges from 32.2 to 34°C (McNab, 1984).

DISTRIBUTION. The present distribution of aardvarks (Fig. 2) is limited to sub-Saharan Africa. According to Freshcop (1946), the range of this species possibly extended into North Africa in historical times.

FOSSIL RECORD. The oldest known representative of the genus Orycteropus is from the lower Miocene of East Africa (18 to 19 mybp; Pickford, 1975), although its generic allocation is doubted (Patterson, 1975). The oldest occurrence in Asia is 13 to 14 mybp (J. C. Barry, personal communication). A skull of Lep- tomantis Filhol from the Eocene to Oligocene Quercy-deposits in France tentatively is referred to the tubulidentates (Thewissen, 1985). Patterson (1975) created a separate subfamily for the subRecent Plestiyorctereous from Madagascar. An Eocene mandible of Tubulodon taylori from Wyoming was described as a tubulidentate by Jepsen (1932) and, based on this description, Colbert (1933) believed that Tubulidentata has its origin in North America. Following Simpson (1959), it is now accepted that Tubulodon is a pleuranodont.
Tubulidentata probably evolved in Africa and is believed to be a condylarth derivative (Clark and Sonntag, 1926; MacLennan, 1956; Patterson, 1975).

**FORM AND FUNCTION.** The snout is elongated and the nostrils can be closed by means of hairs and muscular contraction (Pocock, 1924), an obvious adaptation to life underground. Sensory pads are located near the nostrils (Kingdon, 1971) and long hairs with a sensory function surround the eyes (Pocock, 1924). The hair of *O. afer* is 17.9 ± 3.6 mm long (Buy and Koeg, 1984). It is yellowish-grey, with circular scale pattern, and large (distorted) oval or “egg-shape” in cross-section. The eyes are reduced; the animal is color blind and nocturnal (Franz, 1906; Jones, 1984). The pinnae are large and bearing is acute; the middle ear has a large tympanic membrane (Hunt and Korth, 1980). The mouth is small with a long and narrow tongue; neither lytra nor sublingua are present (Bender, 1909; Sonntag, 1925). Food particles are taken in with the tongue and scraped off by ridges on the palate as the tongue protrudes (Eisentraut, 1976). The jaw muscles are weak (Frick, 1952, 1953) and the mandible is slender. The mandibular gland is enlarged and stretches down the neck to the clavicle.

The dental formula of an adult is 0/0, 0/0, 2/2, 3/3, total 20, and although small additional teeth may be present, they do not erupt (Heuvelmans, 1939). According to Broom (1909a) the full dentition of *Orycteropus* is 3/3, 0/0, 0/0, p 6/6, m 3/3, total 52, and the number of tiny premolars is variable but often exceeds the primitive mammalian number of four (Anthony, 1934; Heuvelmans, 1939). Patterson (1975) described, however, a fossil tubulidentate (*Leptorycteropus*) with an eutherian dental formula: t 2/2, c 1/1, p 4/4, m 3/3. Individual teeth are hypsodont (Anthony, 1934); M2 is the largest. The initial cusps wear off immediately (Heuvelmans, 1939), leaving two flat planes that meet at a low angle on all molars. Tubules that compose the teeth are elongated canals perpendicular to the occlusal plane (Fig. 3), with a wall of dentine and a diameter of approximately 0.2 mm (MacLennan, 1956); they number about 1,500 for the largest tooth (Jones, 1984). The canals do not enclose Tonnes fibers, but are homologous to pulp-canaals. In deciduous and immature teeth, the tubules occur in a homogenous matrix of cementum, but in adults they are tightly packed (MacLennan, 1956). Mastication of insects is reported by Kingdon (1971), but Patterson (1975) suggests that the essential function of the teeth is in mastication of fruits of *Cacamus humifusus*.

On the skull (Fig. 4) there is no sagittal crest or postorbital bar, but only a superior postorbital process with one large (frontal emissary) foramen anterior and ventral to it. There is no separate interparietal bone, and many foramina are present on the dorsal aspect of the cranium. The zygomatic arch is complete but slender, and the jugal does not participate in the mandibular fossa, but is in contact with the lacrimal. A strong postpalatine torus is present; the posterior palatine foramina are at its caudal and lateral corners. The optic foramen and foramen ovale are separate but the orbital fissure and foramen rotundum are confluent. There is no alisphenoid canal. The sinus canal is present, the internal carotid foramen perforates the basisphenoid, and the hypoglossal canal is not confluent with the jugular foramen. A mastoid foramen is present; the foramen magnum is formed by the basioccipital, the exoccipitals, and the supraoccipital. The hyoid apparatus is composed of nine bones. The dentures (Fig. 4) are slender and not fused, all three processes are distinct, and the condyle is directed anteroposteriorly. On the lateral side of each dentary, there are two or more mental foramina and the medial mandibular foramen is located dorsal to an imaginary line drawn on the level of the molar alveoli (Clark and Sonntag, 1926; de Beer, 1937; Grassé, 1955; Shoshani, 1986).

The cartilages of the organ of Jacobson are primitive (Broom, 1909b) and the olfactory chamber is enlarged; olfaction is a major sensory modality. The ectotympanic is horseshoe shaped and the ventral wall of the middle ear is largely unossified though minor ossifications may occur (Thewissen, 1985). A large epi tympanic sinus is present, the internal carotid artery is in the promontory position, and the superior ramus of the stapedial artery is present. In the brain, the rhinencephalon is large (Frant, 1960; Sonntag and Woolard, 1925) and few and variable fissures are present on the neopallium (PieLOT and Kamiya, 1983; Thewissen, 1985).

The vertebral formula is C 7, T 13, L 8, S 6, Ca 25 to 28, total 62 to 65 (Clark and Sonntag, 1926; Jones, 1984) and vertebrae are without supernumerary synapophyses (xenarthrosis), but caudal vertebrae possess chevron bones (hemal arches) on their ventral side. There are five sternebrae but no floating ribs (Fig. 3). The stomach is simple, with a strong muscularis (Allison, 1947), working as “a kind of gizzard” (Sonntag, 1925:400). Two azygous veins enter the heart separately (Beddard, 1909; Sonntag, 1925).

Digging burrows is done by means of flexion and extension movements of the arm. The powerstroke involves flexion of the shoulder, elbow, and metacarpophalangeal joints, but not of the wrist. Pronation and supination are limited. The muscles used in digging are flexors of the shoulder, extensors of the elbow, and flexors of
the hand (Thewissen and Badoux, 1986). All four digits are used in digging, and are about equally thick, but differ in length (Freckkop, 1937). The unguis are strong, and resemble both nail and hoof (Jones, 1984; Pagés, 1970). In the forelimb, the clavicle is present and strong (Fig. 5), the humerus has a strong entepicondyle with a foramen, the ulna has a large olecranon and is as stout as the radius, the carpal bones are arranged alternately, and the metacarpals are about as long as the proximal phalanges. In the hind limb, the femur has a third trochanter, the tibia and fibula are fused proximally, the tarsus is serial (astragulus does not articulate with cuboid), and there is an astragalus foramen. According to Grassé (1955) only the digits touch the surface when the animal is walking. The track illustrated by Smithers (1983) appears to confirm this hypothesis. At rest, the forefoot is digitigrade and the hind foot is plantigrade.

Fig. 5. Skeleton of a male Otocercus afer eriksoni, AMNH 51375 from Congo (=Zaire), 3 December 1913. Scale is 152 mm; measurements in mm are: total length = 1,980, tail length = 760, length of hind foot = 300. Photograph by J. Shoshani.

Placentaion is zonary, endothermic, and a four-lobed alantoid with a marginal hematoma is present (Horst, 1949; Perry, 1974). There are two pairs of mammary, one abdominal and one inguinal (Grassé, 1955). Both males and females have scent glands in the genital region (Pocock, 1924).

Blood-chemistry data available from a captive male specimen are: packed cell volume, 34 volume percent; hemoglobin, 12.5 g/dl; red blood cells, 2.18 × 10^10 l; mean corpuscular volume, 155.9 × 10^-12 l; mean corpuscular hemoglobin, 57.3 × 10^-12 g; mean corpuscular hemoglobin content, 37%; and white blood cells, 2.86 × 10^10 l. The peripheral arterial rate (PAR) of a captive female aardvark ranged from 74 to 88 beats/min, and of eight measurements, 84 PAR seems the most reliable (taken as animal in a standing position). During the 2-h observation, the ambient temperature ranged between 20 and 21.1°C and the animal's body temperature (Tb), measured four times at the axillary regions, ranged between 32.2 and 33.6°C. According to McNab (1984) the Tb of O. afer is 34.5°C and the lower limit of thermoneutrality is 27.0°C. The basal metabolic rate (in ml O2 g^-1 h^-1) of O. afer is 0.128 ± 0.002. This low rate of metabolism is related directly to low Tb and generally is associated with a myrmecophagous adaptation (McNab, 1984).

ONTAGENY AND REPRODUCTION. Polygamy seems probable because males are thought to (1) associate with females only during the breeding season (Fitzsimons, 1920), and (2) wander more than females (Horst and Dandelot, 1969).

 Estrus is characterized by vaginal swelling and sometimes a discharge. Observations of copulation have not been reported. There are few signs of pregnancy as most animals usually are pot-bellied. During pregnancy, the abdomen and mammary are enlarged; milk can be expressed 1 month before birth (Goldman, 1986; Jacobs, 1972). Aervark milk is composed of 68.3% water (with dissolved elements), 14.6% protein, 11.9% fat, 3.8% carbohydrate, and 1.5% ash (Kisling and Sampsell, 1976; White et al., 1985).

 Gestation is thought to approximate 7 months. One young is born, occasionally two (Goldman, 1986; Verheyen, 1951). Nothing is known of early stages of embryo development. Tavener and Bakker-Schlopoon (1970) described the placenta and fetal membranes. A specimen with one fetus had two corpora lutea present in the right ovary and three in the left, all seemed histologically to belong to the same gestation (Assell, 1964). Lasley (1977) described a technique to determine the sex of a neonate by everting the genital opening and examining the underlying structures.

Births in the wild have been reported from May to July in South Africa (Fitzsimons, 1920); May to August in Botswana (Smithers, 1971); October to November in Zaire (Verheyen, 1951); early November in Uganda (Kingsdon, 1971); and May to June in Ethiopia (Rahan, 1972). Births in central Africa reportedly occur at the beginning of the second rainy season from October to November (Verheyen, 1951). Births in captivity have been reported for all months of the year with peaks in February, March, and June (Goldman, 1986).

At birth, naked flesh-colored young weigh 1.8 to 2 kg, and have a total length of approximately 550 mm (Haltenorth and Diller, 1977). In the neonate, both eyes are open, there are no visible signs of teeth, and the claws are well developed (Cullen, 1967). At 1
EcoLOGY. The aardvark is preyed upon by lions, Panthera leo, leopards, Panthera pardus, cheetahs, Acinonyx jubatus, hunting dogs, Lycaon pictus, and pythons, Python sebae, but man and hyenas, Crocuta crocuta, are considered the most notable predators (Kingdon, 1971). Hyenas and pythons frequently consume young, somnolent aardvarks (Fitzrov, 1960). They are used for shelters or breeding sites by many small and medium-sized vertebrates (Melton, 1976; Rahm, 1972; Smithers, 1971). Okiewu (1977) observed that the tetse fly Glossina m. morsitans uses aardvark burrows for resting sites. In some regions, the prevalence of Trypanosoma rhodesiense on the muzzles of abandoned aardvark burrows (Melton, 1976; Rahm, 1972). Burrows of O. afer provide protection for many animals from bush fires (Rahm, 1972).

An association exists between O. afer and a species of wild cucumber, Cucumis humifusus, known in South Africa as the “aardvark pumpkin.” The round whitish fruits of this plant develop 20 to 30 cm below the ground surface and is assumed that the aardvark digs for the fruits in search of moisture, as these fruits are ripe during the driest months of the year. Only the aardvark can dig and eat the buried fruits; thus, the aardvark disseminates the seeds when it buries its feces (Mercie, 1959; Mitchell, 1965; Verheyen, 1951).

Ectoparasites of O. afer include ticks (Acarina) Haemaphysalis mahaoni (Clifford and Anastos, 1962), Hyalomma impressum (Wilson, 1950), Rhipicephalus caspius (Morel and Mouchet, 1958; Osman, 1978), R. bengesi (Clifford and Anastos, 1962), R. anuavatus (Travassos Santos Dias, 1955), R. masseyi (Clifford and Anastos, 1962), R. reichenoi (Clifford and Anastos, 1962; Walker, 1966), R. sanguineus (Wilson, 1950), R. s. sanguineus (Travassos Santos Dias, 1955; Zumpt, 1958), R. simus (Clifford and Anastos, 1962; MacLeod, 1970; Wilson, 1950), R. s. simus (Travassos Santos Dias, 1952), R. r. tiricacis (Clifford and Anastos, 1958); sucking lice (Anoplura) Haematopota notophala (Neumann, 1909) and Hyhophtiris notophala (Bedford, 1926; Cunnings, 1916; Ferris, 1922; Waterston, 1914); a flea (Siphonaptera) Echidnophaga rarina (Bedford, 1926; Hasselbarth et al., 1966; Jordan and Rothscheld, 1906; Waterston, 1914); and lice (Diptera) Acherornya sp. (Askev, 1971), Neorocolykos roubaudi (Zumpt, 1967), and Pachycheorony mia praegrandis (Askev, 1971).

Endoparasites of O. afer include flagellates (Mastigophora) Trichomonas sp. (MacKinnon and Dib, 1936), Trypanosoma brucei (Neves, 1971), and T. rhodesiense (Bort, 1946); an amoeba (Sarcodina) Entamoeba sp. (MacKinnon and Dib, 1938); the thorny-headed worm (Acanthocephala) Nephridiacaenous longissimus (Golvan, 1962; Schmidt and Canaris, 1967); round worms (Nematoda) Anceolostoma hechleri (Moenig, 1938), Anguillulora orytoperi and A. minor (Biocca and Le Roux, 1957), Capillaria sp. (Fox, 1940), Dirofilaria sp. (Dierich, 1978), Filaria maria (Le Roux, 1950), Gendresipara chabaudi (Le-Van-Hoa, 1962), G. homamopulata (Vulsteke, 1956), Gongylostrongylus congonensis (Fain and Thioquet, 1958), Physaloptera sp. (Stossich, 1900), and Trichosomoides sp. (Fox, 1940); and a pentastome (Pentoccephalida) Armillifer armillatus (Doucet, 1960; Zumpt, 1961).

No infectious diseases specific to O. afer have been reported. Diseases and ailments of captive animals include arteriosclerosis, bronchitis, conjunctivitis, dermatitis, fecal impaction, intestinal abscesses, osteomyelitis, peritonitis, pneumonia, salmonellosis, umbilical hemorrhage, and umbilical stalk infection (Bohorquez and Stout, 1972; Dieterich, 1978; Goldman, 1986).
claws (catch termites and as a hoeing charm), bristly hair (poison ingredient), and snout and digits used by witch doctors (Kingdon, 1971; Melton, 1974; Smithers, 1983). Images of aardvark appear regularly in rock paintings (Woodhouse, 1984).

*Orycteropus afer* was listed on 1 July 1975 under Appendix II of CITES; an export permit is required from the country of origin before a live animal or its parts or derivatives can be imported into a member nation. This species is listed not because of scientific information of its threatened status but rather because of a lack of information (Melton, 1976).

Most zoos house *O. afer* in pairs in nocturnal exhibits. Captive diets for adult animals consist of meat, eggs, milk, and cereals with vitamin and mineral supplements. Of 58 births in zoos reported between 1962 and 1980, at least 65% died in infancy. After most captive births, females have shown either minimal or no interest in tending offspring; hand-rearing has been necessary. Longevity in captivity is at least 24 years (Goldman, 1986).

When isolated from its burrow the aardvark is captured easily, but because of its enormous strength several men are required to capture an adult in the wild (Fitzsimons, 1920). They can strike powerful blows with their shoulders by making rapid and sudden turning movements. Fitzsimons (1920) reported that a man’s leg was broken in this manner. According to Smithers (1983), “toggled snares” are used successfully to trap aardvarks in their permanent burrows; “heavy drag weights” also must be used. Chemical restraint has been used successfully to immobilize adult animals in captivity; a 56.7 kg male received 600 mg of ketamine hydrochloride and 15 mg of diazepam (Goldman, 1986); ketamine hydrochloride (2.5 to 4.5 mg/kg) and droperidol (20 mg/ml) combined with fentanyl (0.4 mg/ml) at a dosage of 0.15 mg/kg of fentanyl also have been used (Dieterich, 1978).

**BEHAVIOR.** The aardvark is nocturnal, possibly territorial, and usually solitary. Both sexes spend most of the year in separate burrows; densities are high, several animals may meet and feed in the same area (Kingdon, 1971). Females may be seen with young of previous years (Verheyen, 1951). Within its territory, a resident animal uses the same paths at regular intervals of about 1 week and frequents the same termite hills (Rahn, 1972). When foraging, an aardvark travels in a zig-zag path with its snout to the ground inspecting a strip about 30 m wide. The ears are directed forward and slightly to the side. When digging or moving rapidly, aardvarks frequently stop and hold their snouts pressed to the ground and sniff, often vigorously (Melton, 1976; Walter, 1981). Kingdon (1971) suggested that fleshy tentacles around the nostrils may be highly sensitive to chemical and mechanical (moving ants and termites) stimuli. Hearing is thought to be essential as the animals have been observed to forage with their heads raised (Melton, 1976).

While foraging, animals may make many excavations around the base of termite mounds, destroy mounds by a single large burrow into the ground level, or dig one or more termites nests away from mounds. *O. afer* can cause considerable damage to a termite mound, including the destruction of the nest (Lepage, 1984). A typical dig is only 20 to 40 cm deep and made in less than 20 s. The average time feeding at a typical dig is 1 min. Estimates of total foraging distance average about 10 km per night, with a maximum of 30 km (Kingdon, 1971; Melton, 1976; Verheyen, 1951). Two individuals tracked in the Transvaal foraged over distances ranging from 2 to 5 km/night (van Aarde, 1984).

Aardvarks dig with their front claws and displace the matrix with the hind feet and tail (Fitzsimons, 1920; Patterson, 1975). They use the conical wall of the termitary mound, that often is so hard a man with a pickaxe cannot break into one. Van Ark (1969) reported that *O. afer* was responsible for an average mortality of 18.9% of mound *Microtermes teretes* colonies. A 1-m burrow can be dug in 5 min (Melton, 1976). While digging, the excrementc runs downwards and the vertical slits of the nostrils tightly closed (Kingdon, 1971).

*Orycteropus afer* captures its prey by inserting its long protractile tongue amongst ants and termites and drawing it back into the oral cavity. The tongue can be thrust 250 to 300 mm out of the mouth (Kingdon, 1971). Food is swallowed after being masticated only a few times (Fitzsimons, 1920).

When an animal is caught it quickly tucks its head between its forelegs and performs a somersault with great speed, while kicking viciously with its hind legs and sharp claws (Ranger, 1966). It avoids enemies by digging or seeking refuge in a burrow (Nowak and Paradiso, 1983). The aardvark is reported to swim readily (Rahm, 1972), have poor vision (Melton, 1976), and be almost blinded by light (Dorst and Dandelot, 1969). In an aggressive encounter, *O. afer* may strike with its tail or forelimbs, rear on its hind legs and slash with the forefeet, or roll on the back and slash with all feet (Nowak and Paradiso, 1983). If an attempt is made to excavate an aardvark from its burrow, it will dig rapidly, blocking the passage behind it at about 2 m intervals (Kingdon, 1971). Aardvarks sleep during the day curled in a tight circle with the snout covered by the tail and hind feet (Kingdon, 1971). According to Smithers (1983), aardvarks appear to sleep soundly. Bushmen in Botswana spear them as the animals lie sleeping in the sun at burrow entrances. Before resting in the burrow it blocks the burrow entrance, leaving a small opening at the top (Kingdon, 1971). Hediger (1951) suggested that there may be a partial arrest of circulation to accommodate the lack of oxygen in deeper tunnels. Aardvarks exit burrows in a typical manner: after pausing at the burrow entrance for several minutes they move suddenly for about 12 to 20 m before pausing again to sense their surroundings. *O. afer* basks in the sun for short periods at the burrow entrance (Kingdon, 1971; Melton, 1974; Smithers, 1983; Verheyen, 1951).

Aardvarks bury their feces in a consistent manner. The droppings are ovoid cakes that average 4 cm in length (Kenmzuir and Wilmot, 1975) and are covered by a masticated mass of soil. As much as 0.5 kg may be deposited at one time in a shallow hole about 10 cm deep, and subsequently covered with soil (Melton, 1976). This behavior may contribute to avoidance or attraction of other individuals of the same or other species.

When walking and upon entering a burrow, *Orycteropus afer* makes a muffled grunt. Any sudden fright or what appears to be pain is accompanied by a bleating call like bellow. When foraging they snuff vigorously (Kingdon, 1971). The aardvark is among several mammals prone to stereotyped patterns of movement in captivity such as pacing (Boorer, 1972).

**GENETICS.** Benirschke et al. (1970) reported a diploid chromosome number of 20 for *O. afer*; the karyotype has two pairs of large subtelocentric chromosomes, seven pairs of medium to small metacentric and submetacentric autosomes, a small metacentric X and a small biarmed Y chromosome. The nucleus of *O. afer*, according to Benirschke et al. (1970), have 1.673 times more DNA than human nuclei. Pathak et al. (1980) reported that all chromosomes of *O. afer* possess centromeric C-bands, and that all chromosome pairs can be identified unequivocally by G-banding. The mucosal epithelial cells of a female aardvark contain typical nuclear Barr bodies (Lasley, 1977).

**REMARKS.** Sherborn (1902:701) gives “Orycteropus Geofroy, Decae. Phil. lit. XXXIII. 1795.”; however, neither Sherborn nor any reference to subsequent classifications gives any information about this. “Tubulidentata” refers to the microstructure of the molars; “Orycteropus” means “burrowing foot” and “afer” is an adjective form of Africa. “Aardvark” is derived from the Dutch (through Afrikaans) and means “earth pig” (Bertin and Burton, 1967; Du toit, 1983). The aardvark also is commonly known as the antbear (Smithers, 1983).

Seventeen subspecies of *O. afer* were listed by Allen (1939) and 18 by Meester (1971); however, their validity and geographic ranges are unknown. *O. afer* differs from most species now placed in Edentata by number and structure of teeth, absence of septum maxilla, presence of mesethmoid, structure of bullae, stapes, internal choanae, certain cranial foraminas, and certain characters of the astragals. Nevertheless, until the turn of the 20th century, Tubulidentata was placed in Edentata together with Pholidota and Xenarthra (Simpson, 1945). It was given a subfamily rank by Haughton (1872) instead. “Tubulidentata” refers to the microstructure of the molars; “Orycteropus” means “burrowing foot” and “afer” is an adjective form of Africa. “Aardvark” is derived from the Dutch (through Afrikaans) and means “earth pig” (Bertin and Burton, 1967; Du toit, 1983). The aardvark also is commonly known as the antbear (Smithers, 1983).
MAMMALIAN SPECIES 300


WOODHOUSE, B. 1984. When animals were people: A–Z of animals of southern Africa as the Bushman saw and thought of them and as the camera sees them today. V. Rensburg Puhl., Melville, South Africa, 120 pp.


Editors of this account were SYDNEY ANDERSON and B. J. VERTS. Managing editor was CARLETON J. PHILLIPS.