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Herpestes pulverulentus.

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Herpestes pulverulentus Wagner, 1839

Cape Grey Mongoose

Herpestes caffra A. Smith, 1826:21 (not of Gmelin, 1788, a subspecies of *H. ichneumon*).
Herpestes pulverulentus Wagner, 1839:426. Type locality "Cape," exact locality unknown.
Herpestes apiculatus Gray, 1865:551. Type locality "Cape of Good Hope."
Herpestes ruddi Thomas, 1903:465. Type locality "Klipfontein, Little Namaqualand, Cape Province, South Africa. Alt. 1,000 m."
Myonax nigratus Thomas, 1928:408. Type locality "Okorosave, Kaokoveld, Namibia."
Myonax shortridgei Roberts, 1932:1. Type locality "Rua Caña (=Cunene) Falls, southern Angola, near Namibian border."

CONTEXT AND CONTENT. Order Carnivora, Family Herpestidae. The genus *Herpestes* contains 14 living species (Honacki et al., 1982), divided in two subgenera: *Galerella* Gray, 1865 (including the slender mongoose *H. sanguineus* and the Cape grey mongoose *H. pulverulentus*) and *Herpestes* (all remaining species). Six subspecies are recognized (Coetzee, 1977):

H. p. annulatus Lundholm, 1955:291. Type locality "Oropembe, Kaokoveld, Namibia."
H. p. basuticus Roberts, 1936:253. Type locality "Senkunyane Valley, Maluti Mountains, Lesotho."
H. p. nigratus Thomas, 1928:408, see above.
H. p. pulverulentus Wagner, 1839:426, see above (*apiculatus* Gray, a synonym).
H. p. ruddi Thomas, 1903:465, see above.
H. p. shortridgei Roberts, 1932:1, see above.

DIAGNOSIS. Members of the subgenus *Galerella* are distinguished from *Herpestes* by smaller size (head and body length <440 mm; condylobasal length of adult skull <80 mm), six upper and five lower cheekteeth (instead of six and six, with one more premolar), and anterior chamber of bulla comparable in size to posterior portion (Coetzee, 1977; Lynch, 1981; Meester et al., 1986). *Herpestes* (*Galerella*) *pulverulentus* is a small, south African mongoose, usually grizzled grey, with tip of tail indistinctly or not at all contrasting with the rest of the tail. *H. sanguineus* is smaller (skull length normally <64 mm in males, <63 mm in females). However, some size overlap between *H. pulverulentus* and *H. sanguineus* occurs (Lynch, 1981; Watson and Dippenaar, 1987).

GENERAL CHARACTERS. *Herpestes pulverulentus* is a small mongoose (body mass, 490–1,250 g; head and body length, 296–425 mm) with short legs (Fig. 1). The tail is 205–340 mm long, bushy and tapered towards the tip. The pelage coloration is usually grizzled grey. The muzzle is pointed. The ears are typically herpestid in shape, 15–36 mm long, closely oppressed to the sides of the head, and partly covered by a band of longer hairs. The hind foot is 49–81 mm long. There are five digits on each foot; the first is reduced. There is sexual dimorphism in body size and skull size. Males are 1.24× heavier than females.

The dental formula is i 3/3, c 1/1, p 3/4, m 2/2, total 38. The skull of adult *H. p. pulverulentus* is 62.0–74.0 mm long. Other measurements are (range, in mm): basal length, 57.7–68.8; rostrum width at canines, 11.9–15.0; width of braincase, 26.5–31.2; maxilla width, 22.0–25.6; height of braincase, 20.7–24.7; length of toothrow, 25.7–31.4 (Fig. 2; Lynch, 1981; Watson and Dippenaar, 1987).

DISTRIBUTION. The Cape grey mongoose is endemic to the southern African subregion (Fig. 3). It is common in most Cape Province and Orange Free State south of the Orange River and ranges east to Lesotho and extreme western Natal (confined to the slopes of the Drakensberg from the Royal National Park to Giant's Castle Reserve). Three subspecies (*H. p. shortridgei*, *H. p. annulatus*, and *H. p. nigratus*) are limited to northern Namibia, close to the Angolan border. *H. pulverulentus* overlaps only marginally with its most closely related species, the slender mongoose, in Namibia and in the north and northeastern parts of Cape Province and Orange Free State (Lynch, 1981; Smithers, 1983). No fossil records are available.

FORM AND FUNCTION. The small bare part of the nose encloses the nostrils, with a central depression which continues downwards and divides the haired section of the upper lip. The grizzled appearance is given by black annulations (four to six) of the guard hairs, interspersed with white. Length of individual hairs is variable, from about 5 mm on the head to 50 mm on the hindquarters. The hair at the base of the tail is about 55-mm long and tapers gradually towards the tip. The underfur is sparse, fine and wavy, and much shorter than the guard hairs.

H. p. pulverulentus is speckled or grizzled grey in color with the tip of the tail sometimes brown, but not black. the face is dark grey and less grizzled around the nose. Hands and feet become darker distally; the toes are uniform dark brown. The underparts are less grizzled than the underparts; the armpits and inguinal region are uniform in color. *H. p. basuticus* is similar in color, although the woolly underfur gives a paler appearance. The light rings on the hairs are yellowish in *H. p. ruddi* and the darker underfur gives a brownish appearance. The distal 25–30 mm of the tail is black. *H. p. nigratus* is very dark, with a broad black line from the snout to the end of the tail, which is black for the distal third. *H. p. shortridgei* is chestnut-red along the top of the head, neck, back, and base of tail. The sides of neck, body, limbs, and throat are yellow-ochre. The distal 90 mm of the tail is black. The sides of *H. p. annulatus* are yellowish (the hairs being black and yellow); the underside is greyish and the underfur is yellowish-grey. The tail is uniform dark brown to black. However, compared with *Herpestes sanguineus*, *H. pulverulentus* is much less variable in color (Lynch, 1981).

The heel pad of *Herpestes pulverulentus* is bare (Rood and Wozencraft, 1984) and the claws are not well developed (Smithers, 1983). The scale pattern and the cross-sectional shape of the guard hairs differ from those of other southern African Carnivora, but are indistinguishable from those of *Mungos mungo* (Lynch, 1981).

The baculum is 12 mm in length (Lynch, 1981). The braincase is ovoid, broadest at the level of the ear openings and narrowest at the postorbital constriction, being no more than 45% of the greatest

FIG. 1. Cape grey mongoose from Hout Bay, Cape Province, South Africa. Photo by J. Visser.

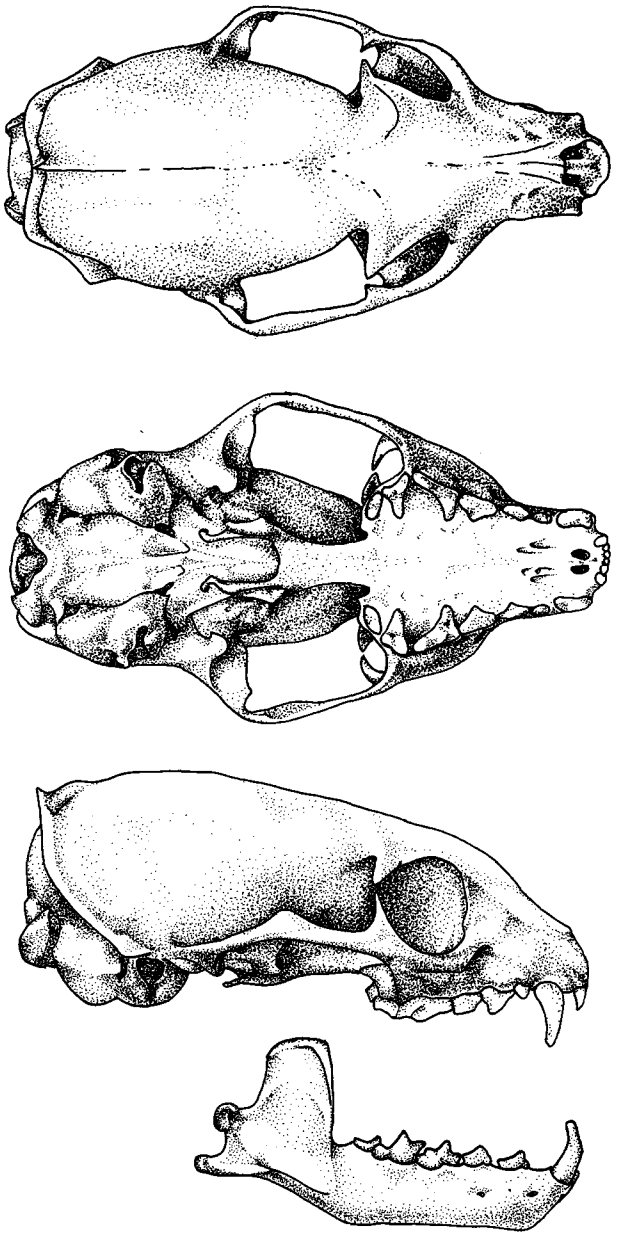

FIG. 2. Dorsal, ventral, and lateral views of the skull, and lateral view of lower jaw of *Herpestes pulverulentus*. Modified from Smithers (1983) using a specimen from the West Coast National Park, South Africa.

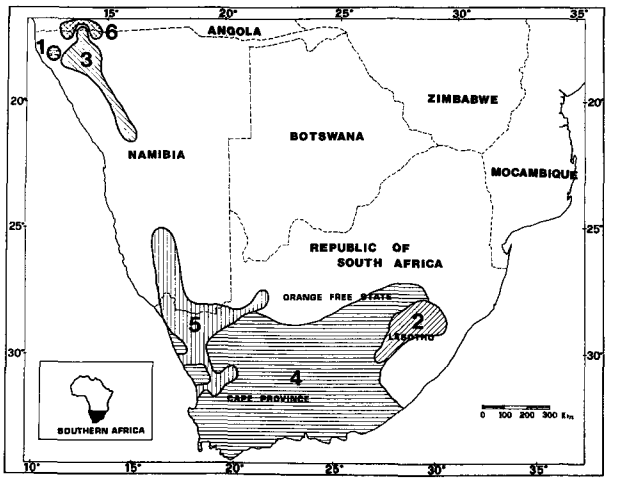

FIG. 3. Distribution of *Herpestes pulverulentus* (redrawn from Lynch, 1981). Approximate subspecies (Coetzee, 1977) distribution is indicated (1, *H. p. annulatus*; 2, *H. p. basuticus*; 3, *H. p. nigratus*; 4, *H. p. pulverulentus*; 5, *H. p. ruddi*; 6, *H. p. shortridgei*).

width of the braincase (=17% of the total length of the skull; Smithers, 1983). The mass of the brain is 11.02 g (Gittleman, 1986). The rostrum is short. The sagittal crest is small, highest where it joins the well-developed supraocciptial crest (up to 3 mm). The zygoma are stout; zygomatic width is about 50% of the total length of the skull (Smithers, 1983). In most *H. pulverulentus* the zygomatic arch does not meet the postorbital process around the eye (Watson and Dippenaar, 1987). I3 are the largest incisors in both the jaws. The upper canines are slightly curved, sharp, and slightly flattened laterally. The lower canines are more recurved. PM1 is small. PM4 forms a carnassial shear with m1 and in part with pm4. The protocone on the front inner edge of PM4 is large and is adapted for crushing, together with the back of m1, M2 (in spite of its small size), and the other molars. The two chambers of the auditory bullae are subequal in size (Smithers, 1983). There are three pairs of abdominal mammae (Roberts, 1919).

ONTOGENY AND REPRODUCTION. Pregnant females (n = 5) were recorded in August, September, and October. Maximum mass of fetuses was 20.2 g. Lactating females (n = 9) were collected in August, November, December, January, and February. These data suggest that the breeding season occurs at the end of the rainy season (August–December). Litter sizes of one (n = 3), two (n = 2), and three (n = 2) fetuses were recorded. Juveniles weighing 140 g, 112 g, 230 g, and 385 g were collected in December; one 300-g juvenile was collected in March (Lynch, 1983; Stuart, 1981). Two females attained almost adult length by February, and about 85% of adult body mass by April (Crawford et al., 1983).

ECOLOGY AND BEHAVIOR. *Herpestes pulverulentus* is common throughout its range (Stuart, 1981). Cape grey mongooses are easily captured (between 0.27 and 0.027 mongooses trapped per trap-day in areas with less than 0.1 individuals/ha) in single-door box traps constructed of wire mesh (25 by 25 by 90 cm). They can be handled after an injection of ketamine hydrochloride at 15–20 mg/kg body mass. Collars, monofilament spaghetti tags, and colored Petersen disks can be used for marking individuals. Radio-tracking techniques have been successfully applied (Cavallini and Nel, 1990*a*; Crawford et al., 1983).

The main prey of the Cape grey mongoose are small to middle-sized rodents, when available. In the West Coast National Park, *Otomys unisulcatus* (average mass = 124 g) and *Rhabdomys pumilio* (average mass = 45 g) constitute over 90% of the diet by volume. Predation of a young porcupine (*Hystrix africaeaustralis*) was also recorded. In the same area, insects (especially Coleoptera) are a secondary food resource. The Cape grey mongooses remove a small proportion (probably <10%) of total rodent production. In other studies, mammals appear in the diet less frequently, ranging from 15 to 30% (relative frequency of occurrence), while arthropods have a greater importance (Cavallini and Nel, 1990*b*). *H. pulverulentus* also kills and eats boomslang (*Dispholidus typus*; Branch and Hanekom, 1987). The Cape grey mongoose also scavenges road kills (Stuart, 1981) and house garbage (Cavallini and Nel, 1990*b*).

Herpestes pulverulentus has a broad tolerance of habitats (Lynch, 1981; Smithers, 1983; Stuart, 1981). It occurs from sea level to 1,900 m and in five of the six biotic zones of the southern African subcontinent, ranging from the dry Namib to the wet forest zones. It is absent only from some of the driest parts of the country (Kalahari thornveld; rainfall 50–200 mm). It is often associated with rocky outcrops and boulders overgrown with vegetation (Lundholm, 1955; Lynch, 1983). In a telemetry study, Cape grey mongooses frequented only bushy areas around two granite outcrops, avoiding areas of short grass (Cavallini and Nel, 1990*a*). In the Tsitsikamma National Park, Cape grey mongoose is common in the very dry scrub forest, uncommon in the dry high forest, and possibly absent from both moist and wet high forests (Crawford et al., 1983).

The Cape grey mongoose is active from around 0600 h until 2045 h during summer, with rare activity before 0500 h. During

the day Cape grey mongooses generally move between 50 and 100 m every 15 min, with a great deal of both intra- and inter-individual variation. Summer home ranges are from 21 to 63 ha (95% harmonic mean) and overlap greatly.

Although basically a solitary animal, males show some sociality (Cavallini and Nel, 1990*a*). In the Tsitsikamma National Park, 89% of the sightings are of solitary animals, 10% are of pairs, and 1% are of groups of three. Sociality is highest during summer and pairs are seen also in July and August (Crawford et al., 1983). Groups are found at sleeping sites (Roberts, 1951). No association of this type was observed between adults (Cavallini and Nel, 1990*a*).

The usual feeding technique consists of moving quickly from bush to bush or other potential feeding site. The Cape grey mongoose sniffs often when in search of food (Smithers, 1983), but it may rely on sight to a large extent (Stuart, 1981). The animal scratches the soil in search of subterranean prey items, although less actively than other mongooses (e.g., *Cynictis penicillata* and *Suricata suricatta*). It has been observed throwing eggs backwards between the hind legs towards a hard surface, repeating the process until the egg breaks (Ewer, 1973).

The Cape grey mongoose is terrestrial, although able to climb trees (Smithers, 1983; Crawford et al., 1983). In summer, the Cape grey mongoose usually does not rest in underground dens (Cavallini and Nel, 1990*a*). Various sites, especially rock crevices, are used for shelter and for rearing young (Stuart, 1981). The Cape grey mongoose, unlike other herpestids, does not form large fecal piles; droppings are found singly (21%) or in groups (up to more than 10), usually near sleeping sites (Cavallini and Nel, 1990*a*). Captive animals show anal gland marking (Stuart, 1981).

Although living sympatrically with various other small carnivores, the extent of interspecific competition appears limited by niche separation in diet and time of activity (MacDonald and Nel, 1986). The limited overlap in distribution suggests that competition might be severe with the closely related slender mongoose (*Herpestes sanguineus*; Lynch, 1981).

From 0 to 25% (average = 7.4%) of the prey collected at nine martial eagle (*Polemaetus bellicosus*) nests were Cape grey mongooses (Boshoff and Palmer, 1980). A Cape grey mongoose lived in the London zoo for 8 years 8.5 months (Shortridge, 1934).

Various arthropod parasites are reported for this species: *Echidnophaga gallinacea, Ctenocephalides connatus, C. felis, Procaviopsylla angolensis* (Haeselbarth et al., 1966), and immatures of the tick *Ixodes pilosus* (Arthur, 1965). Scabies and ticks (unknown species) were present on two (both young animals) of eight trapped mongooses (Cavallini and Nel, 1990*a*).

GENETICS. *Herpestes pulverulentus*, like the other members of the genus *Herpestes* and *Atilax*, has an unusual chromosome arrangement. "By translocation of an original Y chromosome (or part of it) to an autosome, males of these species have one chromosome less than females" (Fredga, 1977:390–391). As a result, females have 40 chromosomes and males 39, less than *H. sanguineus* (42/41) and *H. ichneumon* (44/43). These deviations from the standard number for the family (36/35; common to all other *Herpestes* species) can be accounted for by centric fission events (Fredga, 1970, 1977).

REMARKS. The subgenus *Galerella* is often treated as a distinct genus, mainly on the basis of the number of premolars, the form of the auditory bullae, and the structure of the foot and leg (Allen, 1924; Meester et al., 1986; Smithers, 1983). The Namibian subspecies (*annulatus, nigratus,* and *shortridgei*) are considered to be subspecies of *H. sanguineus,* mainly on the basis of color variation and skull measurements. *H. pulverulentus* is regarded as a monotypic species because of the presence of character gradients in a series of specimens from contiguous areas (Lynch, 1981). *H. nigratus,* on the other hand, is believed to be a distinct species and *H. n. shortridgei* is a subspecies of it (Waston and Dippenaar, 1987; Watson, 1990). The status of *H. p. annulatus* remains uncertain because of the paucity of museum material.

Herpestes (from the Greek *herpo* = to creep) means a creeping being (Lundholm [1955] noted that "in the field, it behaves in a very snake-like manner"). *Pulverulentus* (from the Latin *pulvis* = dust) means dusty.

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