

EXTERNAL MORPHOLOGY OF A MALE LARGE INDIAN CIVET (*VIVERRA ZIBETHA* LINNAEUS, 1758)

Archana, D.N. Sharma and Rakesh Sharma

Department of Anatomy and Histology, College of Veterinary and Animal Sciences, Himachal Pradesh Krishi Vishvavidyalaya, Palampur, Himachal Pradesh 176062, India.

Abstract

Detailed gross anatomical observations on the external morphology of a male Large Indian Civet (*Viverra zibetha* Linnaeus, 1758) has been recorded. The paw impression study with a view to identify the species has been given.

Keywords

External morphology, Viverra zibetha, male, Large Indian Civet

Results and Discussion

The Large Indian Civet is a carnivore, characterized by its large mouth, strong and powerful jaws, with typical pincers and shearers. It occupies the taxonomic position as given below.

Order	Carnivora
Suborder	Feloidea
Family	Viverridae
Subfamily	Viverrinae
Tribe	Viverrini
Genus	<i>Viverra</i>
Species	<i>zibetha</i>

Introduction

Among the animals of Order Carnivora (252 species) of the world, the felines (130 species) constitute a bigger proportion than that of the canines (122 species). Among the felines, the biggest family (>67%) belongs to the viverrids (82 species) which includes civets. The Large Indian Civet (*Viverra zibetha*) is much larger than the Small Indian Civet (*Viverricula indica*); the latter is as small as the genets. Civets are found throughout South Asia, Sumatra, Celebes and Philippines and also in Africa. Their importance in perfume industry has made them vulnerable to exploitation. Not much is known on their external morphological characters, hence this report.

Material and Methods

A morbid specimen of the Large Indian Civet was recovered from the forest along the Banuri Khud of Paalam Valley, District Kangra, Himachal Pradesh (1115m) which has a subhumid temperate climate. The carcass bore gunshot wounds in its thoracic region. The specimen had been killed the previous night and was brought to the department in the morning (February 2000), in rigor mortis stage. It was cleaned, washed and examined. The external morphology was examined in detail and recorded. Paw impressions were made to study the pattern of footprints by using stamp pad ink impression method.

It is said to be nocturnal, non-arboreal, river-loving and solitary in habit (Morris, 1965). The adult civet measured approximately 112cm in length (cranio-caudal axis length) of which nearly 50 per cent was constituted by its tail (56cm) (Fig. 1). Its maximum height at the wither was 19.3cm. The body was covered with very fine hair mostly gray with black patches all over. This agrees with the observation of Morris (1965) who described the viverrids closely resembling mustelids as smallish, long-tailed, short-legged and low-bodied cat like animals, and measured 120cm in length.

The head was elongated cone-like; broad caudally but narrow rostrally (Figs. 1, 2) as also reported earlier (Morris, 1965). It can be classified as an extremely dolicocephalic animal as it had a head index of 42.22 per cent indicating much longer (13.5cm) head as compared to the width (5.7cm). While describing the skull of carnivores Sisson (1975) stated that the breeds of dog which had an index of 50 are classified as extreme dolicocephalic. The nasal rostrum was black and presented a muzzle as in dogs (Ellenport, 1975). Ventral to it lay the thin upper lip. The muzzle was marked by a prominently grooved philtrum like other carnivores (Ellenport, 1975). The lower lip margined the lower jaw and was laterally partly overhung by the upper lip. The labial skin on either side of the face presented long tactile hairs



Figure 1. Lateral profile of the Large Indian Civet.

(28-30 in number, 9.0-9.5cm in length) studded randomly among the ordinary hair. The rima oris was very extensive (9.0cm) extending 4.5cm on either side from the midline. The commissure of the mouth was present at the level of caudal margin of the fourth cheek tooth. While in pet carnivores large-mouthed animals like dogs have the commissure at third/fourth cheek tooth (Ellenport, 1975), the civet cat presented still longer mouth.

Nostrils were inverted comma shaped openings as in other carnivores (Hare, 1975). Eyes were small and elongated situated on either side of the head. The palpebral fissure measured 2cm in length (distance between medial and lateral canthi). Besides the superior and inferior palpebrae which guarded the eyes, a third eyelid (nictitating membrane) was also present along the medial canthus as in other carnivores (Diesem, 1975). Eyelashes (cilia) were present on both eyelids but they were smaller along the lower eyelids. The skin of the lids continued with the integument covering the face and was similarly covered with ordinary hair. Nearly 4cm from the lateral canthus of eye on either side was present a large movable pinna (external ear - auris externa) of the ear (Fig. 2). The external appearance of the pinna compared with the external ear of the carnivores (Ellenport, 1975). A few long tactile hairs were present here and there on the cheek, chin and behind the lateral canthus of eye. The neck was long, narrow region connecting the head with the trunk. It was covered by the regular integument protected with very fine hairs.

The trunk was identifiable into a cranial part, the thorax and a



Figure 2. Face of the Large Indian Civet.

caudal part, the abdomen. The thorax was protected by a bony cage formed by 12 pairs of ribs and a sternum. Out of the 12 ribs, 10 were sternal and two were asternal ribs. In domestic carnivores there are 13 pairs of ribs (Sisson, 1975) the last one being asternal. The skin along the dorsum of trunk bore relatively longer hair, particularly the hair along the mid line which were black and marked a longitudinal black midline band (Fig. 1). The skin on the ventral aspect of the trunk was also fully covered with grey/black hair. Morris (1965) stated that in the viverrids, along the



Figure 3. Impressions of the fore and hind paws of the Large Indian Civet.

back, runs an erectile crest of black hair, and the limbs, cheeks and throat are black. The anus was present just below the root of the tail. Ventral to the anus (in the perineal region) a relatively large and projectile scrotal sac (3.2cm long; 3.0cm wide) was present. It was marked centrally by a prominent raphe scroti. Ellenpor (1975) stated that the scrotum in cats is small and hidden in hairs, and in dog scrotum, the raphe is not distinct.

The penis lay between the two hind limbs. It extended in the perineum from ventral to the ischial arch for about 7.5cm cranial to the scrotal sac. The penis was enclosed in a cutaneous preputial sheath which was nonpigmented and was covered by long shoot of hair all around at its opening. On palpation of the prepuce and penis a bony consistency of os-penis was clearly noticeable.

The thoracic limb comprised an arm 9cm, forearm 13.5cm and the manus 5.5cm. Examination of the paws revealed it to be a pentadactyl animal. The paws of the forelimb were smaller and more or less rectangular in outline (Fig. 3). There were five digits. Each digit was guarded by a protractile sharp pointed claw.

The paws of the hind limb were longer as in primates (Fig. 3). They were round and narrow towards the heel, but wider and flat towards the toe. Each of the five digits of hind limb was also provided with sharp pointed protractile claws. The palmers/solar surface of the limbs was covered with highly keratinised skin. The horny tissue was much thicker in the hind limb. Morris (1965) stated that viverrids have semi retractile claws, approaching to the feline condition.

References

- Diesem, C. (1975).** Organ of vision, pp 1741-1782. In: Getty, R. Editor, Sisson and Grossman's *The Anatomy of the Domestic Animals*, Fifth Edition. W.B. Saunders, Philadelphia, USA.
- Morris, D. (1965).** *The Mammals* First Edition. Harper and Row Publishers, New York, pp 246-247; 298-299
- Ellenport, C.R. (1975).** Olfactory and vomeronasal organ, ear, male genitalia, digestive system, pp. 1538-58, 1580-83, 1780, 1769-79. In: Getty, R. Editor, Sisson and Grossman's *The Anatomy of the Domestic Animals*, Fifth Edition. W.B. Saunders, Philadelphia, USA.
- Sission, S. (1975).** Osteology-canines, pp 1427-82. In: Getty, R. Editor, Sisson and Grossman's *The Anatomy of the Domestic Animals*, Fifth Edition. W.B. Saunders, Philadelphia, USA.
- Hare, W.C.D. (1975).** Respiratory system, pp 1559-75. In: Getty, R. Editor, Sisson and Grossman's *The Anatomy of the Domestic Animals*, Fifth Edition. W.B. Saunders, Philadelphia, USA.