Mammalian Species

Ichneumia albicauda. By Mark E. Taylor

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Ichneumia I. Geoffroy, 1837


Context and content. Order Carnivora, Family Viverridae, Subfamily Herpestinae. The genus includes only one species Ichneumia albicauda.

Ichneumia albicauda (G. Cuvier, 1829)

White-tailed Mongoose

Herpestes albicauda G. Cuvier 1829:158. Type locality "l'Afrique australe et le Senegal," southern Africa and Senegal.

Context and content. Context noted in generic summary above, six subspecies are recognised (Coetzee, 1967) as follows:

1. a. albicauda (G. Cuvier, 1829:158), see above.
1. a. loempio (Temminck, 1853:93). Type locality Guinea coast.
1. a. grandis (Thomas, 1890:622). Type locality "believed to [bel] ... either on the Limpopo or in Zululand." Southern Africa south of the Canane-Zambesi.
1. a. loanda (Thomas, 1904:408). Type locality "Pungo Ango, 1200 m" in northern Angola.
1. a. iva (Thomas, 1904:409). Type locality, "Athi-ya-Mau, Mombasa-Uganda Railway, East Africa.'
1. a. dialeucos Hollister, 1916:131. Type locality "Mount Lololokwi, British East Africa.'

Diagnosis. The single species of this genus is a large mongoose with a head and body length of 470 to 690 mm, tail length 355 to 460 mm, hind foot length 100 to 130 mm, and weight 1.8 to 4.5 kg. The marsh mongoose, Atilax paludinosus, black-legged mongoose, Bdeogale nigripes, Jackson's mongoose, Bdeogale jacksoni, and the Egyptian mongoose, Herpestes ichneumon, are all of similar size. Ichneumia has thick woolly pelage from which coarse guard hairs project; the heavy tail tapers distally, the terminal third usually white (occasionally melanistic). General color of the back is grizzled pale grayish with a faint brown wash; effect is produced by a coarse speckling of black and creamy bands of guard hairs, the extensive black tips of the latter running together in places to form irregular black patches over the nape and back. Herpestes ichneumon resembles Ichneumia more closely than does any other species, but its tail is distinct in that it is slender and has a black bushy tip. The ventral pelage of Ichneumia is a pale brown color (darker brown at its roots and paler buff-cream distally). The limbs are blackish-brown from the midforearms and tarsi distally. The feet of the other large herpestines also are darker than the general body coloration and Bdeogale nigripes and Bdeogale jacksoni are distinguished by their brown-black feet, which are tetractadyle. In Ichneumia the tail at base is the same color as the back but becomes progressively whiter distally. Upper lip is divided by an internarial groove from the nose to mouth. Legs are longish, feet pentadactyle; palms naked to wrist, but the soles are hairy from behind the small first toe to the heel. The feet of Atilax differ in possessing no interdigital web between the phalanges, which enables the digits to be widely spread. Herpestes ichneumon has a larger pollex and hallux than does Ichneumia and the feet are relatively more naked on the plantar surface. In Ichneumia, the claws are well developed and stout. Frontal region of skull is expanded and more elevated than parietal region; anterior orbital margin above P4 (above P3 in Herpestes ichneumon and Atilax, see Figure 1 for symbols used for teeth), postorbital processes well developed, forming complete postorbital bridge in fully adult skulls. Sagittal and lambdoidal crests well developed, posterior chambers of tympanic bullae strongly inflated. Dentition heavy (Figure 2), especially P4, which has a greater development of the protocone (pr) than in Herpestes ichneumon or Atilax so that the inner lobe of the tooth occupies considerably more than half the anteroposterior diameter of the crown. Metastyle (mes) of P4 reduced; M1 fairly symmetrical, paracone (pas) slightly projecting; anterior root of zygomatic arch far behind P4; m1 with conuate paraconid (pad) and metaconid (med); m2 elongate with six cuspae, lower canines recurved, upper canines only slightly recurved. Dentition i 3/3, c 1/1, p 4/4, m 2/2, total 40. The above comments were modified from Harrison (1968:266-268), and Gregory and Hallman (1939:374-375).
Figure 2. Dentition of Ichneumia albicauda, occlusal view of left upper jaw (top) and occlusal view of left lower jaw (bottom). Drawn by the author from a male specimen MC 42110 catalogued in the Department of Osteology, Centre for Prehistory and Palaeontology, Nairobi, Kenya. Some teeth and their parts are labelled with abbreviations that are noted in text.

GENERAL CHARACTERS. More complete descriptions are in Astley Maberly (1960), Allen (1924), Harrison (1968), Hinton and Dunn (1967), Thomas (1890), and Walker et al. (1964).

DISTRIBUTION. The genus occupies Africa south of the Sahara (Figure 3) and scattered records have been obtained from the Nile Valley in Sudan (Cloudesley-Thompson, 1968) and from Oman and Muscat in South Arabia (Harrison, 1968). It is found in coastal areas of Cape Province, Natal, the northern “bushveld” of Transvaal, Ngamiland in Botswana, northern Southwest Africa, Angola, and northward to Sudan, Ethiopia (possibly Egypt), Somalia and westwards to Senegal. Ichneumia might be absent from the central Congo Basin, parts of Gabon, and similar extremely moist areas.

FOSSIL RECORD. The only known fossils of Ichneumia albicauda are a tibia and femur from Bed I, Olduvai Gorge, Tanzania. This level represents the Villafranchian period or early Pleistocene (Petter, 1967).

Figure 3. Map showing the distribution of Ichneumia albicauda and the general areas occupied by the subspecies: (1) I. a. albicauda, (2) I. a. loempia, (3) I. a. grandis, (4) I. a. loanda, (5) I. a. iberana, (6) I. a. diacoeus.

Figure 4. External views of Ichneumia albicauda: (a) lateral view of head, (b) ventral view of snout (not to scale), (c) dorsal view of snout (not to scale), (d) anal pouch. Modified from Pocock (1916).

FORM. Pelage dense and guard hairs about 40 mm long in mid-dorsal region. Dense woolly underfur about 15 mm thick. There is much color variability in the species (Harrison, 1968); this was recognized by Thomas, who noted (1882:77) that “Herpestes albicauda and H. loempia cannot even be separated as varieties; for the only difference between them, namely the color of the tail, seems to be purely an individual variation. It is true that for the most part specimens from West Africa, representing H. loempia, have black tails, and those from East Africa white tails; but I have seen too many exceptions to this rule to feel justified in regarding the two forms as variably distinct.” The subspecies have been based predominantly on pelage coloration and variations in size. Inadequate sampling from areas may give a false idea of subspecies distribution, for specimens from Kenya may be of a size comparable with those from South Africa (personal observations). The crown of the head and ear fringes are the same color as the back; the tip of the muzzle and chin are dusky brown, the cheeks predominantly hairy white. The ventral surface is light brownish (Yellow-Beige, H7, Plate 13, Maerz and Rea, 1950), the underfur shows through extensively, and the flanks are grayer than the dorsal color. The individual guard hairs of the tail are white at their bases and white-tipped, and have one or two black bands that gradually disappear toward the tip of the tail, as does the pale orangetinted brown underfur, thus producing the pure white tip. The caudal guard hairs are about 85 to 100 mm long. The muzzle is attenuated; the rhinarium is blackish and forwards projecting (Figure 4); its inferior surface is marked by a distinct inter-narial groove continued backward as a naked, shallow piliferum dividing the deep upper lip (Pocock, 1916). The depth of the upper lip beneath the rhinarium varies among the genera of viverrids, in most it is less than the depth...
of the rhinarians, but in Ichneumia albicuda the lip is as deep as the rhinarian. The ears are much larger than in Herpestes ichneumon, the pinna projects above the profile of the head and has a broader more squarish outline, with bluntly rounded antero-superior and postero-superior angulations; the posterior margin is gently convex throughout and with a more prominent convexity at the junction of its lower and middle thirds than in Herpestes ichneumon.

Claws are well developed, being dusky brown, largest of the forefeet about 14 mm (Harrison, 1968). Feet are slender and longish, with decidedly emarginate webs; hallux and pollex about equal in size, set well above the plantar pad (Figure 5). The carpal pad is semi-elliptical, of moderate size and higher than the function seems to be marking territory (personal observation). There are two pairs of abdominal mammae (Roberts, 1951). There is no published work on the postcranial skeleton. Basically the skeleton is more doglike than in most other herpestids, because the long limbs are modified for cursorial life. Some measurements are: numerus 85 mm, radius 46 mm, ulna 100 mm, metacarpal III 36 mm, pelvis 81 mm, femur 94 mm, tibia 112 mm, metatarsal III 48 mm. Vertebrae number, c 7, t 13, l 7, s 3, and cd 22 to 27. The upper incisors form a slightly curved row; their crowns are smooth and convex in front, concave behind, the third with the cingulum defined postero-medially but without any cusp. Upper canine scarcely recurved; first upper premolar has one root and is small, its single conical cusp is upright and nearly twice as high as its antero-posterior diameter; P2 three times as large as P1 (see Figure 2); P3 has its postero-medial heel well developed; M1 is strikingly broad with a distinctive outline, its metacynoic projects almost as far laterally as its parasynvs, the medial part of the crown forms a broadly triangular inner lobe, with a deep cup-like depression; M2 is well developed and functional and not overshadowed by M1, its antero-posterior length is about half its transverse width and its crown resembles that of M1 with the cusps less acenteduated. The lower incisors are obscurely biliated, the small lower cusp of 153 more distinct and set decidedly lower than the inner one. The small lower p1 is fairly well developed with the cusp a little forwardly inclined. The premolars become increasingly complex, the posterior cusp increasing in size so that in P4 it is nearly three-fourths of the height of the principal cusp. M1 has a well-developed talonid posteriorly, its area almost attenuating that of the higher anterior trigonid. The metaconid is well developed, only a little lower than the paraconid, which is subequal with the protoconid. The talonid has a small conical central cusp developed on its medial rim, the posterior rim forms a cusp-like ridge. The crown area of M2 is large (it may be as large as or larger than the carnassial I1) and its form is more complex and somewhat like that of M1, with an elevated subcuspitate anterior part, the posterior heel of the tooth has a large antero-lateral cusp and an obscurely bifurcated

postero-medial one (modified after Harrison, 1968). The muscular anatomy of the limbs is being studied by Taylor, and there are modifications towards cursorial habits, muscles being located more proximally than in Herpestes ichneumon to overcome moments of inertia. The brain has a cruciate sulcus, which though present in other viverrines (Radinsky, personal communication) is absent in viverines (Radinsky, personal communication). Phalangeal numbers from first to fifth digits in both fore- and hind feet are 2-3-3-3-3. Other organ systems have not been studied.

ECOLOGY. Man is probably the major predator on white-tailed mongooses though the young may be subjected to limited predation by larger raptors. White-tailed mongooses are primarily solitary, and rarely are seen in pairs, although female and young may be seen together. They are generally nocturnal, but are occasionally diurnal; one was caught between the hours of 1400 and 1600 (personal observation). They coexist with genets (either Genetta tigrina or G. genetta), black-tipped mongooses (Herpestes sanguineus), four-toed mongooses (Bdeagale crassicauda), and the jackal (Canis mesomelas) — see Sale and Taylor, 1970. Competition is reduced by differences in feeding times and behavior patterns. Ichneumia is terrestrial, and is found in a wide variety of habitats from woodland to semidesert, but is not found in swamp or tropical rain forest (Coetzee, 1967) or above 4400 m. Individuals do not migrate, except away from parental territory. When a region is trapped out, new animals enter over a period of several months. Home range is about 0.8 square kilometers (Taylor, 1970). Diseases have not been investigated. Several cases of bone fractures have been found. These include pelvic injuries, probably related to the habit of collecting insects on roads at night and, as a result, being hit by cars, vehicles, and stress fractures of metatarsals, probably also related to behavior (Taylor, 1971). Diet consists mainly of insects (locusts, beetles, mole crickets), but also rats, mice, shrews, lizards and possibly small snakes, smaller birds (chickens when available), carrion, berries and fruits in season.

In other viverrids in East Africa, two young, or sometimes only one, are born during or just after the long rains (Taylor, 1969), and my few records for Ichneumia indicate similar breeding seasons. The longevity record for this species is 10 years and 29 days for an animal in the Zoological Gardens of London (Crandall, 1964).

BEHAVIOR. The locomotion of the white-tailed mongoose has been studied in the wild and in captivity. It typically walks or trots. The walking is similar to that of the dog and can be divided into two parts, elevation or protraction and contact or retraction. In protraction the manus is flexed as it is lifted off the ground and the limb extends forward. During retraction the foot may be extended as much as 25° anteriorly to the axis of the radius, the main propulsive thrust is produced by the hind limbs. The head is carried low, and the shoulder is nearer the ground than is the base of the tail. In one study, the mongoose walked at approximately 4.2 kph, each stride taking approximately 1.7 s. The gait used was a slow, single-foot, lateral-sequence walk with a gait formula of 73-20 (Hildebrand, 1966). The first number of the gait formula represents the percentage of the stride interval that the footfall of the forefoot follows that of the hind foot on the same side. The second figure shows the percentage of the stride interval that each hindfoot is on the ground. Trotting is often observed in the white-tailed mongoose (Plenaar, 1968; Taylor, 1970) and a moderate walking trot (45–45) is the fastest fixed locomotion. No other studies have been done on the information on behavior is anecdotal (Roosevelt, 1910).

GENETICS. The karyotype of a male white-tailed mongoose was found to have 36 diploid chromosomes, with 66 chromosomal arms (the "nomen fundamental") in a haploid set. The autosomes are composed of 14 pairs of meta- or submeta- centric and three pairs of acrocentric elements. The metacentric is a medium sized metacentric and the Y is a small submetacentric, the smallest element (Wurster and Benirschke, 1968).

REMARKS. Little is known about the parasites of Ichneumia, but four digenetic trematodes (a cestode worm), two complete with their scolecites, were collected from a stomach of a white-tailed mongoose from the
Mkuzi Game Reserve, Zululand. The length of the worms ranged from 150 to 180 mm, and maximum breadth was 1.5 mm. The anterior segments are much broader than long, posteriorly the segments increase in length so that the last ones are almost square. Segmentation is distinct from behind the neck, the posterior rim of each mature and ripe segment overhanging the following segment (Ortlepp, 1963).

The sera of Ichneumia from Kenya were tested for rickettsial antibodies and found to be positive, with the two sera tested containing Rickettsia burnetti (Heisch et al., 1962).

The structure of haemoglobin is being studied but no clear results for the Viverridae have been found. Ichneumia albicauda was studied but no results given (Seal, 1969).

A white-tailed mongoose was immobilized by administration of 1.0 mg/kg body weight of phencyclidine with promazine added (Seal et al., 1970).

From collecting and examining material of this species, the subspecific differences appear to be sufficiently small and the local variations sufficiently large to make all subspecies of dubious value. The generic name Ichneumia is derived from the Greek ichneumon meaning a tracker; the word ichneumon is one of the vernacular terms used for the Egyptian mongoose, Herpestes ichneumon; albicauda is derived from the Latin, albus meaning white and cauda meaning tail.

LITERATURE CITED


The editor for this account was S. ANDERSON.

MARK E. TAYLOR, DEPT. OF ZOOLOGY, UNIVERSITY OF TORONTO, TORONTO, ONTARIO, CANADA. (PRESENT ADDRESS, DEPARTMENT OF BIOLOGY, PAHLAVI UNIVERSITY, SHIRAZ, IRAN).