

Mustelids, Viverrids and Herpestids of India: Species Profile and Conservation Status

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THE ORDER CARNIVORA is grouped into two suborders, three superfamilies and ten families (Wozencraft 1989a). The family Ailuridae which was treated as a separate family under the superfamily Ailuroidea represented by red or lesser panda *Ailurus fulgens* has been merged with the family Ursidae due to their close resemblance with each other. Similarly, many taxonomists placed mongoose and civets in a single family. However, most primary systematic studies have placed mongoose in a separate family, as they do not share any derived feature (Wozencraft 1984, Hunt 1987). In India the order Carnivora is represented by seven families.

As apparent from Table 1, though the members of the family Mustelidae, Viverridae and Herpestidae have different phylogenies,

they look quite similar in external appearance. In terms of number of genus and species these groups constitute more than 50% of the order Carnivora (Table 2). Because of their small size, these groups along with the small cats and red panda are termed as small carnivores. In this volume, we restrict our discussion to the members of the families Mustelidae, Viverridae and Herpestidae only.

The members of the family Mustelidae are the most diverse group and may be paraphyletic (Wozencraft 1989a). The members of this group are characterised by the loss of the caranassial notch (on upper premolar- pm^4), invariable loss of upper molar (m^4) (Wortman 1901, Pocock 1941) and the enlargement of the anal sac (Wozencraft 1989a). They differ from Felidae by the absence of retractile claws and from

Table 1. A phylogenetic classification of recent Carnivora

Suborder	Superfamily	Family
Caniformia Kretzoi 1945	Canoidea Waldheim 1817	Canidae Waldheim 1817
		Procyonidae Gray 1825
	Ursoidea Waldheim 1817	Mustelidae Waldheim 1817
		Phocidae Gray 1821
Feliformia Kretzoi 1945	Feloideaoida Waldheim 1817	Ursidae Waldheim 1817
		Otariidae Gray 1821
		Herpestidae Bonaparte 1845
		Viverridae Gray 1821
		Hyaenidae Gray 1821
		Felidae Waldheim 1817

Table 2. Comparative account of number of genera and species belonging to the order Carnivora in respect to world distribution and occurrence in India.

Family	No. of Genus		No. of species	
	World	India	World	India
Canidae	14	3	34	5
Procyonidae	6	-	18	-
Mustelidae	25	7	65	16
Phocidae	10	-	19	-
Ursidae	6	5	9	5
Otariidae	7	-	14	-
Herpestidae	18	1	37	7
Viverridae	34	6	34	9
Hyaenidae	4	1	4	1
Felidae	18	10	36	15

Source: Pocock 1939, 1941, Johnsingh 1986, Wozencraft 1993

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 In India the order
 Carnivora is
 represented by
 seven families, 33
 genera and 58
 species
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the family Canidae by having a well developed first digit on the forefoot, well developed anal glands and by not having a deep chested body (Pocock 1941). In mustelids, the total length (head, body and tail) varies from 110 to 2100 mm and body weight varies from 70 gm in the case of least weasels *Mustela nivalis* to 37 kg in the case of sea otters *Enhydra lutris*. The difference in the size of sexes is characteristic of all mustelids, females are often larger. The mustelids are highly adaptive, terrestrial, arboreal or aquatic in nature and primarily flesh eaters. They are mainly solitary, with males and females getting together only for the purpose of reproduction (Kruska 1990). The family Mustelidae is subdivided into four subfamilies, Lutrinae, Melinae, Memphitinae and Mustelinae (Wozencraft 1989b). They occur throughout the world except Australia and Antarctica. In India the Mustelidae is represented by three subfamilies, Mustelinae, Melinae and Lutrinae with 16 species (Table 3).

The members of the family Viverridae are characterised by the presence of scent glands external to the anal region (Wozencraft 1989a). They differ from the family Herpestidae in the sense that their anus is not enclosed in the glandular pouch and they have a penial gland in the genital region (Pocock 1941). Most of the members have

retractile claws. Their ears are comparatively larger with well developed bursa on the external margin. They are distinguished in the external characters from the members of the family Felidae by the hind foot being five toed, the retention of the inter-ramal tuft of facial vibrissae and typically elongated muzzle. Many of the members have spots or stripes on the body and the tail has ring like marks (Pocock 1939). In viverrids, the total length (head, body and tail) varies from 320 to 1850 mm, where as body weight varies from around 600 gm in the case of African linsang *Poiana richardsoni* to 20 kg in the case of binturong *Arctitis binturong*. They are either terrestrial or arboreal in nature and have wide variety of diet including small mammals, birds, insects and fruits. Viverrids are mostly solitary and nocturnal. The family Viverridae is divided into four subfamilies Cryptoproctinae, Viverrinae, Hemigalinae and Paradoxurinae (Wozencraft 1989b). They are found only in tropical and subtropical Africa and Asia. Of the six subfamilies, the viverrids in India are represented by two subfamilies Viverrinae and Paradoxurinae with nine species (Table 3).

The members of the family Herpestidae are characterised by the uniquely derived nature of their anal sac and the structure of the auditory bulla (Wozencraft 1989a). They are distinguished from the members of the family

Viverridae by the presence of a naked glandular pouch around the anus, with the anal glands opening into the pouch. They have long non-retractile and fossorial claws. The ears have no marginal bursa. The penis, which although short as compared to viverrids, has a well developed baculum and is without penial glands (Pocock 1939). In herpestids, the total length (head, body and tail) varies from 200 to 1600 mm and the weight varies from around 340 gm in the case of dwarf mongoose *Helogale parvula* to 12 kg in the case of fossa *Cryptoprocta ferox*. The striped-necked mongoose *Herpestes*

vitticollis is the largest of the Asiatic mongoose. The mongoose are terrestrial in nature and have a diverse diet including small mammals, birds, reptiles, crabs, fish and insects. They are mostly gregarious and a few are solitary too. The family Herpestidae is divided into three subfamilies Galiinae, Herpestinae and Mungotinae (Wozencraft 1989b). They occur in most of Africa and Asia. In India the family Herpestidae is represented by subfamily Herpestinae with seven species (Table 3).

Following is a concise account of 32 species of mustelids, viverrids and herpestids found

Table 3. List of mustelids, viverrids and herpestids of India.

Family	Subfamily	Common Name	Scientific name
Mustelidae	Mustelinae	Beech marten	<i>Martes foina</i>
		Yellow-throated marten	<i>Martes flavigula</i>
		Nilgiri marten	<i>Martes gwatkinsii</i>
		Ermine or stoat	<i>Mustela erminea</i>
		Pale weasel	<i>Mustela altaica</i>
		Siberian weasel	<i>Mustela sibirica</i>
		Yellow-bellied weasel	<i>Mustela kathiah</i>
		Back-striped weasel	<i>Mustela strigidorsa</i>
		Tibetan polecat	<i>Mustela putorius</i>
		Ratel or honey badger	<i>Mellivora capensis</i>
	Melinae	Hog-badger	<i>Arctonyx collaris</i>
		Small-toothed ferret badger	<i>Melogale moschata</i>
	Lutrinae	Large-toothed ferret badger	<i>Melogale personata</i>
		Eurasian otter	<i>Lutra lutra</i>
		Smooth-coated otter	<i>Lutra perspicillata</i>
Viverridae	Paradoxurinae	Small-clawed otter	<i>Aonyx cinerea</i>
		Binturong	<i>Arctictis binturong</i>
		Small-toothed palm civet	<i>Arctogalidia trivirgata</i>
		Common palm civet	<i>Paradoxurus hermaphroditus</i>
		Brown palm civet	<i>Paradoxurus jerdoni</i>
	Viverrinae	Masked palm civet	<i>Paguma larvata</i>
		Large Indian civet	<i>Viverra zibetha</i>
		Malabar civet	<i>Viverra civettina</i>
		Small Indian civet	<i>Viverricula indica</i>
Spotted linsang	<i>Prionodon pardicolor</i>		
Herpestidae	Herpestinae	Small Indian mongoose	<i>Herpestes javanicus</i>
		Indian marsh mongoose	<i>Herpestes palustris</i>
		Grey mongoose	<i>Herpestes edwardsii</i>
		Ruddy mongoose	<i>Herpestes smithii</i>
		Brown mongoose	<i>Herpestes fuscus</i>
		Striped-necked mongoose	<i>Herpestes vitticollis</i>
		Crab-eating mongoose	<i>Herpestes urva</i>

Source: Wozencraft 1989b

In India Mustelidae, Viverridae and Herpestidae are represented by three, two and one subfamilies respectively.

in India. All species have been described by referring Pocock (1933, 1939 and 1941), Roberts (1977), Prater (1971) and Phillips (1984). For depicting their conservation status their listing in the Indian Wildlife (Protection) Act, 1972, Appendix of CITES, IUCN Red List category and outcome of the Conservation Assessment and Management Plan for Mammals of India (CAMP Workshop) (Molur *et al.* 1998) have been cited (Tables 4, 5 & 6). The range map for each species has been prepared on the basis of their known distribution as specified in Pocock (1939 and 1941), Corbet & Hill (1992), Wozencraft (1993) and associated references.

FAMILY: MUSTELIDAE

SUBFAMILY: MUSTELINAE (Martens and weasels)

STONE OR BEECH MARTEN *Martes foina* Erxleben, 1777

Distribution

In India, the stone marten is distributed in the northern Himalayas from Ladakh in the west through Himachal Pradesh and Uttar Pradesh eastwards up to Sikkim, West Bengal, Assam and Arunachal Pradesh between 1500-3600 m altitude (Pocock 1941, ZSI 1992, Choudhury 1997a, 1999, Datta 1999). Extraliminally it occurs from the drier regions of western Europe, Russia, Iran, Afghanistan, Pakistan, Nepal and Bhutan (Pocock 1941, Wozencraft 1993).

Description

The stone marten has a dense and soft fur of a rich liver-chestnut hue with thick bushy tail. The colour and length of the coat is exceedingly variable seasonally, ranging from rich, reddish, chocolate-brown, pale ochreous-brown, tawny, drab-brown to grey brown, often with varied lighter patches on the dorsal surface. The lower side is little paler than the upper. The throat is typically white or yellowish with two brownish lines or patches of varying size. The legs and the tail are usually darker than the body. The soles of the feet are thickly haired in winter (Pocock 1941). It has a triangular head, broad between the ears, which are low set and rounded. The rhinarium is naked and pinkish-brown and the irides are almost black in colour. It has a long and slender body with comparatively short fore limbs. Males are generally bigger than females and weigh about 1.8 kg, standing about 12 cm high at the shoulders. The head to body length varies between 300-450 mm and the tail length 220 to 260 mm (Roberts 1977).

The subspecies of western Himalayas is *M. foina intermedia* Severtzow, 1876.

Behaviour

The stone martens usually inhabit the temperate and alpine zones of Himalayas and are rarely found below 1500 m altitude. They are solitary, largely diurnal (Roberts 1977), but often hunt during night. They live both in forests, sheltering in hollows of trees and on the barren heights under rocks and boulders or in holes. In the higher elevation of Himalayas they prey largely on voles and mouse hares. Along the tree line they hunt squirrels, birds, lizards and frogs. They often supplement their diet with fruits and nuts, especially cherries. Unlike yellow-throated martens, which keep to the forest, the stone martens found in the vicinity of human settlements are said to raid poultry farms and pigeon-coops (Prater 1971). They are less arboreal than the yellow throated martens. Like other members of the family Mustelidae the stone martens have quite a repertoire of

The stone marten usually inhabits the temperate and alpine zones of Himalayas.



Range map I

Beech marten

vocalizations, when suspicious or excited they make a growling noise, when cornered or attacked they emit loud screams (Roberts 1977). In stone martens mating takes place in February with a gestation period of nine weeks (135-152 days) and the litter size ranges between 2-7 (Kruska 1990).

Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES and DD during the CAMP Workshop.

YELLOW-THROATED MARTEN *Martes flavigula* Boddaert, 1785

Distribution

It occurs in the foothills of Himalayas from north-west Pakistan at an altitude of 600-3500m to Assam, through Himachal Pradesh, Uttar Pradesh, Sikkim, West Bengal, Manipur and Arunachal Pradesh (Pocock 1941, ZSI 1992, Ramakantha 1992a, Choudhury 1997 a,b, 1999, Silori & Badola 1999). It is also found in Nepal, Bhutan, upper Myanmar, Bangladesh, south China, Malaysia, Taiwan, Korea and eastern Siberia (Pocock 1941, Prater 1971, Wozencraft 1993).



Range map 2 Yellow-throated marten

Description

The yellow-throated marten is considerably bigger than the stone marten. Its tail and limbs are also proportionately longer. The tail is almost about three-fourths the length

of head and body (Prater 1971). Unlike stone marten its tail is not bushy (Pocock 1941). It has very silvery blond lower flanks and hind quarters with the upper part of the face, neck, fore limbs and tail being almost jet black. The whole of the chest, throat, lower jaw and side of the neck are creamy white deepening to a rich canary yellow colour on the side of the neck. This yellow area contrasts sharply with the black fur on the upper parts of the neck. The lower flanks and hindquarter contain a mixture of darker grey and brown hair and there are a few reddish-brown guard hair mixed with darker parts of the body (Pocock 1941). The ears are low-set and rounded, the ear tips being at level with the broad flat skull. The rhinarium is naked and black and the iris dark brown. The fore and hind feet have naked pads with sharp claws. The head to body length varies between 400-600 mm and the tail length 380-430 mm (Prater 1971). They weigh up to 3.4 kg (Roberts 1977).

The subspecies of western Himalayas is *M. flavigula flavigula* Boddaert, 1785.

Behaviour

The yellow-throated marten is largely a forest dwelling species occurring in the temperate zone in association with *Cedrus deodara* and *Quercus* spp. At lower altitudes it is associated with tropical pine forests descending to tropical moist deciduous forests. The yellow-throated marten generally lives a solitary life except for the females with growing young ones, which remain in a family group for three or four months. It is partly diurnal, though it hunts at night when close to human habitations. It is an agile climber, spending much time in the upper stories of the forest. It is an omnivore. Its diet includes prey of all kinds of insects, birds and their eggs, lizards and amphibians, occasionally flying squirrel and other larger mammals such as musk deer or barking deer (Roberts 1977) and fruits such as apricots, berries and nectar. Roberts (1977) believes that it probably mates around August and gives birth in April. Like other

The yellow-throated marten is largely a forest dwelling species found at 600-3500 m altitude in the Himalayas. It is considerably bigger in size than the stone marten.

martens, it is believed that the gestation period is around 120 days. Litter size is 2-5. The longest recorded life span in captivity was 14 years and six months (Jones 1968)

Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES and LR 1c during the CAMP workshop.

NILGIRI MARTEN *Martes gwatkinsii* Horsfield, 1851

Distribution

The Nilgiri marten is endemic to Western Ghats. Historically it was recorded from Nilgiri hills, south Coorg and Travancore (Pocock 1941) and possibly from Dharwad in Karnataka (Wroughton 1919). Recently it has been reported from Nilgiri Biosphere Reserve (Yoganand & Kumar 1995) and Rajmala in Eravikulam National Park in Kerala (Madhusudan 1995), Peppara Wildlife Sanctuary and Silent Valley National Park (Christopher & Jayson 1996), from upper Bhavani (Gokula & Ramachandran 1996) and from Kalakad-Mundanthurai Tiger Reserve (Mudappa 1998).

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The Nilgiri
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Range map 3

Nilgiri marten

Description

The Nilgiri marten is almost similar to yellow-throated marten in size. However, from a recent sighting, Madhusudan (1995) feels that it may be a little larger than the latter. It

is distinguished from the yellow-throated marten mainly by the structure of the skull, especially the brain case, which is very flattened above with a prominent frontal concavity, and by the baculum (Pocock 1941). The pelage in Nilgiri marten is also similar to yellow-throated marten except that the entire dorsum is dark. The head to body length varies from 550 to 650 mm, tail length 400-450 mm and weight is around 2.1 kg (Riely 1913, Pocock 1941).

Corbet and Hill (1992) consider it as a subspecies of the yellow-throated marten *M. flavigula gwatkinsii*.

Behaviour

Very little is known about the behaviour and ecology of Nilgiri marten. It is believed to be diurnal and arboreal (this was also evident from the recent sighting), like other marten species it possibly descends to the ground for hunting. There is a report of it preying on crows in the High Ranges of Kerala (Gouldsbury 1949) and Malabar giant squirrel in the High Wavy Mountains of Kerala (Hutton 1944) and on insects (cicadas) (Pocock 1941).

Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES, VUB1 2c in IUCN Red List and VUB1 2bc during the CAMP Workshop.

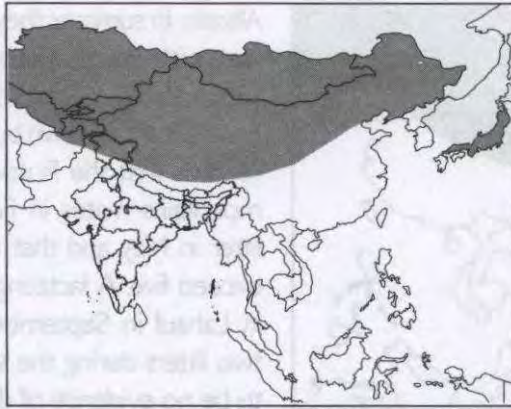
ERMINE OR STOAT *Mustela erminea* Linnaeus, 1758

Distribution

In India the ermine has been recorded above 3600 m in the western Himalayas from Ladakh in Jammu and Kashmir but not further east in the Himalayas (Roberts 1977). Outside India it occurs in Pakistan, Mongolia, northern China, throughout Russia, and northern and southern Europe (Wozencraft 1993).

Description

In external appearance all members of the genus *Mustela* can be distinguished from the



Range map 4

Ermine or stoat

martens by their comparatively smaller size, longer and more cylindrical body, shorter legs and tail, smaller ears and abbreviated muzzle. The ermine is small in size around 130 gm in weight having a longer neck and short limbs. The head bears a rather blunt obtuse muzzle with naked black rhinarium and dark almost black eyes (Roberts 1977). The overall body colour during summer is glossy chestnut brown, usually of a rather dark reddish hue. Frequently there are flecks of white on various parts of the head (Pocock 1941). The chin, throat, belly and the paws are creamy white. The slender round tail is not much bushy as compared to martens and has a conspicuous tip of black hair. In the white winter phase, hair wholly conceal the pads of the feet. However, the tip of the tail remains blackish throughout the year (Pocock 1941). The length of the head and body ranges between 184 and 229 mm, and tail from 70-89 mm.

The Indian subspecies is *M. erminea ferghanae* Thomas, 1895.

Behaviour

The ermine is exclusively carnivorous and normally solitary in nature; it hunts both during day and night. It is adapted to living on the ground. In Pakistan it preys almost exclusively on high altitude voles (*Alticola roylei* and *Hyperacrius fertilis*). It probably also attacks Royle's pika (*Ochotona roylei*) and birds (Roberts 1977). It occasionally eats birds' eggs and insects and frequently pursues voles. The

ermine lives in burrows already dug by rodents and among boulders nearer to rocky areas and also close to river banks, streams as well as along the banks of lakes and ponds. (Pocock 1941, Kruska 1990). Mating occurs during April to July. The young ones are born in the following year between February and May. The gestation period varies between 220 and 380 days. In ermine, the embryo does not develop continuously but has a resting phase. Such prolonged gestation period has been recorded in many species of Mustelidae, an adaptation to avoid unfavorable conditions. The ermine produces one litter per year. The average litter size is six, ranging between 5 and 13. The weight of the newborn varies between 2.6 and 4.2 gm (Kruska 1990). Adult size is reached after three to four months. Males reach maturity at the age of one year. Suckling pregnancy (*i.e.* female can mate successfully at the early age of five weeks when they are still suckling) occurs in ermine which is rare in mustelids (Kruska 1990).

Conservation status

It is listed in Schedule I part I of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES, and DD during the CAMP Workshop.

PALE WEASEL *Mustela altaica* Pallas, 1811

Distribution

In India the pale weasel is distributed in the Himalayas at an altitude ranging from 1,500 m up to 3,960 m from Ladakh in the western Himalayas through Himachal Pradesh, Uttar Pradesh (Garhwal) up to Sikkim (Pocock 1941). Outside India it has been reported from Kazakhstan, Mongolia, Russia, western and northern China, Tibet and Korea (Roberts 1977, Wozencraft 1993).

Description

Pale weasel is a typical weasel with a long cylindrical body, long neck, short legs and long but not very bushy tail, which lacks blackish tip like the ermine *M. erminea*. The tail is more

In India the ermine has been recorded usually above 3600 m in the western Himalayas but not further east.

The pale weasel prefers sparse vegetation and predominantly open landscape in the Himalayas between 1500-3900 m altitude.



Range map 5

Pale weasel

than half the length of the head and body. It is slightly bigger in size than the ermine and has a narrow flattened skull. The general colour of the upper surface is from brighter yellow or dull sandy to little darker and browner, but never bright ochre. The colour of the limbs is like that of the back but the paws are whitish and contrasted. The colour of the tail is also like the back throughout. The ventrum is typically pale primrose yellow or cream and sharply demarcated from the tint of the upper side along the flanks and side of the neck. From the abdomen and chest the white extends along the inner surface of the limbs, and the edge of the upper lip up to the rhinarium. Three specimens from Pakistan had the head and body length averaging 256 mm, varying from 227-276 mm and the tail length averaging 138 mm, varying from 118 to 155 mm. Pocock (1941) gives the measurements of nine specimens from Ladakh, Lahaul and Garhwal, which had an average head and body length of 243 mm and tail length of 159 mm. A specimen captured from Lahaul weighed 127 gm (Roberts 1977).

The Siberian weasel lives in the temperate and alpine forests and in open grasslands and scrub above the tree line.

The Indian subspecies is *M. altaica temon* Hodgson, 1857 (Pocock 1941).

Behaviour

Very little is known about the habits of the pale weasel. It prefers sparse forest vegetation and predominantly open landscape (Kruska 1990). It lives amongst rocks and is believed to be exclusively carnivorous, preying mainly upon pika *Ochotona roylei* and migratory hamsters *Cricetulus migratorius* and voles of the genus

Alticola. In summer they can supplement their diet with lizards (Roberts 1977) and birds (Pocock 1941). Probably they are capable of excavating their own burrows. Pocock (1941) records that the Russian population in Altai mountains mates in February, producing its litter in May and that the litter sizes do not exceed five. A lactating female was captured in Lahaul in September. Possibly there are two litters during the season. There appears to be no evidence of delayed implantation in this species (Roberts 1977).

Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES, and DD during the CAMP Workshop.

HIMALAYAN WEASEL OR SIBERIAN WEASEL *Mustela sibirica* Pallas, 1773

Distribution

The Himalayan or the Siberian weasel is distributed in the Himalayas from Kashmir eastward through Himachal Pradesh (Chamba), Uttar Pradesh (Garhwal), Sikkim (Pocock 1941), West Bengal and Arunachal Pradesh (Corbet & Hill 1992, ZSI 1992, Choudhury 1997a,b, 1999) at 1525-4880 m altitude (Prater 1971). Outside India it occurs in Pakistan, Nepal, Bhutan, Myanmar, Thailand, Taiwan, China, Korea, Japan and as far as Siberia (Wozencraft 1993).



Range map 6

Siberian weasel

Description

The Siberian weasel is a large weasel as compared to other weasel species with its tail a little over half the length of the head and body. The winter coat is typically long and full, with the tail also long haired but tapering. The general colour varies from bright golden or foxy red to deep chocolate-brown and is uniform on the body and the limbs, the ventral surface being a little lighter than the dorsal surface. The tail has a dark contrasted tip in some forms. The throat may be wholly reddish, brown, or whitish. The muzzle almost always has at least the chin and the edge of the upper lip white. The soles of the feet, apart from the pads are thickly covered with hair in all the seasons. The head to body length varies between 255 to 305 mm and the tail length is 135 to 155 mm.

Four subspecies are reported (Pocock 1941) from India viz. *M. sibirica subhemachalana* Hodgson, 1837, *M. sibirica moupiensis* Meline-Edwards 1868-1874, *M. sibirica canigula* Hodgson, 1842 and *M. sibirica hodgsoni*, Gray 1843.

Behaviour

The Siberian weasel lives in the temperate and alpine forests and in the open grass and scrub above the tree line (Prater 1971). In Europe it shows remarkable adaptation. It occurs in dense forests, in dry sandy valleys, and even in low-lying swamps. It makes its den among rocks, under roots of trees, in hollow stumps or logs, and quite often in the burrows of other animals. In human habitation they take shelter in roofs, creeks and crevices in walls, and in any secluded place. The Siberian weasel is mostly nocturnal but also hunts during daytime and is an efficient hunter. It preys upon rodents, lizards, birds and birds' eggs and insects. The mating season for Siberian weasel is February to May depending on the region. The gestation period varies from 35 to 42 days. In captivity, however birth has occurred 28 days after mating. The litter size is 4 to 10 (Kruska 1990).

Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES and LR nt during the CAMP Workshop.

YELLOW-BELLIED WEASEL *Mustela kathiah* Hodgson, 1835

Distribution

The yellow-bellied weasel is distributed in the Himalayas between the altitude of 1800 and 4000 m from northern Pakistan, through Jammu and Kashmir, Uttar Pradesh (Kumaun and Garhwal), West Bengal, Sikkim, Nagaland and Arunachal Pradesh (Pocock 1941, Katti *et al.* 1990, ZSI 1992, Choudhury 1997a, 1999, Datta 1999). Outside India it has been reported from Nepal, Bhutan eastwards from upper Myanmar, south and east China, northern Vietnam and Laos PDR (Pocock 1941, Kruska 1990, Wozencraft 1993). Recent sightings have been made from Nagaland and Meghalaya (see Choudhury, Status Report 2, this issue).



Range map 7

Yellow-bellied weasel

Description

In yellow-bellied weasel the colour on dorsal parts, the entire tail and of the front and outside of the limbs is deep chocolate-brown. The edge of the upper lip, the chin and a little of the fore throat are whitish, but the rest of the underside is sulphur yellow extending on the inner side of the thighs. The tail is more than half the length of head and body. The

The yellow-bellied weasel is distributed in the Himalayas between 1800 and 4000 m altitude.

pads of the feet are not always covered with hair. The head to body length ranges between 215 and 290 mm and the tail length varies between 125 and 190 mm. The weight is around 1.56 kg.

Behaviour

The yellow-bellied weasel is one of the least studied species. Very little is known about its biology and ecology. Pocock (1941) mentioned that in Nepal it is kept as a pet for eradicating rodents from the house. He has also mentioned that it was pitted against fowls, geese and even goat and sheep. From this description it seems plausible that in respect to its behaviour it might be similar to other weasels such as Siberian weasels.

Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES, and DD during the CAMP Workshop.

BACK-STRIPED WEASEL *Mustela strigidorsa* Gray, 1853

Distribution

The back-striped weasel occurs in Nepal, eastwards in Sikkim, West Bengal, Assam, Nagaland and Arunachal Pradesh between an altitude of 1000 and 2500 m (Pocock 1941, Choudhury 1997a,b, 1999, Datta 1999). Its occurrence has been confirmed from Myanmar, China (Yunan), Thailand and Laos PDR (Wozencraft 1993)

Description

It is distinguished from all other species of *Mustela* by the presence of a narrow silvery dorsal streak extending from the occiput almost to the root of the tail, and of a corresponding yellowish ventral streak from the chest along the abdomen. The general body colour of the dorsal surface varies from deep to paler chocolate brown, sometimes a little paler on the head and usually slightly

darkened along the side of the dorsal streak. The tail and limbs are similar in shade as dorsal body surface. The upper lip from



Range map 8

Back-striped weasel

rhinarium, the chin and the throat up to the level of the ears are pale varying from whitish to ochre. On the hind throat and fore chest the pale hue gradually narrows in extent and is quite narrow between the fore legs, where it passes into the ventral streak, which expands on the inguinal region between thighs. The sole of the feet are naked. The tail is small in size being almost between one third to one half the length of the head and body, and bushy. The length of head and body of a female from Laos was around 285 mm while the tail length was 152 mm.

Behaviour

Very little is known about its behaviour and biology. So far only eight animals of this species have been known scientifically; three from Sikkim, and one each from Nepal, Laos, Myanmar, Fenasserim and Thailand (Kruska 1990). Any recent sighting may have gone unreported. In Naga hills it was seen stalking a large bandicoot (Pocock 1941). The specimen from Myanmar came from dense hill jungle (Pocock 1941).

Conservation status

It is listed in Appendix III of CITES, VU c 2a in IUCN Red List and DD during CAMP Workshop. It does not figure in the Indian Wildlife (Protection) Act, 1972.

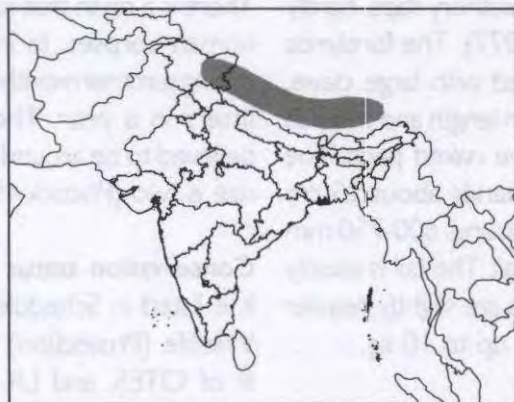
The back-striped weasel occurs in Sikkim, West Bengal, Assam, Nagaland and Arunachal Pradesh between 1000-2500 m altitude. It is not listed in Indian Wildlife (Protection) Act, 1972.

TIBETAN POLECAT *Mustela putorius* Linnaeus, 1758

Synonyms: *Putorius larvatus* Hodgson, 1849,
Putorius putorius larvatus Pocock, 1936

Distribution

The Tibetan polecat is distributed in Kashmir (Ladakh), and possibly in Sikkim as it has been recorded from Utsang (southern Tibet) north of Sikkim (Pocock 1941).



Range map 9

Tibetan polecat

Description

In external appearance the Tibetan polecat of old world (*Putorius* as stated by Pocock 1941) differs from the European form (*Mustela*) by having the chest, hind throat and legs blackish in colour. Another important character is the presence of "mask" or a dark pattern covering both the eyes, forehead and nose above the rhinarium. Only four undated skins of Tibetan polecats are known (Pocock 1941). In all the specimens the colour of the head and tail is variable probably due to seasonality. The fur and under hair of the dorsal surface are creamy white. The shoulders and the nape are dark chocolate-brown. The summit of the head may be almost wholly brown. The head and body length is around 355 to 405 mm, and tail length is around 15 mm (Pocock 1941). The approximate weight is around 700 gm. Of the two Utsang specimens one had the tail black throughout, while in other the basal third of the tail was whitish.

Behaviour

Nothing is known about the behaviour and biology of the Tibetan polecat, but there is no reason to suppose that they differ essentially from European polecat, which is usually nocturnal and its food habits are similar to other members of its group.

The Indian subspecies is *M. putorius tibetanus* Horsfield, 1851 (Pocock 1941).

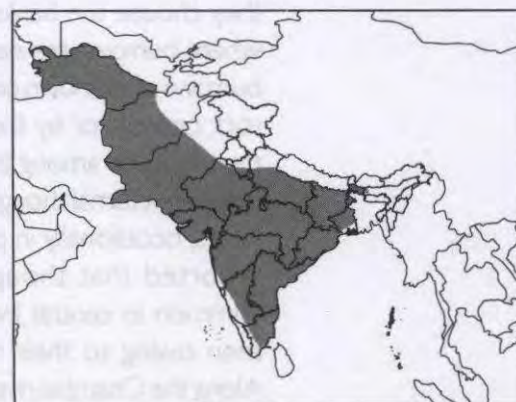
Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES, and DD during the CAMP Workshop.

RATEL OR HONEY BADGER *Mellivora capensis* Schreber, 1776

Distribution

The honey badger appears to be of Ethiopian origin and has invaded the Indo-Pakistan subcontinent through southern Baluchistan. Currently it occurs through most of Africa, through west Asia, Afghanistan, Iran, Pakistan, India, Nepal, eastward as far as Myanmar (Pocock 1941, Roberts 1977). In India it is mostly found in the semiarid areas of Gujarat, Rajasthan, Madhya Pradesh, and Uttar Pradesh, though there are occasional sightings from the moist areas such as Orissa, West Bengal and as far as Assam (ZSI 1992, Choudhury 1997a, 1999, Mishra *et al.* 1996). southwards, it has also been reported from Tamil Nadu (Pocock 1941).



Range map 10

Ratel or honey badger

The Tibetan polecat occurs in Ladakh. It differs from the European forms by having a blackish chest, hind throat and legs.

The honey badger is a large mustelid weighing around 8-10 kg, with a short tail, which is not very bushy. Its coarse body fur is sharply divided horizontally in two contrasting colours. The top half of the head, upper neck, and back is silvery-grey whilst the limbs, belly, lower cheeks and muzzle are jet black. The tip of the tail is also black. The head is broad with a fairly short square muzzle and the ear pinnae are very small, being reduced to mere leathery flaps, hardly 10 mm long (Roberts 1977). The forelimbs are powerfully developed with large claws, as large as 350-400 mm in length and blackish in colour. The soles have naked pads. The typical adult specimen stands about 25 cm at the shoulders and measures 600-750 mm from nose to tip of the tail. The tail is usually 150-240 mm long. Males are slightly heavier and an adult may weigh up to 10 kg.

—————
The honey badger appears to be of Ethiopian origin and is commonly found in the semi-arid regions of India.
—————

Pocock (1941) identified two subspecies from India; *M. capensis indica* Kerr, 1792 distributed mostly in western India such as Gujarat, Rajasthan, Maharashtra and as far as Bihar and *M. capensis inaurita* Hodgson, 1835 in southern Nepal, and possibly from north of Ganges for example in Pilibhit in Uttar Pradesh.

Behaviour

According to Prater (1971) ratels in India live in the desert and in the dry and moist deciduous zones avoiding regions of heavy rainfall. Ratels prefers hilly broken country where shelter is easier to find. In the plains they choose the banks of streams or rivers where burrows are easy to dig. They live in burrows of their own or of some other animal, rock crevices or by the shelter provided by tree roots or among thick bushes. They are largely nocturnal though also seen during day hours, occasionally in pairs. Brander (1923) reported that though they were fairly common in central India, they were rarely seen owing to their nocturnal behaviour. Along the Chambal river a few sightings were made during late afternoon close to river

Lapparis sepiana. Honey badgers are largely carnivorous in nature preying upon snakes, rodents and insects. The African races, possibly the Indian races too love honey of wild bees, which suggests its scientific name, *Mellivora* and the common name, honey badger (Roberts 1977). They are excellent climbers, and also quick and energetic diggers. Their usual gait is rather clumsy shuffling with the tail commonly cocked up over their backs. There is a myth that ratels dig graves and eat human corpses. In India, the ratels breed during summer months and may produce two litters in a year. The gestation period is believed to be around 180 days and the litter size is two (Pocock 1941).

Conservation status

It is listed in Schedule I part I of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES, and LR nt during the CAMP Workshop.

SUBFAMILY MELINAE (Badgers)

HOG-BADGER *Arctonyx collaris* Cuveir, 1835

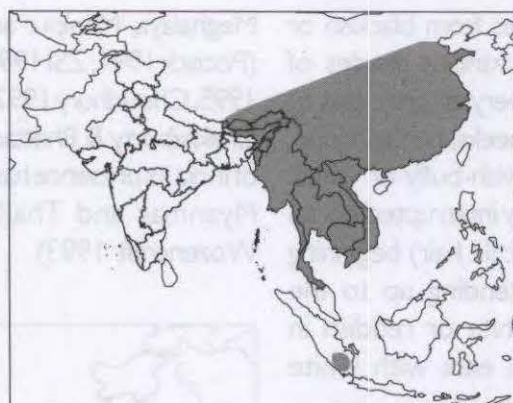
Distribution

In India, the hog-badger is distributed in Sikkim, north Bengal, Assam, Nagaland, Manipur and Arunachal Pradesh (Pocock 1941, Prater 1971, Corbet & Hill, 1992, ZSI 1992, Ramakantha 1993, Choudhury 1997a,b, 1999). Outside India it occurs in Myanmar, Bangladesh, Bhutan, Tibet, most of China, Thailand, Sumatra and possibly in Perak in Malaysia (Pocock 1941, Prater 1971, Corbet & Hill, 1992, Wozencraft 1993). An immature specimen was recently caught near Tenga in West Kemang, Arunachal Pradesh (see Choudhary, Status Report 2 in this issue).

Description

The hog-badger is similar to the honey badger, but with a squat bear-like body, stumpy legs and long powerful claws which are whitish in colour. Snout is elongated much like that of

In India, the hog-badger is found in stony grounds or small hills amongst tropical jungle along rivers and rivulets.



Range map 11

Hog-badger

a pig, without much fur towards the end, the terminal disc containing the nostrils. Ears are short, rounded and small being a little bigger than the honey badgers'. The coat is coarse and the colour of the dorsal body surface is typically a mixture of black and white or buff, yielding generally a greyish appearance. The head pattern or the mask is black and white. The blackish stripes run through the eyes and are bordered by white stripes, which merge with the nape and with the white of the throat. The ears are whitish and the rhinarium is mostly pinkish in colour. The tail is normally whitish above and below but its base is blackish to some extent. The fore legs from above the elbows and the hind legs from above the hock are black or deep brown. The length of the head and body is 550 to 700 mm, the length of the tail is 120-170 mm and the weight is usually 7 to 14 kg (Walker 1975).

Two subspecies are reported from India, *A. collaris collaris* Cuveir, 1835 from Sikkim Tarai, Upper West Bengal (Darjeeling) and Assam and *A. collaris consul* Pocock, 1835 from Assam and Myanmar.

Behaviour

Once the hog-badgers were fairly common in their range but they are now getting increasingly rare. They are largely nocturnal and spend the day in natural shelters such as rock crevices or deep burrows which they dig themselves (Prater 1971). From the recent report (Ramakantha 1993) it appears

that they are mainly crepuscular in behaviour. In India they frequent stony grounds or small hills amongst tropical jungle (Prater 1971), and along rivers and rivulets (Ramakantha 1993). Hog-badgers are apparently omnivorous as evident from the snout, which is believed to be used for digging for animal and plant food. Very little is known about their reproductive biology. A female hog-badger from northern China had four newly born young ones in April (Walker 1975).

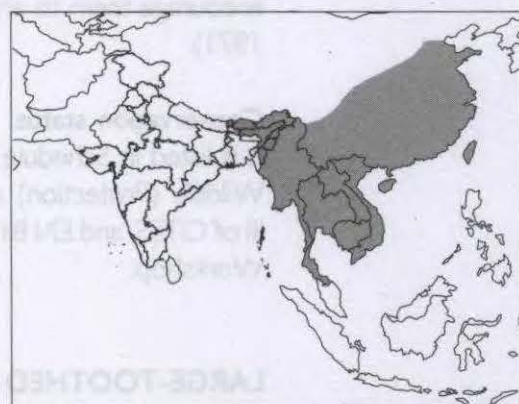
Conservation status

It is listed in Schedule I part I of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES, and DD during the CAMP Workshop.

SMALL-TOOTHED FERRET BADGER *Melogale moschata* Gray, 1831

Distribution

It is also known as Chinese ferret badger. In India it is distributed throughout northeast India from West Bengal eastwards in Assam, Manipur, Nagaland and Arunachal Pradesh (Pocock 1941, Ramakantha 1992b, 1995, Choudhury 1997a,b, 1999, Datta 1999). Outside India it occurs in Myanmar, Vietnam, Laos PDR, Taiwan and south China (Pocock 1941, Walker 1975, Wozencraft 1993).



Range map 12

Small-toothed ferret badger

Description

This is a small badger in which the length of head and body is 330 to 430 mm, tail length 152 to 230 mm and weight is around 1.75 kg (Walker 1975). The general colour of the

In India, the small-toothed ferret badger occurs in West Bengal, Assam through Manipur, Nagaland and Arunachal Pradesh.

dorsal body surface varies from blackish or deep purplish-grey, to various shades of brown, often giving a silvery or grey cast to the pelage. The mask, cheeks, nuchal stripe, and ventral side is yellowish-buffy or white. It has a shorter, frequently interrupted dorsal streak (white tipped erectile hair) beginning from the forehead extending up to the shoulders which are white or reddish in colour. It has rounded ears with white margins.

It has three subspecies *millsi*, *taxilla* and *moschata*. The subspecies *M. moschata millsi* Thomas, 1922 is reported from India.

Behaviour

In India ferret-badgers live in tropical and subtropical forests, and also in grasslands. They are nocturnal, coming out usually at dusk. Like most badgers they live in holes dug out by themselves or in burrows of other animals and in rock crevices. They are good climbers and often sleep on the branches of trees. They are omnivorous and known to feed on small animals, insects, earthworms and fruits. The young ones are born during May and June and the litter size is 1-3. Because it preys upon insects and pests such as cockroaches the local people like Lepchas and Bhotias encourage them to enter their huts (Prater 1971).

Conservation status

It is listed in Schedule I part I of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES, and EN B1 2c during the CAMP Workshop.

LARGE-TOOTHED FERRET BADGER *Melogale personata* Geoffroy 1831

Distribution

In India the large-toothed ferret badger or the Burmese ferret badger is distributed from Nepal eastwards to West Bengal, Assam,

Meghalaya, Manipur and Arunachal Pradesh (Pocock 1941, ZSI 1992, Ramakantha 1992b, 1995, Choudhury 1997 a,b, 1999, Datta 1999, Chakraborty & Bhattacharya 1999). Outside of India its presence has been confirmed from Myanmar and Thailand (Pocock 1941, Wozencraft 1993).



Range map 13 Large-toothed ferret badger

Description

The large-toothed ferret badger is similar in size to small-toothed ferret badger. However, they differ mostly in the pattern of dentition. It has a massive pm^4 and pm^1 is disproportionately smaller than pm^2 . However, externally the dorsal streak in large-toothed ferret badger always extends up to the back or base of the tail, and is always continuous. Individual colour variation is prominent in both the species, and individually.

Four subspecies are reported, *M. personata personata*, *M. p. nipalensis*, *M. p. pieri* and *M. p. laotum*, of which one subspecies *M. p. personata* is reported from India.

Behaviour

Nothing is known about its behaviour and ecology.

Conservation status

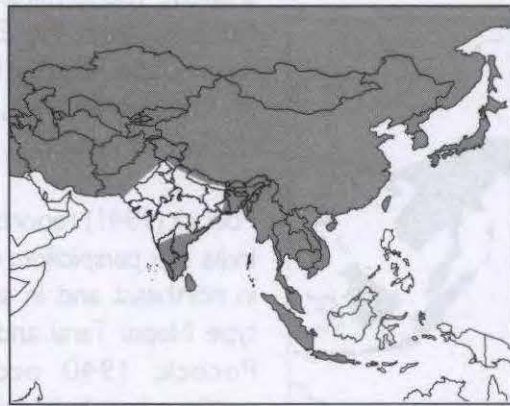
It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES and VU C2a during the CAMP Workshop.

—————
The large-toothed ferret badger or the Burmese ferret badger in India is sympatric with the small-toothed ferret badger.
—————

SUBFAMILY LUTRINAE (Otters)**EURASIAN OTTER *Lutra lutra*, Linnaeus 1758****Distribution**

The Eurasian otter has the widest distribution range of all otter species extending from Europe through northern Africa to Asia as far as Taiwan, Korea and Philippines (Mason & Macdonald 1986, Wozencraft 1993). In India it occurs in Jammu and Kashmir, Himachal Pradesh, hills of Uttar Pradesh, Sikkim, West Bengal, Assam and Arunachal Pradesh (ZSI 1992, Choudhury 1997a,b, 1999) Orissa, and in the southern India in Andhra Pradesh, Kerala, Tamil Nadu, Karnataka and Goa (Pocock 1941, Prater 1971). It was not reported from Bihar, Madhya Pradesh, Gujarat, Rajasthan and Maharashtra.

The Eurasian otter lives in highland and lowland lakes, rivers, streams, marshes and coastal areas. Its major prey is fish, sometimes exceeding more than 80% of the diet.



Range map 14

Eurasian otter

Description

The colour of the dorsal part of the fur in Eurasian otter varies from rusty to dusky-brown, where, as ventral side is lighter - sometimes up to grey or white. The lips and the throat show individual yellow, grey or white spots. The completely hairy tail is flattened at its terminal half and tapered at its end. The rhinarium is bare, mostly of black colour, sometimes with light spots. The shape of its upper rim shows a "W". All four feet have five toes with strong claws and webs between the toes, which extend at least to the last bone of each digit (Pocock 1941).

Pocock (1941) reports four subspecies from India, *L. lutra nair* Cuvier, 1823 occurs in southern India, locality type Pondicherry, *L. l. monticola* Hodgson, 1839 occurs in northern India from Himachal Pradesh (Kangra) eastwards to Assam, locality type - Nepal, *L. l. kutub* Schinz, 1844 occurs in Kashmir, Kangra and Tibet, locality type - Kashmir and *L. l. aurobrunnea* Hodgson, 1868 occurs in Nepal and Garhwal Himalayas, locality type Nepal.

Behaviour and ecology

The Eurasian otter is primarily nocturnal, largely solitary and lives in a wide variety of aquatic habitats, including highland and lowland lakes, rivers, streams, marshes and coastal areas. Like most *Lutra* species fish is the major prey of otters sometimes exceeding more than 80% of the diet (Erlinge 1968, Webb 1975, Beja 1991, Ruiz-Olmo & Palazon 1997). In addition to fish a whole range of other prey items have been recorded in the diet in variable proportions. These include aquatic insects, reptiles, amphibians, birds, small mammals, and crustaceans (Jenkins et al. 1979, Adrian & Delibes 1987, Skaren 1993). Age at sexual maturity is around 18 months in male and 24 months in the case of female, but in captivity it is usually 3 to 4 years (Reuther 1991). The gestation period is approximately 65 days, the litter size varies from 1 to 5, and the life expectancy is around 17 years (Acharjya & Mishra 1983).

Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix I of CITES, and NE for the IUCN Red List. This species was not evaluated during the CAMP Workshop.

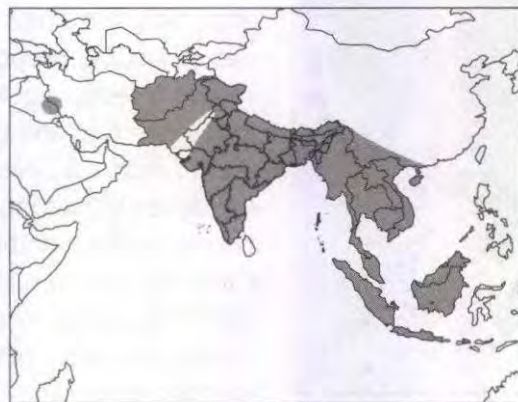
SMOOTH-COATED OTTER *Lutra perspicillata* Geoffroy, 1826**Distribution**

The smooth-coated otter is distributed throughout southern Asia from Indonesia, through southeast Asia, and westwards

through southern China, India and Pakistan, with an isolated population in Iraq (Pocock 1941, Prater 1971, Medway 1978, Mason & Macdonald 1986, Hussain 1993, Hussain & Choudhury 1997). Though its current status in the middle east including Iraq is not known, its presence has been confirmed from Nepal, India, Bangladesh, Bhutan, southwest China, Myanmar, Thailand, Vietnam, Malaysia, Sumatra, Java and Borneo (Mason & Macdonald 1986, Corbet & Hill 1992). In India it occurs in Himachal Pradesh, Punjab, plains of Uttar Pradesh, Madhya Pradesh, Rajasthan, Bihar, in the central Indian plateau of Maharashtra, Andhra Pradesh, in east and northeast in West Bengal, Assam, Arunachal Pradesh (Sanyal 1991, ZSI 1992, Choudhury 1997 a,b, 1999) through Myanmar. In the south in Karnataka, Kerala, Tamil Nadu and Goa (Pocock 1941).

mm, tail length 400-450 mm, hind foot 100-140 mm and weight 7-11 kg ranging from 6.5 kg in the case of subadult to 7.00-11.4 kg in adults. In colour, the dorsal part of the body varies from deep, nearly blackish-brown, or lighter brown with a rufous tinge with much paler, tawny or sandy brown. Whereas the underside is always lighter than the dorsal part the paws are paler than the back. The upper lip to the edge of the rhinarium, the cheek to the eye and ear, the sides of the neck, the chin and throat are white or whitish (Pocock, 1941). In its external characters the smooth-coated otter differs from Eurasian otter by its very smooth, sleek coat, i.e. hair texture is velvety. The length of the guard hair ranges between 12 - 14 mm and under fur 6 - 8 mm (Duplaix & Davis, 1981). Muzzle is not spotted and the rhinarium is bare, dusky with peaked upper margin (inverted V shaped). The terminal half of the tail is more flattened than the Eurasian otter with a tapered end. Both the fore and the hind paws are large, well webbed, but the third phalanges are free of webbing.

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The smooth-coated otter is the most cosmopolitan of all the Indian otter species.
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Range map 15 Smooth-coated otter

Pocock (1941) reports two subspecies from India. *L. p. perspicillata* Geoffroy, 1826 occurs in northeast and in southern India, locality type Nepal Tarai and Madras. *L. p. sindica* Pocock, 1940 occurs in north and northwestern India, locality type Chak in the Sukkur district of Sindh (now in Pakistan).

Description

The size and proportion of the smooth-coated otter is almost similar to the Eurasian otter. The tail length is more than half the length of the head and body and more than three times the length of hind foot. The total length ranges between 1067 and 1300 mm, head to body 655 and 790 mm and the tail length ranges between 406 and 505 mm (Duplaix & Davis 1981). Measurements of two specimens given by Pocock (1941) are as follows; head and body 655-687 mm, tail 422-435 mm, hind foot 137-142 mm (Medway 1978). Lekagul & McNeely (1988) mentioned head to body length 650-750

Behaviour and ecology

The smooth-coated otter occurs along the large rivers and lakes, in mangrove forests along the coast and estuaries, and in southeast Asia it even uses the rice fields for foraging (Foster-Turly 1992, Sivasothi & Nor 1994, Melisch et al. 1996). Along the large rivers in India, it shows greater preference for rocky stretches in all the seasons, since these stretches provide sites for den and resting (Hussain 1993, Hussain & Choudhury 1995). In the Tarai areas of the upper Gangetic plains the seasonally flooded swamps dominated by *Phragmites karka*, *Arundo donax*, *Sclerostachya fusca*,

Carex obscuriceps and *Cyanodon dactylon* communities interspersed with *Syzygium* spp. were extensively used by smooth-coated otters during monsoon and in early winter (Hussain 1998).

It is predominantly a fish eater, but supplements its diet with shrimp/crayfish, crab and insects, and other vertebrates such as frogs, mudskippers, birds and rats (Prater 1971, Foster-Turly 1992, Hussain 1993, Hussain & Choudhury 1998). The range of fish in the diet varies from 75 to 100% (Foster-Turly 1992, Hussain 1993, Melisch *et al.* 1996, Hussain & Choudhury 1998). A typical group of smooth-coated otter consists of male, female, and up to three to five young ones. (Wayre 1974, Hussain 1996). During a radio-tracking study in the National Chambal Sanctuary, India, the home ranges of all the otters tracked, overlapped intensively. Among the radio-implanted otters, the maximum home range was observed in a subadult male and the minimum in a juvenile female and male. Among the non-tagged otters, the home range of female with cubs was estimated as 5.5 km. In case of the adult male it was estimated as approximately 17 km (Hussain 1993, Hussain & Choudhury 1995).

The smooth-coated otter is predominantly a fish eater. Along a major river a typical family of five members need 17 km stretch of undisturbed river for survival. In the Tarai areas of upper Gangetic plains the seasonally flooded swamps are extensively used by this species.

The smooth-coated otter attains sexual maturity at twenty-two months in captivity (Desai 1974). Yadav (1967) observed first litter at four years of age. In captivity it mates during August to November (Desai, 1974, Naidu & Malhotra 1989). The gestation period varies from 60 to 62 days (Yadav 1967, Desai 1974, Naidu & Malhotra 1989). The litter size varies from 1 to 5 (mean = 3.25) (Desai 1974, Naidu & Malhotra 1989). The longest recorded life span in captivity is around 20 years five months (Acharjyo & Mishra 1983).

Conservation Status

Listed in Schedule II part II of Indian Wildlife (Protection) Act, 1972, Appendix II of CITES and VU A2cd in the IUCN Red List.

SMALL-CLAWED OTTER *Aonyx cinerea* Illiger, 1889

Distribution

It occurs in north India from the Himalayan foothills of Himachal Pradesh (Kulu), West Bengal, Assam and Arunachal Pradesh (ZSI 1992, Choudhury 1997a,b, 1999) as well as in southern India, in the higher ranges of the hills in Coorg (Karnataka), Ashambu, Nilgiri and Palni hills (Tamil Nadu) and some places in Kerala (Pocock 1941, Prater 1971). Outside India it occurs in Myanmar, Thailand, southern China, Laos PDR, Vietnam, Malaysia, Indonesia and Philippines (Mason & Macdonald 1986, Wozencraft 1993).



Range map 16

Small-clawed otter

Description

It is smallest of all otter species (Harris 1968). It is distinguished from the Eurasian and smooth-coated otter in external characters by the structure of the feet, which are considerably narrower, with more emarginate webs which do not extend along the digital pads and are sparsely covered below with short hair. The claws, except in small cubs, are minute, erect spikes, not projecting beyond the end of the digital pads. The planter pads are better developed, more normal in shape, sub-symmetrical and four lobed. The rhinarium is as in the smooth-coated otter (inverted V shaped). The shape of the tail is similar to Eurasian otter and is little longer than the length of the head and body. The colour of the dorsal surface is dark brown, sometimes with a

tawny or rufous tinge and the tip of the contour hair paler. The underside is generally paler brown than the upper part often showing grey cast. The edge of the upper lip, chin, cheek, side of the neck and throat are grey or nearly white. The length of the head and body is around 420 to 540 mm, tail 233 to 330 mm and weight ranges between 2.7 to 5.4 kg.

Pocock (1941) reports two subspecies from India. *A. cinerea concolor*, Rafinesque, 1832 occurs in Himalayas from Kulu eastwards from entire northeast India, locality type - Garo hills, Assam. *A. cinerea nimai* Pocock, 1940 occurs in southern India, locality type - Virajpet in south Coorg.

Behaviour and ecology

In most of their range the small-clawed otters are sympatric with smooth-coated and Eurasian otters. In India all three species occur in southwest India particularly from Western Ghats and possibly in the hills of Uttar Pradesh and Assam. In south India it is mostly found along hill streams. It was once common in the mangroves of east Calcutta and Sunderbans (Sanyal 1991). In Malaysia and Indonesia including Java it occurs in coastal wetlands, and along the banks of paddy fields. Comparable data from Java, Myanmar, and India revealed that Oriental small-clawed otter has a high climatic and trophic adaptability in south and southeast Asian tropics, occurring from coastal wetlands up

Table 4. Summary of the distribution and conservation status of the Indian mustelid species.

The small-clawed otter is predominantly an invertebrate feeder and relies mostly on crabs for its survival.

Species	Distribution Biogeographic zones	Conservation status			
		IWPA	CITES	IUCN	CAMP
Beech marten	1A, 1B, 2A, 2B, 2C, 2D	II	III	-	DD
Yellow-throated marten	1B, 2A, 2B, 2C, 2D, 9A, 9B	II	III	-	LR 1c
Nilgiri marten	5B	II	III	VU B1 2c	VU B1 2bc
Ermine	1A, 1B, 2A	I	III	-	DD
Pale weasel	1A, 1B, 2A, 2B, 2C, 2D	II	III	-	DD
Siberian weasel	1A, 1B, 2A, 2B, 2C, 2D, 9A	II	III	-	LR nt
Yellow-bellied weasel	1A, 1B, 2A, 2B, 2C, 2D, 9A, 9B	II	III	-	DD
Back-striped weasel	1B(Sikkim), 2C, 2D, 9A, 9B	-	III	VU C2a	DD
Polecat	1A, 1B	II	III	-	DD
Ratel	3A, 3B, 4A, 4B, 6A, 6B, 6C, 6D, 6E, 7A, 7B, 9A	I	III	-	LR nt
Hog-badger	1B (Sikkim), 2C, 2D, 9A, 9B	I	III	-	DD
Small-toothed ferret badger	1B (Sikkim), 2C, 2D, 9A, 9B	I	III	-	EN B1 2c
Large-toothed ferret badger	1B (Sikkim), 2C, 2D, 9A, 9B	II	III	-	VU C2 a
Eurasian otter	1A, 1B, 2A, 2B, 2C, 2D, 5B, 6B, 6C, 6E, 7B, 9A, 9B	II	I	NE	-
Smooth-coated otter	1A, 1B, 2A, 2B, 2C, 2D, 3B, 4A, 4B, 5A, 5B, 6A, 6B, 6C, 6D, 6E, 7A, 7B, 9A, 9B	II	II	VU A2 cd	-
Small-clawed otter	1B (Sikkim), 2B, 2C, 2D, 5B, 7B, 9A, 9B	I	II	LR nt	-

IWPA- Indian Wildlife Protection Act , CITES - Appendices of CITES, IUCN - IUCN Red List (1996), CAMP - Conservation Assessment and Management Plan for Mammals of India (CAMP Workshop) (Molur et al. 1998). Biogeographic zone - (Rodgers et al. 2000).

BOX I

The Biogeographic Zones of India (Rodgers et al. 2000).

Code	Zones	Code	Zones
1A	Trans-Himalayas-Ladakh-Mountains	6B	Deccan Peninsula-Chotta Nagpur
1B	Trans-Himalayas-Tibetan Plateau	6C	Deccan Peninsula-Eastern Highlands
2A	Himalayas-Northwest Himalayas	6D	Deccan Peninsula-Central Plateau
2B	Himalayas-West Himalayas	6E	Deccan Peninsula-Deccan South
2C	Himalayas-Central Himalayas	7A	Gangetic Plain-Upper
2D	Himalayas-East Himalayas	7B	Gangetic plain Lower
3A	Desert-Thar	8A	Coast-West Coast
3B	Desert Katchchh	8B	Coast-East Coast
4A	Semi Arid-Punjab Plains	8C	Coast Lakshadweep
4B	Semi Arid-Gujarat Rajaputana	9A	Northeast-Brahmaputra Valley
5A	Western Ghats-Malabar Plains	9B	Northeast- Northeast Hills
5B	Western Ghats-Mountains	10A	Islands-Andaman
6A	Deccan Peninsula-Central Highlands	10B	Islands- Nicobar

to mountain streams (Melisch et al, 1996). In contrast to *Lutra* species it is an invertebrate feeder. Invertebrates constitute around 87% of its diet. The other important prey species are fish, amphibians and snakes. In the wild, the small-clawed otters have been seen both singly and in groups ranging from 2 to 8. It is active both during day and night, but it is mainly nocturnal. In captivity, females are capable to breed at the age of 15 months. The gestation period is around 60 days and litter size ranges from 2-7. Life span in captivity is around 11 years (Crandall 1964).

The binturong is also known as bear cat. It is the heaviest among all the viverrids.



Range map 17

Binturong

Conservation status

Listed in Schedule I and part I of the Indian Wildlife (Protection) Act, 1972, Appendix II of CITES and LR nt in IUCN Red List. It was not evaluated during the CAMP Workshop.

FAMILY VIVERRIDAE**SUBFAMILY PARADOXURINAE****(Binturong and Palm Civets)****BINTURONG *Arctictis binturong* Raffles, 1821****Distribution**

It is distributed in eastern Himalayas from Nepal, Sikkim, Bhutan, Assam eastward in Tripura, Nagaland, Arunachal Pradesh (Pocock 1939, Choudhury 1997a,b, Datta 1999, Jha 1999), Myanmar, Thailand, Malaysia and Indonesia as far as the Philippines (Pocock 1939, Medway 1978, Corbet & Hill 1992).

Description

In general the binturong is essentially like *Paradoxurus* and *Paguma* but larger in size having a much coarser and shaggy coat. The general coat colour is blackish or very dark brown with pale tipped hair giving a speckled appearance to the pelage. The head is deeply speckled and greyish, especially in the juveniles. The vibrissae are long, conspicuously white, and the edge of the pinnae are white with a tuft of hair, otherwise black. The tail is prehensile with thick fur and its colour similar to the body but paler at the base beneath. The tail is little shorter than the head and body. The length of the head and body varies between 610 to 965 mm, the tail length is between 560-890 mm and body weight around 9 to 14 kg.

The Indian subspecies is *A. binturong albifrons* Cuvier, 1822 (Pocock 1939).

Behaviour

It lives mostly in mature forests. It is primarily arboreal, largely nocturnal and solitary. It is often seen in small groups with immature offspring. It is said to be omnivorous, eating fruits and shoots, insects, birds and small mammals. There are reports of it catching fish (Harrison 1952, Ogilvie 1958). In captivity it is very vocal. The gestation period is around 92 days (Gensch 1963) with litter size of 1-2. Weaning occurs after eight weeks. Longest recorded life span in captivity is 18 years and one month (Jones 1968).

Conservation status

It is listed in Schedule I part I of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES, and DD during CAMP Workshop.

proximal portion of the tail and the outside of the legs is tawny, but varies individually from dusky grey-tawny to bright ochre-buff. The head is usually darker and greyer. The muzzle is brownish with median white streak on the muzzle and front of the forehead. The back is always marked with three distinct black or dark brown longitudinal stripes in the midline. The flanks are unmarked. The juveniles are uniformly brown. The head and body length is 480 to 575 mm, tail is 560 to 600 mm and the weight varies from 2.0 to 2.7 kg (Roberts 1977).

The Indian subspecies is *A. trivirgata millsii* Wroughton, 1921 (Pocock 1939).

Behaviour

Like most of the palm civets it is solitary, however, occasionally it is seen in a small group of females with young ones. Primarily arboreal and nocturnal, by day time it can be found resting on the upper branches of tall trees. It is omnivorous in habit, feeding on insects, small mammals, birds and mostly fruits. The stomach of two of the animals contained beetles, frogs and a lizard. Litter size is usually three. In captivity it attains maturity in 17 months. The gestation period is 45 days. The longest recorded life span is around 11 years (Jones 1968).

Conservation status

It is listed in the Schedule II part II of the Indian Wildlife (Protection) Act, 1972 and in Appendix III of CITES. It was not evaluated during the CAMP Workshop.

SMALL-TOOTHED PALM CIVET
Arctogalidia trivirgata Gray, 1832

Distribution

It is distributed in northeast India possibly from West Bengal (Sclater 1891), Assam and Arunachal Pradesh (Choudhury 1997 a,b) through Myanmar, south China, Thailand Malaysia, Indonesia and Singapore (Pocock 1939, Medway 1978, Corbet & Hill 1992).



Range map 18 Small-toothed palm civet

Description

The small-toothed palm civet closely resembles common palm civet in external form and in the length of the legs and tail. The general colour of the nape, back,

COMMON PALM CIVET *Paradoxurus hermaphroditus* Schreber 1778

Distribution

The common palm civet is distributed in northern Pakistan and in entire India from east of Gujarat to Jammu and Kashmir, whole of the peninsula down south up to Sri Lanka. In the north of India from Nepal, Bhutan and south China, eastward through West

The small-toothed palm civet closely resembles common palm civet in external form. It is also known as three-striped palm civet.

The common palm civet is probably the most cosmopolitan of all the Indian civets. It is also known as toddy cat.

Bengal, Assam, Arunachal Pradesh (Pocock 1939, ZSI 1992, Choudhury 1997,a,b, 1999, Datta 1999, Jha 1999) to Myanmar, Thailand, Malaysia, Indonesia, Philippines, New Guinea and Japan (Pocock 1939, Medway 1978, Corbet & Hill 1992, Wozencraft 1993).



Range Map 19

Common palm civet

Description

A black or blackish-brown civet heavily built, with long, coarse and shaggy hair and short limbs. The tail is as long as the head and body. The ground colour of the coat varies seasonally and individually from olive-grey to almost cream with darker bases to the hair. The back is always marked with three indistinct black or dark brown longitudinal stripes in the midline. The flanks are marked with many dark spots, which may be partly coalesced to form additional longitudinal stripes. These markings are less prominent in the juveniles. The tail is sometimes tipped white. It is distinguished from *Viverra* and *Viverricula* by uniformly grey un-patterned throat, and un-ringed tail. The limbs are always black or dark brown. Facial markings are quite variable; the most usual pattern is a white patch or spot below and above the eyes, and each side of the nose. Weight ranges from 2.4 to 4.0 kg, head and body length varies between 480 and 590 mm and tail length between 440 to 535 mm.

Around 16 subspecies have been reported to occur in Asia. For details see Pocock (1939).

Behaviour

Like other civets it is mostly solitary, nocturnal and largely arboreal, although freely descending to the ground to cross open spaces. It prefers well-wooded forests, and roams around in plantations taking shelter in hollows of trees. It also lives close to human habitation on roofs and in homesteads. It is an omnivore and feeds on birds, rodents, insects and fruits such as Tendu (*Diospyros* spp.) banana, pineapple, coffee and berries (Pocock 1939, Medway 1978, Singh 1982). The young ones are born in lair in hollows of trees, or among boulders. The litter size is usually 3 to 4. They mature at the age of 11-12 months. The longest recorded life span is 22 years 5 months (Jones 1968). When threatened they hiss and spit like cats.

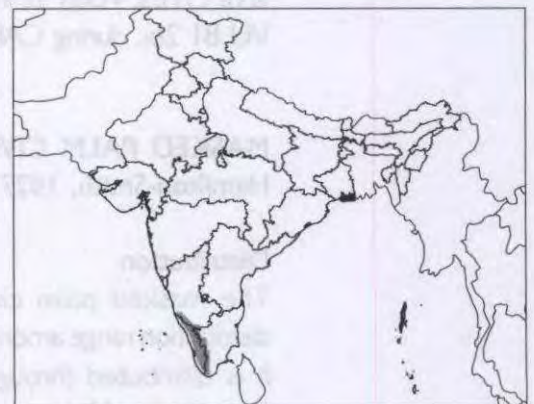
Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES and LRIc during CAMP Workshop.

BROWN PALM CIVET *Paradoxurus jerdoni* Blanford, 1885

Distribution

The brown palm civet is endemic to Western Ghats, it is distributed in the Palni, Nilgiri and Anamalai hills, Travancore and Coorg (Pocock 1939, Corbet & Hill 1992, Mudappa 1998) particularly at an altitude ranging between 500 and 1300 m.



Range map 20

Brown palm civet

The brown palm civet is endemic to the Western Ghats.

Description

The brown palm civet is more or less similar to the common palm civet in size. The general body colour is brown with deep brown or blackish face and shoulder speckled with buffy-grey, which merge with the greyish flanks. All the limbs are darker, similar to face and shoulder. Unlike common palm civet it lacks distinct marking on the body. The length of the tail is almost the size of head and body with the distal end lighter brown to dirty white. Weight ranges from 2.4 - 4.0 kg, head and body length 480 - 590 mm and tail length from 400 - 535 mm.

Two subspecies are recorded (Pocock 1939), *P. jerdoni jerdoni* Blanford, 1885 distributed largely in Palni and Nilgiri hills and Travancore and *P. jerdoni caniscus* Pocock, 1933 in Coorg.

Behaviour

The brown palm civet is found in well-wooded forests. It is largely arboreal and nocturnal found around coffee estates (Pocock 1939). It is predominantly frugivorous. As found in a recent study (see Mudappa, Status Report 8, this issue) it feeds on nearly 40 rainforest trees and liana fruit species. It occasionally supplements its diet with birds, rodents and insects (Pocock 1939).

Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES, VUBI 2c in IUCN Red List, and VU BI 2bc during CAMP Workshop.

MASKED PALM CIVET *Paguma larvata* Hamilton-Smith, 1827

Distribution

The masked palm civet has the largest distribution range among all the civet species. It is distributed throughout the Himalayas from north of Pakistan, Jammu and Kashmir to Arunachal Pradesh through Punjab, Himachal Pradesh, Uttar Pradesh, West

Bengal, Sikkim and Assam southwards to Andaman Islands (Pocock 1939, Roberts 1977, ZSI 1992, Choudhury 1997 a,b, 1999, Jha 1999). Extralimitally it is distributed in Nepal, Bhutan, south China to eastwards in Myanmar, Thailand, Malaysia, Indonesia, Taiwan and Japan (Pocock 1939, Roberts 1977, Medway 1978, Corbet & Hill 1992).



Range map 21

Masked palm civet

Description

The masked palm civet is distinguished from other Indian civets by its white whiskers and by the absence of spots or stripes on its body (Prater 1971). It is larger and heavier than the common palm civet with a relatively longer tail, which is cylindrical and thickly muscular in its proximal portion. The tail is two third of the head and body length. Its body colour ranges from uniform greyish-black at the extremities to almost pure black, and the underparts are greyish-buff colour. The tail is often tipped dirty white. The face has a regular black and greyish-white pattern, which varies among individuals, but usually a white semicircular band of creamy white hair occurs behind and below the eyes, which does not meet across the forehead. There may be a distinct line of grey tipped hair running down the centre of the forehead and nose, another beneath the ears passing over the cheeks, and a blotch below each eye. It has derived its name from these markings or mask. It is distinguished from yellow-throated marten by the pale markings on the face, and the dark chin and throat. The head to body length varies from 415-

The masked palm civet is mainly arboreal, nocturnal and largely solitary in its habits.

730 mm, tail is 392-560 mm and weight ranges from 3.6-6 kg.

Four Indian subspecies are, *P. larvata wroughtoni* Schwarz, 1913 occurring in Kashmir, Upper Punjab, and parts of Kumaun and Garhwal; *P. larvata grayi* Bennett, 1835 in Kumaun and Garhwal; *P. larvata neglecta* Pocock 1934 from Sikkim eastwards; *P. larvata tytleri* Tytler, 1864 in Andaman and Nicobar Islands.

Behaviour

Its habits are similar to those of common palm civet. The masked palm civet is mainly arboreal, nocturnal and largely solitary. It lives in mountain and hill forests taking shelter in hollows of trees. It mostly eats fruits but also supplements its diet with rodents, birds, insects and roots. When disturbed or agitated it ejects a foul smelling secretion from its four anal glands. It breeds in holes in trees. The litter size is 1-4. In juveniles the facial masks are not very prominent but have indistinct marking on the dorsal side similar to common palm civets leading to confusion in identification in the field. The longest recorded life span in captivity is 15 years and 5 months (Crandall 1964).

Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, and Appendix III of CITES and LRI c during the CAMP Workshop.

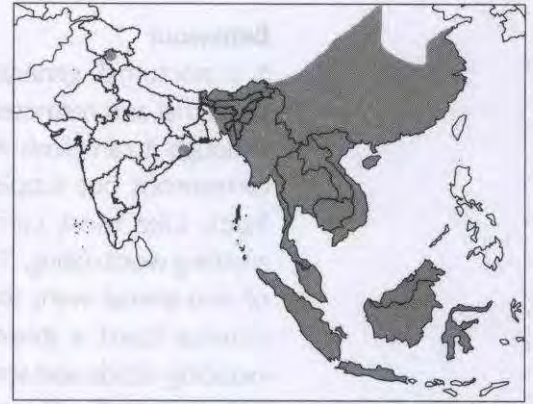
SUBFAMILY VIVERRINAE (Civets and langurs)

LARGE INDIAN CIVET *Viverra zibetha* Linnaeus, 1758

Distribution

It is distributed in northern India possibly from Chamba to north Bengal, Sikkim, eastwards to Orissa (Acharjyo & Patnaik 1987), Assam, Meghalaya, Nagaland, Manipur and Arunachal Pradesh (Pocock

1933, Choudhury 1997a,b, 1999, Datta 1999). Extralimitally it has been reported from Nepal, Myanmar, Thailand, Singapore and in the mainland Malaysia (Pocock 1939, Medway 1978, Corbet & Hill 1992).



Range map 22

Large Indian civet

Description

It is a large civet with a pointed muzzle, long compressed body and short stumpy legs, a built typical to true civets. Like all members of the genus *Viverra*, the third and the fourth digits of the forefeet are with well-developed skin-sheaths protecting the claws. All the feet are thickly hairy between the pads. General colour is grey or tawny with yellowish or brown tinge. Flanks are marked with indistinct dark spots or mottling of black or dark brown colour. The front of the muzzle on each side has a whitish patch; the chin and the fore throat are blackish. Anterior edges of the ears are widely separated by the broad forehead. There is always an erectile black spinal stripe or crest (dorsal crest) running from behind the shoulders to the root of the tail. Dark bands are pronounced on the chest and shoulders and form loops and rosettes on the hindquarters. The tail is almost half the size of head and body with five to eight dark bands separated by pale rings extending up to the tip of the tail. There is significant variation in coat colour among individuals because of age, sex and seasons. The length of the head and body is 760-820 mm, tail 425-495 mm, and weight 8-9 kg. Males and females are approximately alike in size.

The large Indian civet is distributed in northern India possibly from Chamba to Arunachal Pradesh.

Two subspecies possibly found in India are, *V. zibetha zibetha* Linnaeus, 1758 in Nepal, Bhutan, upper Bengal and apparently in Assam and *V. zibetha picta* Wroughton, 1915 from east of (Brahmaputra) Assam (Pocock 1939).

Behaviour

It is nocturnal, generally solitary, primarily terrestrial and restricted to the forest floor, although it can climb with ease. It is largely carnivorous but supplements its diet with fruits. Like most carnivores it feeds on anything worth killing. The stomach contents of one animal were found to have a small monitor lizard, a shrew, number of insects including cicada and some oil palm seeds. In India, it has also been seen fishing and in China crabs have been found in the gut contents. It breeds during May and June and produces 3-4 young ones in a litter. The maximum recorded life span is 15 years and five months in captivity (Crandall 1964).

Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix II of CITES, and VU A1c during CAMP Workshop.

MALABAR CIVET *Viverra civettina* Blyth, 1862

Distribution

The Malabar civet is endemic to the Western Ghats. It is mostly recorded from the coastal district of Western Ghats in southern India from Kanyakumari in the extreme south to Honnavar in Kamataka, in the north as far as Wayanad and Coorg (Pocock 1933, 1939, Corbet & Hill 1992). There are only two reports of its occurrence in the higher elevation of the Western Ghats, in the High Wavy Mountains (Hutton 1949) and Kudremukh (Karanth 1986). Recent report is from Elayur near Calicut, Kerala (Kurup 1989). For details see Kumar *et al.* Conservation Initiatives 2, this issue.



Range map 23

Malabar civet

Description

It is a large civet, almost similar in size to the large Indian civet *V. zibetha*. Its exact measurement is not available. However, it is believed that an adult is around 1090 - 1250 mm long including tail which is around 330 to 400 mm and weighing up to 6.45 to 8 kg. The coat is long and full grey in colour. The body pattern is blackish and larger in size as compared to the little civet. The dorsal crest is black and prominent extending from neck up to the tip of the tail. The tail has five white rings, the last one being only about two inches from the tip.

Behaviour

The Malabar civet once inhabited the lowland forests in its range. In northern Kerala it appears to be confined to thickets in cashew plantations, and to highly degraded lowland forests (Ashraf *et al.* 1993). It is reported to be nocturnal and retreats to the scrub forests and cashew plantations during the day for shelter. From the recent surveys (see Kumar *et al.* Conservation Initiatives 2, this issue) concluded that the typical habitat of Malabar civet is lowland swamp and riparian forests in the coastal plain districts of Western Ghats. Little is known about its ecology and biology.

Conservation status

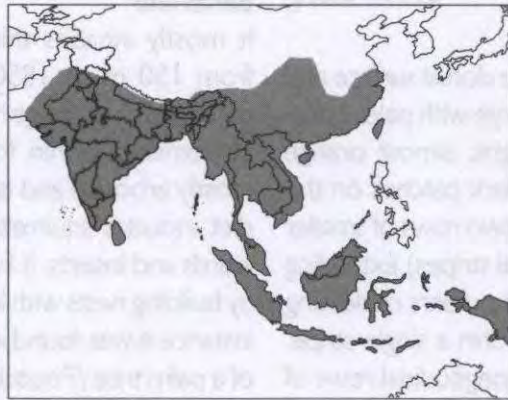
It is listed in Schedule I part I of the Indian Wildlife (Protection) Act, 1972, Appendix I of CITES, CR C2a in IUCN Red List and CR A1bc during the CAMP Workshop.

The Malabar civet is endemic to the Western Ghats occurring particularly in the coastal districts.

SMALL INDIAN CIVET *Viverricula indica* Desmarest, 1817

Distribution

It is distributed over most of India, Pakistan, eastward to south China, Myanmar, Thailand, southward from Sri Lanka, Singapore, Malaysia and Indonesia (Pocock 1939, Roberts 1977, Medway 1978, Corbet & Hill 1992, Datta 1999).



Range map 24

Small Indian civet

Description

The small Indian civet is somewhat cat like in general appearance having relatively long forelegs and conspicuous rounded ears. The general body colour varies from sandy-buff to greyish-white and is heavily spotted with blackish patches in parallel horizontal lines. The spots are smaller in the region of the spine where they tend to coalesce into continuous lines. The spots at the flanks are considerably bigger and set apart than from the dorsal spots. All four legs are blackish or very dark brown and are often marked with small white patches. The tail is almost two third the length of head and body and is conspicuously marked with 9-10 concentric black rings. The throat and breast are greyish-white with two thick black semicircular bands on the upper throat. It lacks dorsal crest and the anterior edge of the ears is set close together. The weight varies from 2.2 - 3.4 kg (Shortridge 1914, Roberts 1977). The head and body measure 450 to 630 mm while tail length varies from 369 and 413 mm.

Five subspecies have been identified from India; *V. indica indica* Geoffroy, 1803 from Western Ghats, *V. indica bengalensis* Grey, 1832 from the plains of northern India, *V. indica deserti* Bonhote, 1898 from Rajasthan, *V. indica wellsi* Pocock, 1933 from Kangra, Kumaun and Uttar Pradesh, and *V. indica baptistae* Pocock, 1933 from upper Bengal and Assam.

Behaviour

It is normally solitary and strictly nocturnal and prefers long grasses and scrub to live in. Though it is capable of climbing trees, it prefers to hunt on ground. It is mostly omnivorous in nature. Its diet includes rodents, lizards, insects, small birds, birds' eggs and nestling and often fruits. It lives in burrows dug by itself or under rocks. It is polyestrous, and young ones are seen throughout the year, with litter size between 3 to 5. The life span is around 22 years in captivity (Jones 1968).

Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES, and LR nt during CAMP Workshop.

SPOTTED LINSANG *Prionodon pardicolor* Hodgson, 1841

Distribution

It is distributed from east of Nepal to Sikkim, Assam, Arunachal Pradesh (Pocock 1939, Choudhury 1997a,b, 1999, Datta 1999, Jha 1999) eastwards to Myanmar, southern China, Thailand, Laos PDR, Vietnam, Malaysia, Sumatra, Java and Borneo (Pocock 1939, Medway 1978, Corbet & Hill 1992).

Description

The spotted linsang is the smallest of all the civets, weighing less than a kilogram. It has a pointed muzzle, elongated body, short limbs and retractile claws. The tail is nearly as long as the head and body. The general coat

The small Indian civet is sympatric to common palm civet in distribution. However, unlike common palm civet it prefers to hunt on ground.



Range map 25

Spotted linsang

and thighs. The spots decrease in size from dorsal to the ventral surface. The fore legs are spotted to the paws and the hind legs up to the hock. The tail has eight or nine complete broad dark rings separated by narrow white rings. Head and body length varies between 305 and 452 mm, tail length 302 to 402 mm and weight ranges between 598 and 798 gm. The absence of sex glands in both sexes is also distinctive.

Behaviour

It mostly inhabits thick hill forests ranging from 150 m to 1850 m. It has also been recorded from fringe habitats around human settlements within forests. It is nocturnal, mostly arboreal and is an efficient hunter. Its diet includes squirrels, rodents, small birds, lizards and insects. It lives in hollows of trees, by building nests with leaves and twigs. In one instance it was found in a burrow at the base of a palm tree (Pocock 1941). Breeding time is February and again in August. The litter size is between two to three.

colour is brownish on the dorsal surface and nape, which gradually merge with paler buffy-olivaceous flanks, to bright, almost orange buff. There are distinct dark patches on the body. Dorsally there are two rows of smaller spots on the spine (nuchal stripes) extending from the occiput to the shoulders coalescing at the posterior end to form a single stripe. There are three or four longitudinal rows of small spots on the sides, extending from the back and lower down to the flanks, shoulders

The spotted linsang inhabits thick hill forests of northeast India at 150 to 1850 m altitude.

Table 5. Summary of the distribution and conservation status of the Indian viverrid species.

Species	Distribution Biogeographic zones	Conservation status			
		IWPA	CITES	IUCN	CAMP
Binturong	1B (Sikkim), 2C, 2D, 7B, 9A, 9B	I	III	-	DD
Small-toothed palm civet	2C, 2D, 9A, 9B	II	III	-	VU B1 2c d2
Common palm civet	2A, 2B, 2C, 2D, 4A, 4B, 5A, 5B, 6A, 6B, 6C, 6D, 6E, 7A, 7B, 9A, 9B	II	III	-	LR 1c
Brown palm civet	5A, 5B	II	III	VU B1 2c	VU B1 2bc
Masked palm civet	1B, 2A, 2B, 2C, 2D, 9A, 9B, 10A, 10B	II	III	-	LR 1c
Large Indian civet	1B (Sikkim), 2A (Chamba), 2C, 2D, 6C, 7B, 9A, 9B	II	II	-	VU A1c
Malabar civet	5A, 5B	I	I	CR C2a	CR A1 bc
Small Indian Civet	1B (Sikkim), 2B, 2C, 2D, 3A, 3B, 4A, 4B, 5A, 5B, 6A, 6B, 6C, 6D, 6E, 7A, 7B, 8A, 8B, 9A, 9B	II	III	-	LR nt
Spotted linsang	1B (Sikkim), 2C, 2D, 7B, 9A, 9B	I	II	-	VU B2 2ac

IWPA- Indian Wildlife Protection Act, CITES - Appendices of CITES, IUCN - IUCN Red List (1996). CAMP - Conservation Assessment and Management Plan for Mammals of India (CAMP Workshop) (Molur et al. 1998). Biogeographic zone - (Rodgers et al. 2000).

Conservation status

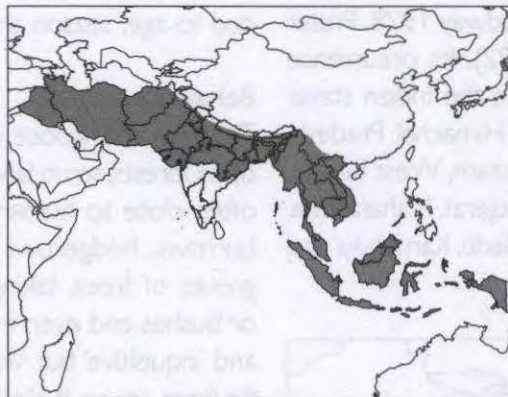
It is listed in Schedule I part I of the Indian Wildlife (Protection) Act, 1972, Appendix II of CITES, and VU B2 2ac during the CAMP Workshop.

FAMILY HERPESTIDAE**SUBFAMILY HERPESTINAE (Mongoose)****Small Indian mongoose *Herpestes javanicus* Geoffroy, 1812**

Synonym: *Herpestes auropunctatus* Hodgson, 1836

Distribution

The small mongoose is distributed through the Himalayas at an altitude of 2300 m, from Kashmir to Bhutan. In the south of Ganges it occurs in Madhya Pradesh to as far as Orissa in the east, extending eastwards to West Bengal, Assam, Manipur, Myanmar, Thailand and Malayan peninsula (Pocock 1939, Prater 1971, ZSI 1992, Choudhury 1997 a,b, 1999). It occurs westwards in Afghanistan, Baluchistan, Iran and Iraq (Pocock 1939, Medway 1978, Corbet & Hill 1992).



Range map 26

Small Indian mongoose

Description

It is small in size as compared to other mongoose species with the tail always shorter than the head and body, but usually over two-third its length. The coat is short, up to about 20 mm, soft and silky. The coat colour varies seasonally and individually. The speckling is

always fine, the contour-hair having five rings of which two are pale. The general body colour looks like olive-brown with gold-flecks. Legs have the same tint as the body, with the paws often paler. Head and body length is around 250 to 410 mm, tail 236 to 253 mm (Pocock 1941, Medway 1978, Corbet & Hill 1992).

Two subspecies are reported from India, the typical *H. javanicus auropunctatus* Hodgson, 1836 from north India is darker brown and minutely speckled with golden colour and the western desert form *H. javanicus pallipes* Blyth, 1946 which is paler in shade, dorsally grey and usually whitish below.

Behaviour

It lives in burrows, is mainly diurnal and feeds on a wide variety of small vertebrates and large invertebrates, similar to grey mongoose. Females are polyestrous, breeding throughout the year. Gestation period is around 43 days. Both sexes reach maturity within first year. The maximum-recorded life span is nine years and eight months (Acharjyo & Mohapatra 1976).

Conservation status

It is listed in Schedule IV of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES and LR 1c during the CAMP Workshop.

INDIAN MARSH MONGOOSE *Herpestes palustris* Ghose, 1965**Distribution**

The Indian marsh mongoose occurs in Salt Lake and north and south 24-Parganas and Howrah district in West Bengal, India (Ghose 1965, Ghose & Chaturvedi 1972).

Description

It is similar to small Indian mongoose in size. Honacki *et al.* (1982) treated it as synonym of *H. auropunctatus*. Nothing is known about its biology and ecology.

Two subspecies of small Indian mongoose occur in India: the typical *H. javanicus auropunctatus* from north India is darker brown and minutely speckled with golden colour and the western desert form *H. javanicus pallipes* is paler in shade, dorsally grey and whitish below.

The Indian marsh mongoose occurs in Salt Lake and North and South 24-Parganas and Howrah district in West Bengal, India. It is similar to small Indian mongoose in size.



Range map 27 Indian marsh mongoose

Description

It is a medium sized tawny or yellowish grey mongoose with no stripes on the side of its neck. The tail is long, almost equal to the head and body length. The hair at the tip of the tail are pallid to ochreous-red, but never black. The contour hair of the back are harsh, longer than the rest of the body, and marked with as many as ten dark and light bands alternately arranged, giving a speckled aspect to the pelage. The legs are always darker than the body. Total length is up to 900 mm with tail length of around 450 mm (Medway 1978). The head to body length varies between 360 and 450 mm (Corbet & Hill 1992). Males are always heavier and larger than females with weights ranging from 1.34-1.7 kg and 0.89-1.12 kg respectively (Medway 1978).

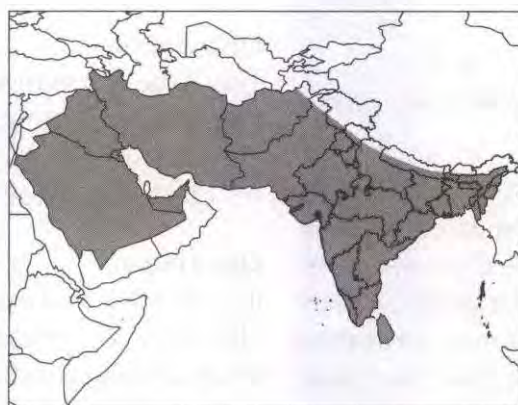
Conservation status

All species of mongoose found in India are placed in Schedule IV of the Indian Wildlife Protection Act, 1972. It was evaluated as EN B1 2abcd during the CAMP Workshop.

GREY MONGOOSE *Herpestes edwardsii* Geoffroy, 1818

Distribution

The grey or the common mongoose occurs in the whole of India from an altitude of 2100 m in the Himalayas down to Kanyakumari in the south. In the west it extends to Iran and Iraq, and in the east to China (Pocock 1939, Medway 1978, Prater 1971, Corbet & Hill 1992). Its occurrence has been confirmed from the Indian states of Jammu and Kashmir, Himachal Pradesh, Punjab, Uttar Pradesh, Assam, West Bengal, Bihar, Madhya Pradesh, Gujarat, Maharashtra, Andhra Pradesh, Tamil Nadu, Karnataka and Kerala.



Range map 28 Grey mongoose

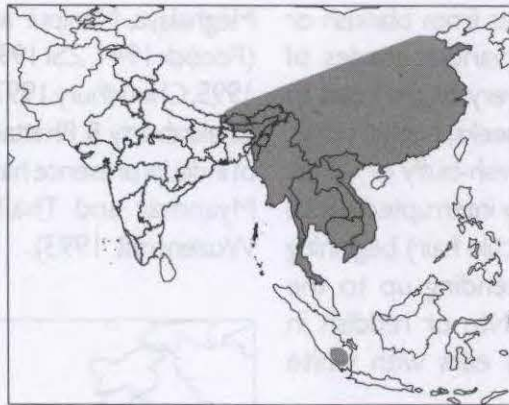
Three Indian subspecies are identified, a north and central Indian race *H. edwardsii nyula* Hodson, 1836, with a fuller somewhat darker coat, a desert race *H. edwardsii femigineus* Blanford, 1874, with reddish fur, and a typical south Indian race *H. edwardsii edwardsii* Geoffroy, 1818. In field conditions the subspecies are difficult to identify as there is marked variation in the colour of the coat due to age, season and locality factors.

Behaviour

The grey mongoose is commonly found in open forests, scrub lands and cultivated fields, often close to human habitation. It lives in burrows, hedgerows and thickets, among groves of trees, taking shelter under rocks or bushes and even in drains. It is very bold and inquisitive but wary, seldom venturing far from cover. It climbs well. Usually found singly or in pairs. They prey on rodents, snakes, birds' eggs and hatchlings, lizards and variety of invertebrates. Along the Chambal river they occasionally predate on gharial eggs (Chowdhury 1981). They breed throughout the year, gestation period is around 60-65 days, litter size 2-5. Maturity is achieved at the age of 6 to 9 months. The longest recorded life span is 11 years and 2 months in captivity (Jarvis & Morris 1961).

The grey mongoose is most cosmopolitan of all the Indian mongoose. It is commonly found in open forests, scrub lands and cultivated fields, often close to human habitations.

In India, the hog-badger is found in stony grounds or small hills amongst tropical jungle along rivers and rivulets.



Range map 11

Hog-badger

a pig, without much fur towards the end, the terminal disc containing the nostrils. Ears are short, rounded and small being a little bigger than the honey badgers'. The coat is coarse and the colour of the dorsal body surface is typically a mixture of black and white or buff, yielding generally a greyish appearance. The head pattern or the mask is black and white. The blackish stripes run through the eyes and are bordered by white stripes, which merge with the nape and with the white of the throat. The ears are whitish and the rhinarium is mostly pinkish in colour. The tail is normally whitish above and below but its base is blackish to some extent. The fore legs from above the elbows and the hind legs from above the hock are black or deep brown. The length of the head and body is 550 to 700 mm, the length of the tail is 120-170 mm and the weight is usually 7 to 14 kg (Walker 1975).

Two subspecies are reported from India, *A. collaris collaris* Cuveir, 1835 from Sikkim Tarai, Upper West Bengal (Darjeeling) and Assam and *A. collaris consul* Pocock, 1835 from Assam and Myanmar.

Behaviour

Once the hog-badgers were fairly common in their range but they are now getting increasingly rare. They are largely nocturnal and spend the day in natural shelters such as rock crevices or deep burrows which they dig themselves (Prater 1971). From the recent report (Ramakantha 1993) it appears

that they are mainly crepuscular in behaviour. In India they frequent stony grounds or small hills amongst tropical jungle (Prater 1971), and along rivers and rivulets (Ramakantha 1993). Hog-badgers are apparently omnivorous as evident from the snout, which is believed to be used for digging for animal and plant food. Very little is known about their reproductive biology. A female hog-badger from northern China had four newly born young ones in April (Walker 1975).

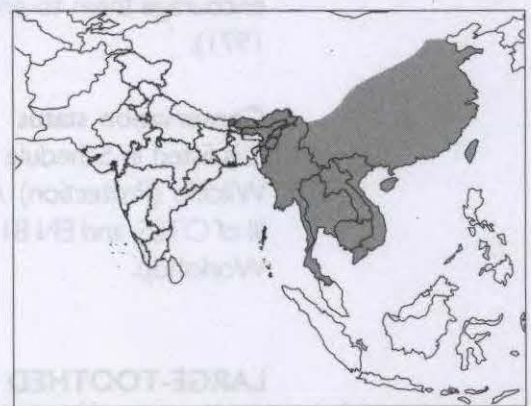
Conservation status

It is listed in Schedule I part I of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES, and DD during the CAMP Workshop.

SMALL-TOOTHED FERRET BADGER *Melogale moschata* Gray, 1831

Distribution

It is also known as Chinese ferret badger. In India it is distributed throughout northeast India from West Bengal eastwards in Assam, Manipur, Nagaland and Arunachal Pradesh (Pocock 1941, Ramakantha 1992b, 1995, Choudhury 1997a,b, 1999, Datta 1999). Outside India it occurs in Myanmar, Vietnam, Laos PDR, Taiwan and south China (Pocock 1941, Walker 1975, Wozencraft 1993).



Range map 12

Small-toothed ferret badger

In India, the small-toothed ferret badger occurs in West Bengal, Assam through Manipur, Nagaland and Arunachal Pradesh.

Description

This is a small badger in which the length of head and body is 330 to 430 mm, tail length 152 to 230 mm and weight is around 1.75 kg (Walker 1975). The general colour of the

dorsal body surface varies from blackish or deep purplish-grey, to various shades of brown, often giving a silvery or grey cast to the pelage. The mask, cheeks, nuchal stripe, and ventral side is yellowish-buffy or white. It has a shorter, frequently interrupted dorsal streak (white tipped erectile hair) beginning from the forehead extending up to the shoulders which are white or reddish in colour. It has rounded ears with white margins.

It has three subspecies *millsi*, *taxilla* and *moschata*. The subspecies *M. moschata millsi* Thomas, 1922 is reported from India.

Behaviour

In India ferret-badgers live in tropical and subtropical forests, and also in grasslands. They are nocturnal, coming out usually at dusk. Like most badgers they live in holes dug out by themselves or in burrows of other animals and in rock crevices. They are good climbers and often sleep on the branches of trees. They are omnivorous and known to feed on small animals, insects, earthworms and fruits. The young ones are born during May and June and the litter size is 1-3. Because it preys upon insects and pests such as cockroaches the local people like Lepchas and Bhotias encourage them to enter their huts (Prater 1971).

Conservation status

It is listed in Schedule I part I of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES, and EN B1 2c during the CAMP Workshop.

LARGE-TOOTHED FERRET BADGER

Melogale personata Geoffroy 1831

Distribution

In India the large-toothed ferret badger or the Burmese ferret badger is distributed from Nepal eastwards to West Bengal, Assam,

Meghalaya, Manipur and Arunachal Pradesh (Pocock 1941, ZSI 1992, Ramakantha 1992b, 1995, Choudhury 1997a,b, 1999, Datta 1999, Chakraborty & Bhattacharya 1999). Outside of India its presence has been confirmed from Myanmar and Thailand (Pocock 1941, Wozencraft 1993).



Range map 13 Large-toothed ferret badger

Description

The large-toothed ferret badger is similar in size to small-toothed ferret badger. However, they differ mostly in the pattern of dentition. It has a massive pm^4 and pm^1 is disproportionately smaller than pm^2 . However, externally the dorsal streak in large-toothed ferret badger always extends up to the back or base of the tail, and is always continuous. Individual colour variation is prominent in both the species, and individually.

Four subspecies are reported, *M. personata personata*, *M. p. nipalensis*, *M. p. pieri* and *M. p. laotum*, of which one subspecies *M. p. personata* is reported from India.

Behaviour

Nothing is known about its behaviour and ecology.

Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES and VU C2a during the CAMP Workshop.

The large-toothed ferret badger or the Burmese ferret badger in India is sympatric with the small-toothed ferret badger.

SUBFAMILY LUTRINAE (Otters)**EURASIAN OTTER *Lutra lutra*, Linnaeus 1758****Distribution**

The Eurasian otter has the widest distribution range of all otter species extending from Europe through northern Africa to Asia as far as Taiwan, Korea and Philippines (Mason & Macdonald 1986, Wozencraft 1993). In India it occurs in Jammu and Kashmir, Himachal Pradesh, hills of Uttar Pradesh, Sikkim, West Bengal, Assam and Arunachal Pradesh (ZSI 1992, Choudhury 1997a,b, 1999) Orissa, and in the southern India in Andhra Pradesh, Kerala, Tamil Nadu, Karnataka and Goa (Pocock 1941, Prater 1971). It was not reported from Bihar, Madhya Pradesh, Gujarat, Rajasthan and Maharashtra.

The Eurasian otter lives in highland and lowland lakes, rivers, streams, marshes and coastal areas. Its major prey is fish, sometimes exceeding more than 80% of the diet.



Range map 14

Eurasian otter

Description

The colour of the dorsal part of the fur in Eurasian otter varies from rusty to dusky-brown, where, as ventral side is lighter - sometimes up to grey or white. The lips and the throat show individual yellow, grey or white spots. The completely hairy tail is flattened at its terminal half and tapered at its end. The rhinarium is bare, mostly of black colour, sometimes with light spots. The shape of its upper rim shows a "W". All four feet have five toes with strong claws and webs between the toes, which extend at least to the last bone of each digit (Pocock 1941).

Pocock (1941) reports four subspecies from India, *L. lutra nair* Cuvier, 1823 occurs in southern India, locality type Pondicherry, *L. l. monticola* Hodgson, 1839 occurs in northern India from Himachal Pradesh (Kangra) eastwards to Assam, locality type - Nepal, *L. l. kutub* Schinz, 1844 occurs in Kashmir, Kangra and Tibet, locality type - Kashmir and *L. l. aurobrunnea* Hodgson, 1868 occurs in Nepal and Garhwal Himalayas, locality type Nepal.

Behaviour and ecology

The Eurasian otter is primarily nocturnal, largely solitary and lives in a wide variety of aquatic habitats, including highland and lowland lakes, rivers, streams, marshes and coastal areas. Like most *Lutra* species fish is the major prey of otters sometimes exceeding more than 80% of the diet (Erlinge 1968, Webb 1975, Beja 1991, Ruiz-Olmo & Palazon 1997). In addition to fish a whole range of other prey items have been recorded in the diet in variable proportions. These include aquatic insects, reptiles, amphibians, birds, small mammals, and crustaceans (Jenkins et al. 1979, Adrian & Delibes 1987, Skaren 1993). Age at sexual maturity is around 18 months in male and 24 months in the case of female, but in captivity it is usually 3 to 4 years (Reuther 1991). The gestation period is approximately 65 days, the litter size varies from 1 to 5, and the life expectancy is around 17 years (Acharjyo & Mishra 1983).

Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix I of CITES, and NE for the IUCN Red List. This species was not evaluated during the CAMP Workshop.

SMOOTH-COATED OTTER *Lutra perspicillata* Geoffroy, 1826**Distribution**

The smooth-coated otter is distributed throughout southern Asia from Indonesia, through southeast Asia, and westwards

through southern China, India and Pakistan, with an isolated population in Iraq (Pocock 1941, Prater 1971, Medway 1978, Mason & Macdonald 1986, Hussain 1993, Hussain & Choudhury 1997). Though its current status in the middle east including Iraq is not known, its presence has been confirmed from Nepal, India, Bangladesh, Bhutan, southwest China, Myanmar, Thailand, Vietnam, Malaysia, Sumatra, Java and Borneo (Mason & Macdonald 1986, Corbet & Hill 1992). In India it occurs in Himachal Pradesh, Punjab, plains of Uttar Pradesh, Madhya Pradesh, Rajasthan, Bihar, in the central Indian plateau of Maharashtra, Andhra Pradesh, in east and northeast in West Bengal, Assam, Arunachal Pradesh (Sanyal 1991, ZSI 1992, Choudhury 1997 a,b, 1999) through Myanmar. In the south in Karnataka, Kerala, Tamil Nadu and Goa (Pocock 1941).

mm, tail length 400-450 mm, hind foot 100-140 mm and weight 7-11 kg ranging from 6.5 kg in the case of subadult to 7.00-11.4 kg in adults. In colour, the dorsal part of the body varies from deep, nearly blackish-brown, or lighter brown with a rufous tinge with much paler, tawny or sandy brown. Whereas the underside is always lighter than the dorsal part the paws are paler than the back. The upper lip to the edge of the rhinarium, the cheek to the eye and ear, the sides of the neck, the chin and throat are white or whitish (Pocock, 1941). In its external characters the smooth-coated otter differs from Eurasian otter by its very smooth, sleek coat, i.e. hair texture is velvety. The length of the guard hair ranges between 12 - 14 mm and under fur 6 - 8 mm (Duplaix & Davis, 1981). Muzzle is not spotted and the rhinarium is bare, dusky with peaked upper margin (inverted V shaped). The terminal half of the tail is more flattened than the Eurasian otter with a tapered end. Both the fore and the hind paws are large, well webbed, but the third phalanges are free of webbing.

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The smooth-coated otter is the most cosmopolitan of all the Indian otter species.
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Range map 15 Smooth-coated otter

Pocock (1941) reports two subspecies from India. *L. p. perspicillata* Geoffroy, 1826 occurs in northeast and in southern India, locality type Nepal Tarai and Madras. *L. p. sindica* Pocock, 1940 occurs in north and northwestern India, locality type Chak in the Sukkur district of Sindh (now in Pakistan).

Description

The size and proportion of the smooth-coated otter is almost similar to the Eurasian otter. The tail length is more than half the length of the head and body and more than three times the length of hind foot. The total length ranges between 1067 and 1300 mm, head to body 655 and 790 mm and the tail length ranges between 406 and 505 mm (Duplaix & Davis 1981). Measurements of two specimens given by Pocock (1941) are as follows; head and body 655-687 mm, tail 422-435 mm, hind foot 137-142 mm (Medway 1978). Lekagul & McNeely (1988) mentioned head to body length 650-750

Behaviour and ecology

The smooth-coated otter occurs along the large rivers and lakes, in mangrove forests along the coast and estuaries, and in southeast Asia it even uses the rice fields for foraging (Foster-Turly 1992, Sivasothi & Nor 1994, Melisch *et al.* 1996). Along the large rivers in India, it shows greater preference for rocky stretches in all the seasons, since these stretches provide sites for den and resting (Hussain 1993, Hussain & Choudhury 1995). In the Tarai areas of the upper Gangetic plains the seasonally flooded swamps dominated by *Phragmites karka*, *Arundo donax*, *Sclerostachya fusca*,

Carex obscuriceps and *Cyanodon dactylon* communities interspersed with *Syzygium* spp. were extensively used by smooth-coated otters during monsoon and in early winter (Hussain 1998).

It is predominantly a fish eater, but supplements its diet with shrimp/crayfish, crab and insects, and other vertebrates such as frogs, mudskippers, birds and rats (Prater 1971, Foster-Turly 1992, Hussain 1993, Hussain & Choudhury 1998). The range of fish in the diet varies from 75 to 100% (Foster-Turly 1992, Hussain 1993, Melisch *et al.* 1996, Hussain & Choudhury 1998). A typical group of smooth-coated otter consists of male, female, and up to three to five young ones. (Wayre 1974, Hussain 1996). During a radio-tracking study in the National Chambal Sanctuary, India, the home ranges of all the otters tracked, overlapped intensively. Among the radio-implanted otters, the maximum home range was observed in a subadult male and the minimum in a juvenile female and male. Among the non-tagged otters, the home range of female with cubs was estimated as 5.5 km. In case of the adult male it was estimated as approximately 17 km (Hussain 1993, Hussain & Choudhury 1995).

The smooth-coated otter is predominantly a fish eater. Along a major river a typical family of five members need 17 km stretch of undisturbed river for survival. In the Tarai areas of upper Gangetic plains the seasonally flooded swamps are extensively used by this species.

The smooth-coated otter attains sexual maturity at twenty-two months in captivity (Desai 1974). Yadav (1967) observed first litter at four years of age. In captivity it mates during August to November (Desai, 1974, Naidu & Malhotra 1989). The gestation period varies from 60 to 62 days (Yadav 1967, Desai 1974, Naidu & Malhotra 1989). The litter size varies from 1 to 5 (mean = 3.25) (Desai 1974, Naidu & Malhotra 1989). The longest recorded life span in captivity is around 20 years five months (Acharjyo & Mishra 1983).

Conservation Status

Listed in Schedule II part II of Indian Wildlife (Protection) Act, 1972, Appendix II of CITES and VU A2cd in the IUCN Red List.

SMALL-CLAWED OTTER *Aonyx cinerea* Illiger, 1889

Distribution

It occurs in north India from the Himalayan foothills of Himachal Pradesh (Kulu), West Bengal, Assam and Arunachal Pradesh (ZSI 1992, Choudhury 1997a,b, 1999) as well as in southern India, in the higher ranges of the hills in Coorg (Karnataka), Ashambu, Nilgiri and Palni hills (Tamil Nadu) and some places in Kerala (Pocock 1941, Prater 1971). Outside India it occurs in Myanmar, Thailand, southern China, Laos PDR, Vietnam, Malaysia, Indonesia and Philippines (Mason & Macdonald 1986, Wozencraft 1993).



Range map 16

Small-clawed otter

Description

It is smallest of all otter species (Harris 1968). It is distinguished from the Eurasian and smooth-coated otter in external characters by the structure of the feet, which are considerably narrower, with more emarginate webs which do not extend along the digital pads and are sparsely covered below with short hair. The claws, except in small cubs, are minute, erect spikes, not projecting beyond the end of the digital pads. The planter pads are better developed, more normal in shape, sub-symmetrical and four lobed. The rhinarium is as in the smooth-coated otter (inverted V shaped). The shape of the tail is similar to Eurasian otter and is little longer than the length of the head and body. The colour of the dorsal surface is dark brown, sometimes with a

tawny or rufous tinge and the tip of the contour hair paler. The underside is generally paler brown than the upper part often showing grey cast. The edge of the upper lip, chin, cheek, side of the neck and throat are grey or nearly white. The length of the head and body is around 420 to 540 mm, tail 233 to 330 mm and weight ranges between 2.7 to 5.4 kg.

Pocock (1941) reports two subspecies from India. *A. cinerea concolor*, Rafinesque, 1832 occurs in Himalayas from Kulu eastwards from entire northeast India, locality type - Garo hills, Assam. *A. cinerea nimai* Pocock, 1940 occurs in southern India, locality type - Virajpet in south Coorg.

Behaviour and ecology

In most of their range the small-clawed otters are sympatric with smooth-coated and Eurasian otters. In India all three species occur in southwest India particularly from Western Ghats and possibly in the hills of Uttar Pradesh and Assam. In south India it is mostly found along hill streams. It was once common in the mangroves of east Calcutta and Sunderbans (Sanyal 1991). In Malaysia and Indonesia including Java it occurs in coastal wetlands, and along the banks of paddy fields. Comparable data from Java, Myanmar, and India revealed that Oriental small-clawed otter has a high climatic and trophic adaptability in south and southeast Asian tropics, occurring from coastal wetlands up

Table 4. Summary of the distribution and conservation status of the Indian mustelid species.

The small-clawed otter is predominantly an invertebrate feeder and relies mostly on crabs for its survival.

Species	Distribution Biogeographic zones	Conservation status			
		IWPA	CITES	IUCN	CAMP
Beech marten	1A, 1B, 2A, 2B, 2C, 2D	II	III	-	DD
Yellow-throated marten	1B, 2A, 2B, 2C, 2D, 9A, 9B	II	III	-	LR 1c
Nilgiri marten	5B	II	III	VU B1 2c	VU B1 2bc
Ermine	1A, 1B, 2A	I	III	-	DD
Pale weasel	1A, 1B, 2A, 2B, 2C, 2D	II	III	-	DD
Siberian weasel	1A, 1B, 2A, 2B, 2C, 2D, 9A	II	III	-	LR nt
Yellow-bellied weasel	1A, 1B, 2A, 2B, 2C, 2D, 9A, 9B	II	III	-	DD
Back-striped weasel	1B (Sikkim), 2C, 2D, 9A, 9B	-	III	VU C2a	DD
Polecat	1A, 1B	II	III	-	DD
Ratel	3A, 3B, 4A, 4B, 6A, 6B, 6C, 6D, 6E, 7A, 7B, 9A	I	III	-	LR nt
Hog-badger	1B (Sikkim), 2C, 2D, 9A, 9B	I	III	-	DD
Small-toothed ferret badger	1B (Sikkim), 2C, 2D, 9A, 9B	I	III	-	EN B1 2c
Large-toothed ferret badger	1B (Sikkim), 2C, 2D, 9A, 9B	II	III	-	VU C2 a
Eurasian otter	1A, 1B, 2A, 2B, 2C, 2D, 5B, 6B, 6C, 6E, 7B, 9A, 9B	II	I	NE	-
Smooth-coated otter	1A, 1B, 2A, 2B, 2C, 2D, 3B, 4A, 4B, 5A, 5B, 6A, 6B, 6C, 6D, 6E, 7A, 7B, 9A, 9B	II	II	VU A2 cd	-
Small-clawed otter	1B (Sikkim), 2B, 2C, 2D, 5B, 7B, 9A, 9B	I	II	LR nt	-

IWPA- Indian Wildlife Protection Act, CITES - Appendices of CITES, IUCN - IUCN Red List (1996). CAMP - Conservation Assessment and Management Plan for Mammals of India (CAMP Workshop) (Molur et al. 1998). Biogeographic zone - (Rodgers et al. 2000).

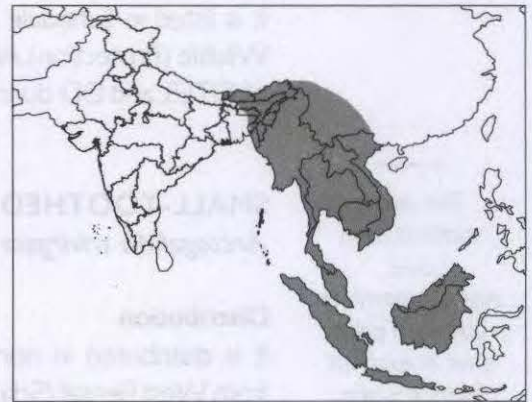
BOX I

The Biogeographic Zones of India (Rodgers *et al.* 2000).

Code	Zones	Code	Zones
1A	Trans-Himalayas-Ladakh-Mountains	6B	Deccan Peninsula-Chotta Nagpur
1B	Trans-Himalayas-Tibetan Plateau	6C	Deccan Peninsula-Eastern Highlands
2A	Himalayas-Northwest Himalayas	6D	Deccan Peninsula-Central Plateau
2B	Himalayas-West Himalayas	6E	Deccan Peninsula-Deccan South
2C	Himalayas-Central Himalayas	7A	Gangetic Plain-Upper
2D	Himalayas-East Himalayas	7B	Gangetic plain Lower
3A	Desert-Thar	8A	Coast-West Coast
3B	Desert Katchchh	8B	Coast-East Coast
4A	Semi Arid-Punjab Plains	8C	Coast Lakshadweep
4B	Semi Arid-Gujarat Rajaputana	9A	Northeast-Brahmaputra Valley
5A	Western Ghats-Malabar Plains	9B	Northeast- Northeast Hills
5B	Western Ghats-Mountains	10A	Islands-Andaman
6A	Deccan Peninsula-Central Highlands	10B	Islands- Nicobar

to mountain streams (Melisch *et al.*, 1996). In contrast to *Lutra* species it is an invertebrate feeder. Invertebrates constitute around 87% of its diet. The other important prey species are fish, amphibians and snakes. In the wild, the small-clawed otters have been seen both singly and in groups ranging from 2 to 8. It is active both during day and night, but it is mainly nocturnal. In captivity, females are capable to breed at the age of 15 months. The gestation period is around 60 days and litter size ranges from 2-7. Life span in captivity is around 11 years (Crandall 1964).

The binturong is also known as bear cat. It is the heaviest among all the viverrids.



Range map 17

Binturong

Conservation status

Listed in Schedule I and part I of the Indian Wildlife (Protection) Act, 1972, Appendix II of CITES and LR nt in IUCN Red List. It was not evaluated during the CAMP Workshop.

FAMILY VIVERRIDAE
SUBFAMILY PARADOXURINAE
(Binturong and Palm Civets)

BINTURONG *Arctictis binturong* Raffles, 1821**Distribution**

It is distributed in eastern Himalayas from Nepal, Sikkim, Bhutan, Assam eastward in Tripura, Nagaland, Arunachal Pradesh (Pocock 1939, Choudhury 1997a,b, Datta 1999, Jha 1999), Myanmar, Thailand, Malaysia and Indonesia as far as the Philippines (Pocock 1939, Medway 1978, Corbet & Hill 1992).

Description

In general the binturong is essentially like *Paradoxurus* and *Paguma* but larger in size having a much coarser and shaggy coat. The general coat colour is blackish or very dark brown with pale tipped hair giving a speckled appearance to the pelage. The head is deeply speckled and greyish, especially in the juveniles. The vibrissae are long, conspicuously white, and the edge of the pinnae are white with a tuft of hair, otherwise black. The tail is prehensile with thick fur and its colour similar to the body but paler at the base beneath. The tail is little shorter than the head and body. The length of the head and body varies between 610 to 965 mm, the tail length is between 560-890 mm and body weight around 9 to 14 kg.

The Indian subspecies is *A. binturong albifrons* Cuvier, 1822 (Pocock 1939).

Behaviour

It lives mostly in mature forests. It is primarily arboreal, largely nocturnal and solitary. It is often seen in small groups with immature offspring. It is said to be omnivorous, eating fruits and shoots, insects, birds and small mammals. There are reports of it catching fish (Harrison 1952, Ogilvie 1958). In captivity it is very vocal. The gestation period is around 92 days (Gensch 1963) with litter size of 1-2. Weaning occurs after eight weeks. Longest recorded life span in captivity is 18 years and one month (Jones 1968).

Conservation status

It is listed in Schedule I part I of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES, and DD during CAMP Workshop.

proximal portion of the tail and the outside of the legs is tawny, but varies individually from dusky grey-tawny to bright ochre-buff. The head is usually darker and greyer. The muzzle is brownish with median white streak on the muzzle and front of the forehead. The back is always marked with three distinct black or dark brown longitudinal stripes in the midline. The flanks are unmarked. The juveniles are uniformly brown. The head and body length is 480 to 575 mm, tail is 560 to 600 mm and the weight varies from 2.0 to 2.7 kg (Roberts 1977).

The Indian subspecies is *A. trivirgata millsii* Wroughton, 1921 (Pocock 1939).

Behaviour

Like most of the palm civets it is solitary, however, occasionally it is seen in a small group of females with young ones. Primarily arboreal and nocturnal, by day time it can be found resting on the upper branches of tall trees. It is omnivorous in habit, feeding on insects, small mammals, birds and mostly fruits. The stomach of two of the animals contained beetles, frogs and a lizard. Litter size is usually three. In captivity it attains maturity in 17 months. The gestation period is 45 days. The longest recorded life span is around 11 years (Jones 1968).

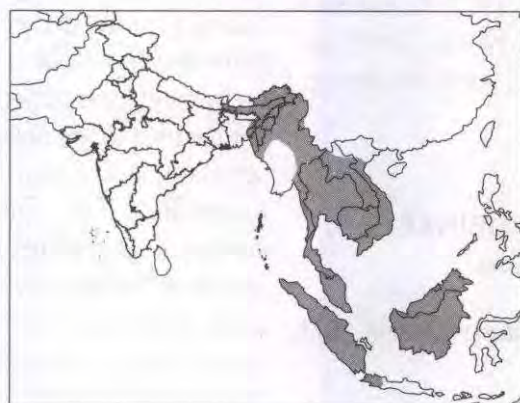
Conservation status

It is listed in the Schedule II part II of the Indian Wildlife (Protection) Act, 1972 and in Appendix III of CITES. It was not evaluated during the CAMP Workshop.

SMALL-TOOTHED PALM CIVET
Arctogalidia trivirgata Gray, 1832

Distribution

It is distributed in northeast India possibly from West Bengal (Sclater 1891), Assam and Arunachal Pradesh (Choudhury 1997 a,b) through Myanmar, south China, Thailand Malaysia, Indonesia and Singapore (Pocock 1939, Medway 1978, Corbet & Hill 1992).



Range map 18 Small-toothed palm civet

Description

The small-toothed palm civet closely resembles common palm civet in external form and in the length of the legs and tail. The general colour of the nape, back,

The small-toothed palm civet closely resembles common palm civet in external form. It is also known as three-striped palm civet.

COMMON PALM CIVET *Paradoxurus hermaphroditus* Schreber 1778

Distribution

The common palm civet is distributed in northern Pakistan and in entire India from east of Gujarat to Jammu and Kashmir, whole of the peninsula down south up to Sri Lanka. In the north of India from Nepal, Bhutan and south China, eastward through West

The common palm civet is probably the most cosmopolitan of all the Indian civets. It is also known as toddy cat.

Bengal, Assam, Arunachal Pradesh (Pocock 1939, ZSI 1992, Choudhury 1997,a,b, 1999, Datta 1999, Jha 1999) to Myanmar, Thailand, Malaysia, Indonesia, Philippines, New Guinea and Japan (Pocock 1939, Medway 1978, Corbet & Hill 1992, Wozencraft 1993).



Range Map 19

Common palm civet

Description

A black or blackish-brown civet heavily built, with long, coarse and shaggy hair and short limbs. The tail is as long as the head and body. The ground colour of the coat varies seasonally and individually from olive-grey to almost cream with darker bases to the hair. The back is always marked with three indistinct black or dark brown longitudinal stripes in the midline. The flanks are marked with many dark spots, which may be partly coalesced to form additional longitudinal stripes. These markings are less prominent in the juveniles. The tail is sometimes tipped white. It is distinguished from *Viverra* and *Viverricula* by uniformly grey un-patterned throat, and un-ringed tail. The limbs are always black or dark brown. Facial markings are quite variable; the most usual pattern is a white patch or spot below and above the eyes, and each side of the nose. Weight ranges from 2.4 to 4.0 kg, head and body length varies between 480 and 590 mm and tail length between 440 to 535 mm.

Around 16 subspecies have been reported to occur in Asia. For details see Pocock (1939).

Behaviour

Like other civets it is mostly solitary, nocturnal and largely arboreal, although freely descending to the ground to cross open spaces. It prefers well-wooded forests, and roams around in plantations taking shelter in hollows of trees. It also lives close to human habitation on roofs and in homesteads. It is an omnivore and feeds on birds, rodents, insects and fruits such as Tendu (*Diospyros* spp.) banana, pineapple, coffee and berries (Pocock 1939, Medway 1978, Singh 1982). The young ones are born in lair in hollows of trees, or among boulders. The litter size is usually 3 to 4. They mature at the age of 11-12 months. The longest recorded life span is 22 years 5 months (Jones 1968). When threatened they hiss and spit like cats.

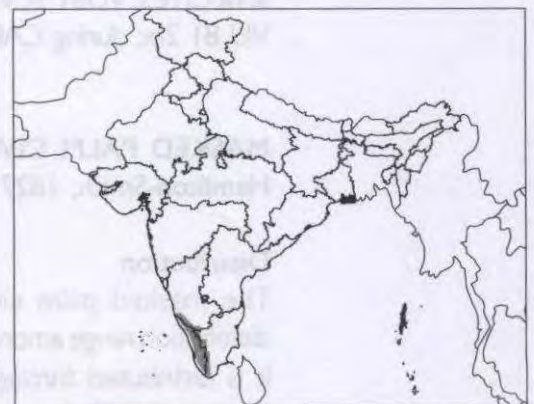
Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES and LRIc during CAMP Workshop.

BROWN PALM CIVET *Paradoxurus jerdoni* Blanford, 1885

Distribution

The brown palm civet is endemic to Western Ghats, It is distributed in the Palni, Nilgiri and Anamalai hills, Travancore and Coorg (Pocock 1939, Corbet & Hill 1992, Mudappa 1998) particularly at an altitude ranging between 500 and 1300 m.



Range map 20

Brown palm civet

The brown palm civet is endemic to the Western Ghats.

Description

The brown palm civet is more or less similar to the common palm civet in size. The general body colour is brown with deep brown or blackish face and shoulder speckled with buffy-grey, which merge with the greyish flanks. All the limbs are darker, similar to face and shoulder. Unlike common palm civet it lacks distinct marking on the body. The length of the tail is almost the size of head and body with the distal end lighter brown to dirty white. Weight ranges from 2.4 - 4.0 kg, head and body length 480 - 590 mm and tail length from 400 - 535 mm.

Two subspecies are recorded (Pocock 1939), *P. jerdoni jerdoni* Blanford, 1885 distributed largely in Palni and Nilgiri hills and Travancore and *P. jerdoni caniscus* Pocock, 1933 in Coorg.

Behaviour

The brown palm civet is found in well-wooded forests. It is largely arboreal and nocturnal found around coffee estates (Pocock 1939). It is predominantly frugivorous. As found in a recent study (see Mudappa, Status Report 8, this issue) it feeds on nearly 40 rainforest trees and liana fruit species. It occasionally supplements its diet with birds, rodents and insects (Pocock 1939).

Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES, VUBI 2c in IUCN Red List, and VU BI 2bc during CAMP Workshop.

MASKED PALM CIVET *Paguma larvata* Hamilton-Smith, 1827

Distribution

The masked palm civet has the largest distribution range among all the civet species. It is distributed throughout the Himalayas from north of Pakistan, Jammu and Kashmir to Arunachal Pradesh through Punjab, Himachal Pradesh, Uttar Pradesh, West

Bengal, Sikkim and Assam southwards to Andaman Islands (Pocock 1939, Roberts 1977, ZSI 1992, Choudhury 1997 a,b, 1999, Jha 1999). Extralimitally it is distributed in Nepal, Bhutan, south China to eastwards in Myanmar, Thailand, Malaysia, Indonesia, Taiwan and Japan (Pocock 1939, Roberts 1977, Medway 1978, Corbet & Hill 1992).



Range map 21

Masked palm civet

Description

The masked palm civet is distinguished from other Indian civets by its white whiskers and by the absence of spots or stripes on its body (Prater 1971). It is larger and heavier than the common palm civet with a relatively longer tail, which is cylindrical and thickly muscular in its proximal portion. The tail is two third of the head and body length. Its body colour ranges from uniform greyish-black at the extremities to almost pure black, and the underparts are greyish-buff colour. The tail is often tipped dirty white. The face has a regular black and greyish-white pattern, which varies among individuals, but usually a white semicircular band of creamy white hair occurs behind and below the eyes, which does not meet across the forehead. There may be a distinct line of grey tipped hair running down the centre of the forehead and nose, another beneath the ears passing over the cheeks, and a blotch below each eye. It has derived its name from these markings or mask. It is distinguished from yellow-throated marten by the pale markings on the face, and the dark chin and throat. The head to body length varies from 415-

The masked palm civet is mainly arboreal, nocturnal and largely solitary in its habits.

730 mm, tail is 392-560 mm and weight ranges from 3.6-6 kg.

Four Indian subspecies are, *P. larvata wroughtoni* Schwarz, 1913 occurring in Kashmir, Upper Punjab, and parts of Kumaun and Garhwal; *P. larvata grayi* Bennett, 1835 in Kumaun and Garhwal; *P. larvata neglecta* Pocock 1934 from Sikkim eastwards; *P. larvata tytleri* Tytler, 1864 in Andaman and Nicobar Islands.

Behaviour

Its habits are similar to those of common palm civet. The masked palm civet is mainly arboreal, nocturnal and largely solitary. It lives in mountain and hill forests taking shelter in hollows of trees. It mostly eats fruits but also supplements its diet with rodents, birds, insects and roots. When disturbed or agitated it ejects a foul smelling secretion from its four anal glands. It breeds in holes in trees. The litter size is 1-4. In juveniles the facial masks are not very prominent but have indistinct marking on the dorsal side similar to common palm civets leading to confusion in identification in the field. The longest recorded life span in captivity is 15 years and 5 months (Crandall 1964).

Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, and Appendix III of CITES and LRIc during the CAMP Workshop.

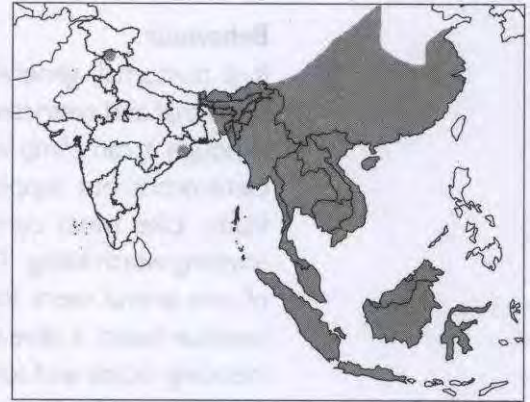
SUBFAMILY VIVERRINAE (Civets and linsangs)

LARGE INDIAN CIVET *Viverra zibetha* Linnaeus, 1758

Distribution

It is distributed in northern India possibly from Chamba to north Bengal, Sikkim, eastwards to Orissa (Acharjyo & Patnaik 1987), Assam, Meghalaya, Nagaland, Manipur and Arunachal Pradesh (Pocock

1933, Choudhury 1997a,b, 1999, Datta 1999). Extraliminally it has been reported from Nepal, Myanmar, Thailand, Singapore and in the mainland Malaysia (Pocock 1939, Medway 1978, Corbet & Hill 1992).



Range map 22

Large Indian civet

Description

It is a large civet with a pointed muzzle, long compressed body and short stumpy legs, a built typical to true civets. Like all members of the genus *Viverra*, the third and the fourth digits of the forefeet are with well-developed skin-sheaths protecting the claws. All the feet are thickly hairy between the pads. General colour is grey or tawny with yellowish or brown tinge. Flanks are marked with indistinct dark spots or mottling of black or dark brown colour. The front of the muzzle on each side has a whitish patch; the chin and the fore throat are blackish. Anterior edges of the ears are widely separated by the broad forehead. There is always an erectile black spinal stripe or crest (dorsal crest) running from behind the shoulders to the root of the tail. Dark bands are pronounced on the chest and shoulders and form loops and rosettes on the hindquarters. The tail is almost half the size of head and body with five to eight dark bands separated by pale rings extending up to the tip of the tail. There is significant variation in coat colour among individuals because of age, sex and seasons. The length of the head and body is 760-820 mm, tail 425-495 mm, and weight 8-9 kg. Males and females are approximately alike in size.

The large Indian civet is distributed in northern India possibly from Chamba to Arunachal Pradesh.

Two subspecies possibly found in India are, *V. zibetha zibetha* Linnaeus, 1758 in Nepal, Bhutan, upper Bengal and apparently in Assam and *V. zibetha picta* Wroughton, 1915 from east of (Brahmaputra) Assam (Pocock 1939).

Behaviour

It is nocturnal, generally solitary, primarily terrestrial and restricted to the forest floor, although it can climb with ease. It is largely carnivorous but supplements its diet with fruits. Like most carnivores it feeds on anything worth killing. The stomach contents of one animal were found to have a small monitor lizard, a shrew, number of insects including cicada and some oil palm seeds. In India, it has also been seen fishing and in China crabs have been found in the gut contents. It breeds during May and June and produces 3-4 young ones in a litter. The maximum recorded life span is 15 years and five months in captivity (Crandall 1964).

Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix II of CITES, and VU A1c during CAMP Workshop.

MALABAR CIVET *Viverra civettina* Blyth, 1862

Distribution

The Malabar civet is endemic to the Western Ghats. It is mostly recorded from the coastal district of Western Ghats in southern India from Kanyakumari in the extreme south to Honnavar in Kamataka, in the north as far as Wayanad and Coorg (Pocock 1933, 1939, Corbet & Hill 1992). There are only two reports of its occurrence in the higher elevation of the Western Ghats, in the High Wavy Mountains (Hutton 1949) and Kudremukh (Karanth 1986). Recent report is from Elayur near Calicut, Kerala (Kurup 1989). For details see Kumar *et al.* Conservation Initiatives 2, this issue.



Range map 23

Malabar civet

Description

It is a large civet, almost similar in size to the large Indian civet *V. zibetha*. Its exact measurement is not available. However, it is believed that an adult is around 1090 - 1250 mm long including tail which is around 330 to 400 mm and weighing up to 6.45 to 8 kg. The coat is long and full grey in colour. The body pattern is blackish and larger in size as compared to the little civet. The dorsal crest is black and prominent extending from neck up to the tip of the tail. The tail has five white rings, the last one being only about two inches from the tip.

Behaviour

The Malabar civet once inhabited the lowland forests in its range. In northern Kerala it appears to be confined to thickets in cashew plantations, and to highly degraded lowland forests (Ashraf *et al.* 1993). It is reported to be nocturnal and retreats to the scrub forests and cashew plantations during the day for shelter. From the recent surveys (see Kumar *et al.* Conservation Initiatives 2, this issue) concluded that the typical habitat of Malabar civet is lowland swamp and riparian forests in the coastal plain districts of Western Ghats. Little is known about its ecology and biology.

Conservation status

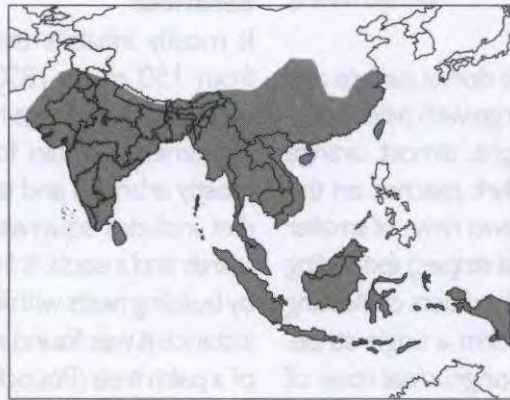
It is listed in Schedule I part I of the Indian Wildlife (Protection) Act, 1972, Appendix I of CITES, CR C2a in IUCN Red List and CR A1bc during the CAMP Workshop.

The Malabar civet is endemic to the Western Ghats occurring particularly in the coastal districts.

SMALL INDIAN CIVET *Viverricula indica* Desmarest, 1817

Distribution

It is distributed over most of India, Pakistan, eastward to south China, Myanmar, Thailand, southward from Sri Lanka, Singapore, Malaysia and Indonesia (Pocock 1939, Roberts 1977, Medway 1978, Corbet & Hill 1992, Datta 1999).



Range map 24

Small Indian civet

Description

The small Indian civet is somewhat cat like in general appearance having relatively long forelegs and conspicuous rounded ears. The general body colour varies from sandy-buff to greyish-white and is heavily spotted with blackish patches in parallel horizontal lines. The spots are smaller in the region of the spine where they tend to coalesce into continuous lines. The spots at the flanks are considerably bigger and set apart than from the dorsal spots. All four legs are blackish or very dark brown and are often marked with small white patches. The tail is almost two third the length of head and body and is conspicuously marked with 9-10 concentric black rings. The throat and breast are greyish-white with two thick black semicircular bands on the upper throat. It lacks dorsal crest and the anterior edge of the ears is set close together. The weight varies from 2.2 - 3.4 kg (Shortridge 1914, Roberts 1977). The head and body measure 450 to 630 mm while tail length varies from 369 and 413 mm.

Five subspecies have been identified from India; *V. indica indica* Geoffroy, 1803 from Western Ghats, *V. indica bengalensis* Grey, 1832 from the plains of northern India, *V. indica deserti* Bonhote, 1898 from Rajasthan, *V. indica wellsi* Pocock, 1933 from Kangra, Kumaun and Uttar Pradesh, and *V. indica baptistae* Pocock, 1933 from upper Bengal and Assam.

Behaviour

It is normally solitary and strictly nocturnal and prefers long grasses and scrub to live in. Though it is capable of climbing trees, it prefers to hunt on ground. It is mostly omnivorous in nature. Its diet includes rodents, lizards, insects, small birds, birds' eggs and nestling and often fruits. It lives in burrows dug by itself or under rocks. It is polyestrous, and young ones are seen throughout the year, with litter size between 3 to 5. The life span is around 22 years in captivity (Jones 1968).

Conservation status

It is listed in Schedule II part II of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES, and LR nt during CAMP Workshop.

SPOTTED LINSANG *Prionodon pardicolor* Hodgson, 1841

Distribution

It is distributed from east of Nepal to Sikkim, Assam, Arunachal Pradesh (Pocock 1939, Choudhury 1997a,b, 1999, Datta 1999, Jha 1999) eastwards to Myanmar, southern China, Thailand, Laos PDR, Vietnam, Malaysia, Sumatra, Java and Borneo (Pocock 1939, Medway 1978, Corbet & Hill 1992).

Description

The spotted linsang is the smallest of all the civets, weighing less than a kilogram. It has a pointed muzzle, elongated body, short limbs and retractile claws. The tail is nearly as long as the head and body. The general coat

The small Indian civet is sympatric to common palm civet in distribution. However, unlike common palm civet it prefers to hunt on ground.



Range map 25

Spotted linsang

and thighs. The spots decrease in size from dorsal to the ventral surface. The fore legs are spotted to the paws and the hind legs up to the hock. The tail has eight or nine complete broad dark rings separated by narrow white rings. Head and body length varies between 305 and 452 mm, tail length 302 to 402 mm and weight ranges between 598 and 798 gm. The absence of sex glands in both sexes is also distinctive.

Behaviour

It mostly inhabits thick hill forests ranging from 150 m to 1850 m. It has also been recorded from fringe habitats around human settlements within forests. It is nocturnal, mostly arboreal and is an efficient hunter. Its diet includes squirrels, rodents, small birds, lizards and insects. It lives in hollows of trees, by building nests with leaves and twigs. In one instance it was found in a burrow at the base of a palm tree (Pocock 1941). Breeding time is February and again in August. The litter size is between two to three.

colour is brownish on the dorsal surface and nape, which gradually merge with paler buffy-olivaceous flanks, to bright, almost orange buff. There are distinct dark patches on the body. Dorsally there are two rows of smaller spots on the spine (nuchal stripes) extending from the occiput to the shoulders coalescing at the posterior end to form a single stripe. There are three or four longitudinal rows of small spots on the sides, extending from the back and lower down to the flanks, shoulders

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The spotted linsang inhabits thick hill forests of northeast India at 150 to 1850 m altitude.
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Table 5. Summary of the distribution and conservation status of the Indian viverrid species.

Species	Distribution Biogeographic zones	Conservation status			
		IWPA	CITES	IUCN	CAMP
Binturong	1B (Sikkim), 2C, 2D, 7B, 9A, 9B	I	III	-	DD
Small-toothed palm civet	2C, 2D, 9A, 9B	II	III	-	VU B1 2c d2
Common palm civet	2A, 2B, 2C, 2D, 4A, 4B, 5A, 5B, 6A, 6B, 6C, 6D, 6E, 7A, 7B, 9A, 9B	II	III	-	LR 1c
Brown palm civet	5A, 5B	II	III	VU B1 2c	VU B1 2bc
Masked palm civet	1B, 2A, 2B, 2C, 2D, 9A, 9B, 10A, 10B	II	III	-	LR 1c
Large Indian civet	1B (Sikkim), 2A (Chamba), 2C, 2D, 6C, 7B, 9A, 9B	II	II	-	VU A1c
Malabar civet	5A, 5B	I	I	CR C2a	CR A1 bc
Small Indian Civet	1B (Sikkim), 2B, 2C, 2D, 3A, 3B, 4A, 4B, 5A, 5B, 6A, 6B, 6C, 6D, 6E, 7A, 7B, 8A, 8B, 9A, 9B,	II	III	-	LR nt
Spotted linsang	1B (Sikkim), 2C, 2D, 7B, 9A, 9B	I	II	-	VU B2 2ac

IWPA- Indian Wildlife Protection Act, CITES - Appendices of CITES, IUCN - IUCN Red List (1996). CAMP - Conservation Assessment and Management Plan for Mammals of India (CAMP Workshop) (Molur et al. 1998). Biogeographic zone - (Rodgers et al. 2000).

Conservation status

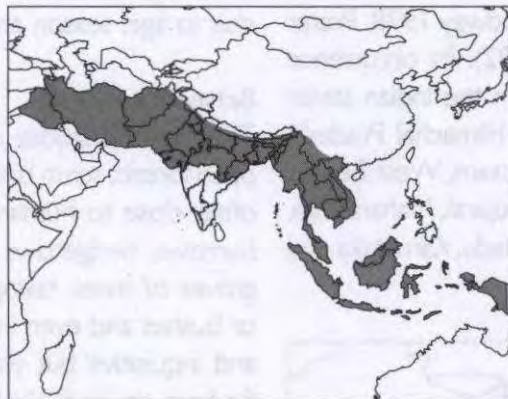
It is listed in Schedule I part I of the Indian Wildlife (Protection) Act, 1972, Appendix II of CITES, and VU B2 2ac during the CAMP Workshop.

FAMILY HERPESTIDAE**SUBFAMILY HERPESTINAE (Mongoose)****Small Indian mongoose *Herpestes javanicus* Geoffroy, 1812**

Synonym: *Herpestes auropunctatus* Hodgson, 1836

Distribution

The small mongoose is distributed through the Himalayas at an altitude of 2300 m, from Kashmir to Bhutan. In the south of Ganges it occurs in Madhya Pradesh to as far as Orissa in the east, extending eastwards to West Bengal, Assam, Manipur, Myanmar, Thailand and Malayan peninsula (Pocock 1939, Prater 1971, ZSI 1992, Choudhury 1997 a,b, 1999). It occurs westwards in Afghanistan, Baluchistan, Iran and Iraq (Pocock 1939, Medway 1978, Corbet & Hill 1992).



Range map 26

Small Indian mongoose

Description

It is small in size as compared to other mongoose species with the tail always shorter than the head and body, but usually over two-third its length. The coat is short, up to about 20 mm, soft and silky. The coat colour varies seasonally and individually. The speckling is

always fine, the contour-hair having five rings of which two are pale. The general body colour looks like olive-brown with gold-flecks. Legs have the same tint as the body, with the paws often paler. Head and body length is around 250 to 410 mm, tail 236 to 253 mm (Pocock 1941, Medway 1978, Corbet & Hill 1992).

Two subspecies are reported from India, the typical *H. javanicus auropunctatus* Hodgson, 1836 from north India is darker brown and minutely speckled with golden colour and the western desert form *H. javanicus pallipes* Blyth, 1946 which is paler in shade, dorsally grey and usually whitish below.

Behaviour

It lives in burrows, is mainly diurnal and feeds on a wide variety of small vertebrates and large invertebrates, similar to grey mongoose. Females are polyestrous, breeding throughout the year. Gestation period is around 43 days. Both sexes reach maturity within first year. The maximum-recorded life span is nine years and eight months (Acharjyo & Mohapatra 1976).

Conservation status

It is listed in Schedule IV of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES and LR 1c during the CAMP Workshop.

INDIAN MARSH MONGOOSE *Herpestes palustris* Ghose, 1965**Distribution**

The Indian marsh mongoose occurs in Salt Lake and north and south 24-Parganas and Howrah district in West Bengal, India (Ghose 1965, Ghose & Chaturvedi 1972).

Description

It is similar to small Indian mongoose in size. Honacki et al. (1982) treated it as synonym of *H. auropunctatus*. Nothing is known about its biology and ecology.

Two subspecies of small Indian mongoose occur in India: the typical *H. javanicus auropunctatus* from north India is darker brown and minutely speckled with golden colour and the western desert form *H. javanicus pallipes* is paler in shade, dorsally grey and whitish below.

The Indian marsh mongoose occurs in Salt Lake and North and South 24-Parganas and Howrah district in West Bengal, India. It is similar to small Indian mongoose in size.



Range map 27 Indian marsh mongoose

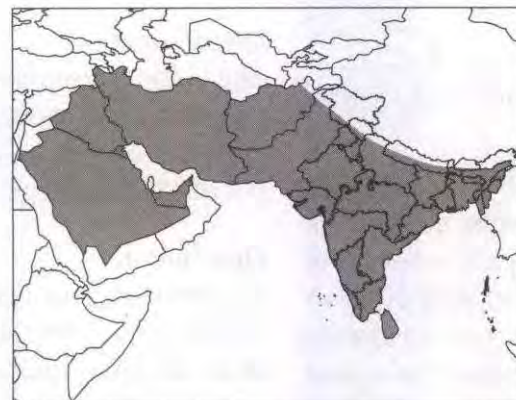
Conservation status

All species of mongoose found in India are placed in Schedule IV of the Indian Wildlife Protection Act, 1972. It was evaluated as EN B1 2abcd during the CAMP Workshop.

GREY MONGOOSE *Herpestes edwardsii* Geoffroy, 1818

Distribution

The grey or the common mongoose occurs in the whole of India from an altitude of 2100 m in the Himalayas down to Kanyakumari in the south. In the west it extends to Iran and Iraq, and in the east to China (Pocock 1939, Medway 1978, Prater 1971, Corbet & Hill 1992). Its occurrence has been confirmed from the Indian states of Jammu and Kashmir, Himachal Pradesh, Punjab, Uttar Pradesh, Assam, West Bengal, Bihar, Madhya Pradesh, Gujarat, Maharashtra, Andhra Pradesh, Tamil Nadu, Karnataka and Kerala.



Range map 28 Grey mongoose

Description

It is a medium sized tawny or yellowish grey mongoose with no stripes on the side of its neck. The tail is long, almost equal to the head and body length. The hair at the tip of the tail are pallid to ochreous-red, but never black. The contour hair of the back are harsh, longer than the rest of the body, and marked with as many as ten dark and light bands alternately arranged, giving a speckled aspect to the pelage. The legs are always darker than the body. Total length is up to 900 mm with tail length of around 450 mm (Medway 1978). The head to body length varies between 360 and 450 mm (Corbet & Hill 1992). Males are always heavier and larger than females with weights ranging from 1.34-1.7 kg and 0.89-1.12 kg respectively (Medway 1978).

Three Indian subspecies are identified, a north and central Indian race *H. edwardsii nyula* Hodson, 1836, with a fuller somewhat darker coat, a desert race *H. edwardsii ferrugineus* Blanford, 1874, with reddish fur, and a typical south Indian race *H. edwardsii edwardsii* Geoffroy, 1818. In field conditions the subspecies are difficult to identify as there is marked variation in the colour of the coat due to age, season and locality factors.

Behaviour

The grey mongoose is commonly found in open forests, scrub lands and cultivated fields, often close to human habitation. It lives in burrows, hedgerows and thickets, among groves of trees, taking shelter under rocks or bushes and even in drains. It is very bold and inquisitive but wary, seldom venturing far from cover. It climbs well. Usually found singly or in pairs. They prey on rodents, snakes, birds' eggs and hatchlings, lizards and variety of invertebrates. Along the Chambal river they occasionally predate on gharial eggs (Chowdhury 1981). They breed throughout the year, gestation period is around 60-65 days, litter size 2-5. Maturity is achieved at the age of 6 to 9 months. The longest recorded life span is 11 years and 2 months in captivity (Jarvis & Morris 1961).

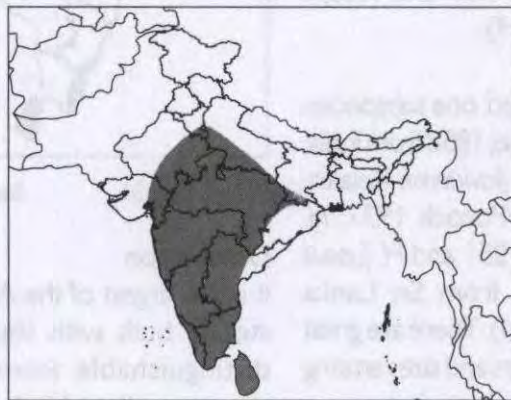
The grey mongoose is most cosmopolitan of all the Indian mongoose. It is commonly found in open forests, scrub lands and cultivated fields, often close to human habitations.

Conservation status

It is listed in Schedule IV of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES. It was evaluated as LR 1c during the CAMP Workshop.

RUDDY MONGOOSE *Herpestes smithii* GRAY, 1837**Distribution**

It is distributed in peninsular India, in Western and Eastern Ghats, extending northwards up to Madhya Pradesh, and at least up to 25° N in Rajasthan as far as Delhi and eastwards 24° N in Bihar (Pocock 1939, Prater 1971, Corbet & Hill 1992). Recent records from north India are from Madhav NP, Madhya Pradesh, Sariska TR, Rajasthan and Asola Wildlife Sanctuary, Delhi.



Range map 29

Ruddy mongoose

Description

The ruddy mongoose is very closely related to Indian grey mongoose *H. edwardsii*, but distinguished by its slightly larger size and black tipped tail extending for 2 to 3 inches at the distal end. Body is generally darker in colour with black and greyish-white speckling and a reddish cast traceable in the hair of the upper side, particularly on the head, neck and between the shoulders. The fore legs are reddish-brown and speckled, while the hind legs are brighter red. The tail is three-quarters the length of the head and body, busy at the base, and is usually carried with

the tip curved upwards, which is the identification character. Head and body length varies between 390 to 470 mm, tail length 333 to 362 mm and hind feet 78 to 84 mm (Pocock 1941, Phillips 1984, Corbet & Hill 1992). The weight varies from 0.95 to 1.85 kg. Males are larger than the females.

Of the two subspecies, the Indian race is *H. smithii smithii* Gray 1837 and the other *H. smithii zeylanicus* Thomas, 1852 found in Sri Lanka.

Behaviour

The ruddy mongoose is mainly a forest loving animal in contrast to the grey or small Indian mongoose and prefers more secluded areas. They have also been recorded from secluded paddy fields and in comparatively open fields. Like other mongoose, it hunts by day as well as by night but it is in fact crepuscular in nature. Its normal food is similar to other mongoose species including carrion.

Conservation status

It is listed in Schedule IV of Indian Wildlife (Protection) Act, 1972, and Appendix III of CITES. It does not figure in IUCN Red List. It was evaluated as LR 1c during the CAMP Workshop.

BROWN MONGOOSE *Herpestes fuscus* Waterhouse, 1838**Distribution**

The brown mongoose is found in the forests of the south Indian hill ranges at 900-1850 m altitude particularly from Virajpet in south Coorg and Ooty in the Nilgiri hills, Tiger Shola in the Palni hills, High Wavy Mountains in Madurai, and Peeramedu in Kerala (Pocock 1939, Prater 1971, Corbet & Hill 1992, Mudappa 1998). Outside India it occurs in Sri Lanka (Phillips 1984).

Description

On an average the brown mongoose is little larger than the grey mongoose and more uniformly dark brown above and especially

The ruddy mongoose is distributed in peninsular India, extending northwards up to Madhya Pradesh, Bihar, Rajasthan and Delhi. It is mainly a forest dwelling species.

The brown mongoose occurs in the Western Ghats. Though it is more common in Sri Lanka, it is rare in India.



Range map 30 Brown mongoose

below. It is heavily built with a relatively shorter tail which is only about two-thirds the length of the head and body. The dark brown pelage is often more or less speckled with yellow or tawny colour. The contour hair are less harsh and the upper half or third of the soles of the hind feet are covered with hair throughout the year. The length of the head and body is around 500 mm, tail 300 mm and weight about 2.7 kg (Phillips 1984).

Five subspecies are reported, one subspecies *H. fuscus fuscus* Waterhouse, 1858 from India, and the rest i.e. *H. fuscus flavidense* Kelaart, 1850, *H. fuscus rubidior* Pocock 1937, *H. fuscus macarthiae* Gray, 1851 and *H. fuscus siccatus* Thomas, 1924 from Sri Lanka (Pocock 1941, Phillips 1984). There are great variations in the coat colours and sizes among individuals and in all the subspecies.

Behaviour

Being rare, very little is known about this species. In Nilgiri hills it inhabits dense forests up to an altitude of 1850 m. Like its cousin *H. f. flavidense* in Sri Lanka it is commonly found around coffee and tea plantations. In its activity it appears to be more nocturnal, but is also seen during crepuscular hours. It is believed to breed in burrows, beneath rocks and tree roots, and the litter size is around three to four.

Conservation status

It is listed in Schedule IV of the Indian Wildlife (Protection) Act, 1972, Appendix III of

CITES and VU, B1 2abc during the CAMP Workshop.

STRIPED-NECKED MONGOOSE *Herpestes vitticollis* Bennett, 1835

Distribution

The striped-necked mongoose is confined to southern India, particularly in Western Ghats and other hill tracts from Coorg to Travancore and in Sri Lanka (Pocock 1939, Medway 1978, Prater 1971, Phillips 1984, Corbet & Hill 1992, Mudappa 1998).



Range map 31 Striped-necked mongoose

Description

It is the largest of the Asiatic mongoose. It is stoutly built with short limbs, invariably distinguishable from other species of mongoose by a black stripe, composed of soft underfurs and pale tips of the contour hair, starting from the back of the ear through the side of the neck, up to the shoulder. The length of the tail is about three-fifth the length of the head and body. General colour varies from grizzled dark brown and yellowish-grey to tawny-red. Three to four inches of the tip of the tail is jet black. Head and body length is between 430 to 530 mm (Pocock, 1939, Phillips 1984, Corbet & Hill 1992) tail 304.5 to 325 mm and weight ranges from 1.36 to 2.73 kg.

Two subspecies are known from India. The typical form *H. vitticollis vitticollis* Bennett, 1835 from Western Ghats, Coorg and

The striped-necked mongoose is largest of the Asiatic mongoose. It occurs in southern India, particularly in Western Ghats, and in Sri Lanka. It is typically a forest dwelling species.

Table 6. Summary of the distribution and conservation status of the Indian herpestid species.

Species	Distribution Biogeographic zones	Conservation status			
		IWPA	CITES	IUCN	CAMP
Small Indian mongoose	2C, 2D, 3A, 3B, 4A, 4B, 6A, 6B, 6C, 7A, 7B, 9A, 9B	IV	III	—	LR 1c
Indian marsh mongoose	8B	IV	—	—	EN B1 2abcd
Grey mongoose	2A, 2B, 2C, 3A, 3B, 4A, 4B, 5A, 5B, 6A, 6B, 6C, 6D, 6E, 7A, 7B, 8A, 8B, 9A, 9B	IV	III	—	LR 1c
Rudy mongoose	4A, 4B, 5A, 5B, 6A, 6B, 6C, 6D, 6E	IV	III	—	LR 1c
Brown mongoose	5A, 5B	IV	III	—	VU 2abc
Striped-necked mongoose	5A, 5B	IV	III	—	LR nt
Crab-eating mongoose	2C, 2D, 7B, 9A, 9B	IV	III	—	VU B1 2ac

IWPA- Indian Wildlife Protection Act, CITES - Appendices of CITES, IUCN - IUCN Red List (1996). CAMP - Conservation Assessment and Management Plan for Mammals of India (CAMP Workshop) (Molur *et al.* 1998). Biogeographic zone - (Rodgers *et al.* 2000).

The crab-eating mongoose is more aquatic in habit than other species of mongoose. It is largely nocturnal, and hunts along the stream banks looking for crabs, frogs and fish.

Kerala is characterised by the dominance of chestnut red on its coat and the second *H. vitticollis inornatus* Pocock 1941 from north Kanara has no red tinge on the upper side of the body.

Behaviour

It is not as common around human habitations as other species of mongoose and is typically a forest dwelling species. It is rarely found far away from water sources. It is often found in swamps and rice fields. This indicates that probably it preys upon frogs and crabs. In Sri Lanka there is record of it preying on mouse deer, hares, rodents, jungle fowl and reptiles (Phillips 1984). Though it is diurnal in habit it is more active during crepuscular period. The litter size is probably two to three.

Conservation status

It is listed in Schedule IV of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES and LR nt during the CAMP Workshop.

CRAB-EATING MONGOOSE *Herpestes urva* Hodgson, 1836

Distribution

The crab-eating mongoose is distributed in Nepal, West Bengal, Assam, including Naga hills, eastward to Myanmar, south China including Formosa and Hainan, Laos PDR and the northern part of Malaysia (Wroughton 1917, Pocock 1939, Medway 1978, Corbet & Hill 1992, ZSI 1992, Choudhury 1997a,b, 1999).



Range map 32

Crab-eating mongoose

BOX II

The meaning of the IUCN Red List Categories and Criteria

CATEGORIES

Critically Endangered (CR) - a taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the immediate future as defined by the criteria.

Endangered (EN) - a taxon is Endangered when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future as defined by the criteria.

Vulnerable (VU) - a taxon is Vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium term future as defined by the criteria.

Lower Risk (LR) - a taxon is Low Risk when it has been evaluated and does not qualify for any of the threatened categories, Critically Endangered, Endangered, Vulnerable, or Data Deficient. (LR-nt - near threatened, LR-lc - least concern, LR-cd - conservation dependent).

Data Deficient (DD) - a taxon is Data Deficient when there is inadequate information to make a direct or indirect assessment of its risk of extinction based on its distribution and/or population status.

Not evaluated (NE) - a taxon is Not Evaluated when it has not yet been assessed against the criteria.

CRITERIA

A - Population reduction - (1) observed, inferred, suspected or estimated reduction, or (2) projected or predicted reduction of at least 20% (VU), or 50% (EN), or 80% (CR) in 10 years or 3 generations whichever is longer based on (a) Direct observation; (b) index of abundance appropriate for the taxon; (c) decline in areas of occupancy, extent of occurrence and/or quality of habitat; (d) actual or potential levels of exploitation; (e) effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.

B - Restricted distribution - Extent of occurrence estimated to be less than 20,000 sq km (VU), or 5,000 sq km (EN) or 100 sq km (CR) and/or area of occupancy estimated to be less than 2000 sq km (VU), or 500 sq km (EN), or 10 sq km (CR), and qualifying for any two of the following: (1) severely fragmented, or known to exist in not more than 10 locations (VU), or 5 locations (EN), or single location (CR); (2) continuing decline, observed, inferred, projected in any (a) extent of occurrence, (b) area of occupancy; (c) area, extent and/or quality of habitat; (d) number of locations or subpopulations; (e) number of mature individuals; (3) extreme fluctuation in either (a) extent of occurrence, (b) area of occupancy, (c) number of populations or subpopulations, (d) number of mature individuals.

C - Population estimates - population estimated to number less than 10,000 (VU), or 2,500 (EN), or 250 (CR) mature individuals and either (1) estimated, continuing decline of at least 10% in 10 years or 3 generations or whichever is longer (VU), or 20% in 5 years or 2 generations, whichever is longer (EN), or 25% in 3 years or 1 generation whichever is longer (CR) OR in (2) continuing decline, observed, projected, inferred, number of mature individuals and population structure in the form of either (a) severely fragmented [no subpopulation estimated to contain more than 1000 (VU), or 250 (EN), or 50 (CR) mature individuals]; (b) all individuals are in a single subpopulation.

D - Restricted populations - (1) Population estimated to number less than 1000 (VU), or 250 (EN), or 50 (CR) mature individuals; (2) Population restricted in area of occupancy of less than 100 sq km or less than 5 locations (VU).

E - Probability of extinction - quantitative analysis showing the probability of extinction in the wild is at least 10% in 100 years (VU), or 20% in 20 years or 5 generations, whichever is longer (EN), or 50% in 10 years or 3 generations, whichever is longer (CR).

Contributed by: Sally Walker & Sanjay Molur, Source: IUCN 1994

Description

The crab-eating mongoose is similar in size to stripe-necked mongoose, with comparatively short tail. A stripe of white contour hair extends from the corner of the mouth to the shoulder. The sole of the hind foot is hairy nearly down to the hallux. The general colour of the coat above is black and white to dusky iron grey. The contour hair are white at the tip. The woolly under fur is dark brown at the base and pale brownish yellow at the tip. Head to body length is 450-500 mm, tail without hair at the end is 250-300 mm and weight varies from 1.8 - 2.3 kg.

Behaviour

The crab-eating mongoose is more aquatic in habit than other species of mongoose. It is largely nocturnal and hunts along the stream banks feeling under stones and in rock crevices with its paw for fish, crabs, snails and frogs. It also eats small mammals, birds and reptiles and possibly insects as well. The litter size is small, possibly two. The longest recorded life span is around 12 years in captivity (Acharjyo & Mohapatra 1976).

Conservation status

It is listed in Schedule IV of the Indian Wildlife (Protection) Act, 1972, Appendix III of CITES, and VU, B1 2ac during the CAMP Workshop.

CONSERVATION SIGNIFICANCE OF MUSTELIDS, VIVERRIDS AND HERPESTIDS

The mustelids, viverrids and herpestids consist of around 136 species distributed worldwide, of which 32 species occur in India. Though in terms of diversity they outnumber other carnivores, they are not as intricately involved in human culture as are felids and canids. Nevertheless, over the centuries human beings have been exploiting them either for fur, meat or for the secretion that they produce from their scent glands. Around 30% of the confiscated wildlife skins in India are of otters. Mongoose hair/bristles are used for making paint brushes. Besides several

tribes eat meat of mustelids, viverrids and herpestids. They are also kept as pets to eradicate snakes, scorpions and other domestic pests, or merely for amusement. In view of the general ferocious nature of the members of this group, magical and aphrodisiac powers have been attributed to the internal organs, fat and other body parts of a wide variety of species. These are extensively used as medicine or as amulets.

Because of their small size, together with small cats and red panda this group is termed as small carnivores. Unlike large carnivores, which depend on a relatively narrow prey base, the small carnivores have a wide dietary range such as mammals, birds, reptiles, amphibians, fish and a variety of invertebrates particularly insects and also fruits. Thus, the presence of large assemblages of small carnivores is an indicator of rich biological diversity. Nevertheless, mustelids, viverrids and herpestids, particularly the tropical forms are among the least known carnivores. An appreciable number of species are only known from a few museum skulls or skins (Schreiber *et al.* 1989). This is true for India too. Even basic ecological information on common species, such as mongoose and small Indian civets is lacking.

The small carnivores use large variety of habitats ranging from rain forests to arid deserts, high altitude ecosystems, wetlands, and coastal and marine ecosystems for their sustained reproduction. Conservation of natural habitats at a landscape level should therefore be the highest priority for ensuring survival of the small carnivores and also other wildlife. India has a large network of Protected Areas representing different biogeographic zones and habitat types, which ensure survival of a wide range of wildlife. With increasing human population and associated development activities in the last century, it is not known what is happening to small carnivore populations. Effort should be made to undertake more studies to determine the status of small carnivores in India.

The presence of large assemblages of small carnivores is an indicator of rich biological diversity.

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