Status Report - 7

Lesser Known Carnivores of the Western Ghats

DIVYA MUDAPPA

THE WESTERN GHATS is formed by a chain of mountains, 1,600 km long, stretching along the west coast of India from 8° N to 21° N. It encompasses various forest types such as the tropical rainforests, moist and dry deciduous forests and scrub jungles. Low and high altitude grasslands and rivers are also important habitats for some small carnivores. These habitats in the Western Ghats range up to 2,700 m altitude. Each of these habitats contains distinct assemblages of small carnivores.

In the Western Ghats, there are 13 species of small carnivores *viz.* 4 herpestids, 4 viverrids and 5 mustelids. Apart from these the jungle cat *Felis chaus*, leopard cat *Prionailurus bengalensis*, rusty-spotted cat *P. rubinginosus* and fishing cat *P. viverrinus* are also found here. Due to their elusive habits, little is known of their ecology in the region. In this article, I present a brief review of the natural history, distribution and conservation status of all the species of mustelids, viverrids and herpestids found in the Western Ghats.

THE MUSTELIDS

Eurasian or common otter *Lutra lutra*

It has a widespread global distribution and also occurs in the Western Ghats. It is mostly Palaearctic in distribution, but also occurs in south and southeast Asia. It is a montane species in the Indo-Malayan region but coastal elsewhere. The south Indian animals are smaller and less grizzled on the dorsal side than the Himalayan individuals. It lives in lairs among rocks and boulders along streams and lakes in the mountains. Its activity peaks at night or dusk and dawn.

Smooth-coated otter *L. perspicillata*

It is also widespread in the Western Ghats. It is about the same size as the common otter, but with a smooth and sleek coat, blackish to chocolate brown in colour. It is commonly found in plains, including arid areas. These animals are often seen in groups in large rivers, lakes and reservoirs such as in Periyar Tiger Reserve. They are more diurnal or crepuscular in their habit. The species is known to readily adapt to hunting in forests, when water sources dry up (Prater 1971).

Small-clawed otter *Aonyx cinerea*

It is about half the size of the common otter. It is dark brown above and pale yellow below. Its distribution overlaps that of the common otter. This is also a species of hilly mountain streams in the Western Ghats. There is very little information on this species due to lack of studies.

Honey badger or ratel *Mellivora capensis*

It is an animal of the arid regions of Peninsular India. It avoids heavy rainfall tracts. Its diet comprises of small mammals, other vertebrates, invertebrates, fruits and honey. Information on its ecological requirements and even its distribution is lacking.

Nilgiri marten *Martes gwatkinsii*

It is the southern counterpart of the yellow-throated marten *Martes flavigula* of the

Wildlife Institute of India
Post Box # 18,
Dehra Dun. 248 001

Siwaliks and the Himalayas. It is endemic to the Western Ghats and known from south of 12° N (Coorg). It is a beautiful animal, unmistakable for its mostly black body with a stout tail, typical weasel like legs and a flat, pointed head. The throat is brightly coloured, ranging from pale yellow to bright orange. Its gait is weasel-like, while hopping on the ground and it seems very comfortable even on trees. It has been observed to traverse long distances on the canopy in undisturbed, dense and evergreen forests (*personal observations*). Moist and tropical rainforests are its preferred habitats (within an altitudinal range of 300-1200 m). It is mostly diurnal in its activity.

Nilgiri martens have been observed to hunt small vertebrates like mouse deer and *Varanus* (N. M. Ishwar, *pers. comm.* and *personal observation*). There is a report of them feeding on the nectar of *Ceiba pentandra* (silk cotton tree, Hutton 1944). In some areas of their distribution (as in Coorg), they are considered pests as they raid honey from boxes in farms (Ajith Kumar, *pers. comm.*). They are elegant animals about whom very little is known.

Five species of mustelids and four species each of viverrids and herpesitds occur in Western Ghats. Of these, Nilgiri marten and Malabar civets are endemic.

The species has been reported from various parts of the southern Western Ghats (Madhusudan 1995, Yoganand & Kumar 1995, Christopher & Jayson 1996, Gokula & Ramachandran 1996, Mudappa 1998).

THE VIVERRIDS

Small Indian civet *Viverricula indica*

This species occurs in almost all kinds of habitats, including the arid zones of western India. It prefers scrub and dry forests or grasslands and is relatively rare in undisturbed rainforests (Prater 1971, Mudappa 1998). Garbage dumps near settlements are known to attract these civets. They are omnivorous in diet and are known to feed largely on insects. They den in burrows and crevices under rocky outcrops and hedges. Secretions from their perineal glands are used to mark territories.

The only ecological study is that of Rabinowitz (1991) in Thailand. This study showed that they are nocturnal in habit and have home ranges of about 3 km^2. Despite being good climbers, they have been observed to forage largely on the ground. Small Indian civets are commercially exploited for the "civet" or scent, extracted at regular intervals from the perineal gland using a special wooden spoon. The animals are kept in captivity, or sometimes the "civet" is collected from wild, poached animals. This "civet" or scent is used in perfume industries and in Indian medicine for its purported aphrodisiac properties.

Malabar civet *Viverra civettina*

Endemic to the Western Ghats, it is similar to the large-spotted civet *V. megaspila* found in southeast Asia. This is an extremely rare species, known only from a few specimens. It is distinguished from the small Indian civet by its larger size (Table 1) and the black crest of hair running along the length of the back. The tail has fewer and broader rings than in the small Indian civet. The white bands are incomplete around the tail because of the black line extending dorsally along the length of the tail. The tail tip is black. The Malabar civet is probably terrestrial and is known for its use of latrine sites or 'civetries'.

The Malabar civet has been mostly recorded from the coastal hinterland and coastal evergreen forests in southwest India below 14° N (Schreiber *et al.* 1989). Most of its habitat has been lost to the ever-increasing demands of the human population. It was last seen in early 1900s and rediscovered in 1989 in Elayur, Kerala, based on evidence from a fresh skin (Kurup 1989). A survey conducted by the Wildlife Institute of India revealed that the Malabar civet still exists (and is not extinct as listed in IUCN Red Data Book) but is probably critically endangered (Ashraf *et al.* 1993). Its conservation status is currently unknown and it may occur only in low numbers in small pockets within the range

of its distribution. The species may follow the Indian cheetah to extinction if immediate action is not taken for its conservation.

Common palm civet *Paradoxurus hermaphroditus*

This species almost entirely overlaps in distribution with the small Indian civet (except in very arid areas), the masked palm civet *Paguma larvata* (except in higher altitudes of the Himalayas) and the golden palm civet *Paradoxurus zeylonensis* in Sri Lanka. It is confined to moist and dry deciduous forest and drier habitats at lower altitudes.

Pocock (1933a,b, 1934) gives a detailed account of the morphological variation in the common palm civet over the range of its distribution. One of the earliest studies of natural history of this species was by Bartels (1964). It was observed to be predominantly frugivorous in diet and probably plays a major role as seed disperser. The palm civet uses prominent sites such as rocks and fallen logs along the trails in forest to defecate. Like most other civets, this species is also nocturnal and arboreal, living, resting and foraging on trees.

Some ecological requirements of this species are known from studies in Nepal and Thailand (Rabinowitz 1991, Joshi *et al.* 1995, Grassman 1998). The common palm civets were found to range over larger areas in drier forests and habitats with disturbances such as fire and over smaller areas in evergreen forests with year-round food availability. Their home ranges varied between 1 and 17 km² in Thailand (Rabinowitz 1991, Grassman 1998). The average monthly home range in Nepal was 14.1 hectares (Joshi *et al.* 1995).

Brown palm civet *P. jerdoni*

It is also known as Jerdon's palm civet. It replaces the common palm civet in tropical rainforests of the Western Ghats south from Coorg (12° N). It has a uniformly brown pelage, darker around the head, neck, shoulder, legs and tail. The dark tail sometimes has a white tip. It has no distinct markings on the body or the face as in the common palm civet. Sometimes the pelage may be slightly grizzled. A distinctive feature is the reversed direction of hair growth on the nape, similar to that in the golden palm civet of Sri Lanka. It is about as large as the common palm civet, but with a long and sleek tail.

The brown palm civet is an endemic, restricted to the rainforest tracts of the Western Ghats (up to 12° N). They have been reported from an altitudinal range of 500-1300 m, being more common in higher altitudes (Mudappa 1998). Recent photographs or sight records are from Anamalais, Nilgiris, Coorg (Schreiber *et al.* 1989 and references therein), Silent Valley (Christopher & Jayson 1996) and Kalakad-Mundanthurai Tiger Reserve (Mudappa 1998). The brown palm civets are probably sympatric with the common palm civets only in transition zones between the rainforests and drier habitats.

Earlier it was known only from museum collections or sight records and captive animals in four zoos (Schreiber *et al.* 1989). The first ecological study of the species is being carried out (using radio-telemetry) in the rainforests of Kalakad-Mundanthurai Tiger Reserve (by the author). The animals were found to be predominantly frugivorous, highly arboreal and strictly nocturnal in habit, living a solitary life. The brown palm civets were found to feed on nearly 40 rainforest tree and liana fruit species. They seem to have smaller area requirements than strictly carnivorous species of similar body sizes. Both year-round food availability and habitat quality (canopy contiguity, habitat structure, etc.) are likely to determine their ranging habits. They play an active role in seed dispersal of many rainforest tree and liana species.

THE HERPESTIDS

Common grey mongoose *Herpestes edwardsii*

It is the most common species of mongoose in India. The morphological measurements of all the mongoose and other species of small carnivores are given in Table 1. There are only anecdotal notes of the species (Prater 1971). A taxonomic review is given by Pocock (1941) and notes on its distribution can be found in Corbet & Hill (1992). The species is more popular for its enmity with snakes, particularly cobras.

Ruddy mongoose *H. smithii*

It is similar to the common grey mongoose, but is more an animal of forested areas in western, central and southern India, including the Western Ghats. A subspecies is found in Sri Lanka. In the Western Ghats, the ruddy mongoose can be found in dry and moist deciduous forests and disturbed areas. It can be distinguished from the common grey mongoose by its brown pelage with a rufous tinge, darker feet and black tip to the tail. This species may be relatively common and widespread.

Indian brown mongoose *H. fuscus*

It is found in the Western Ghats, south of Coorg (12° N) and in Sri Lanka. The Western Ghats form has a darker brown coat than its Sri Lankan counterpart. It has a characteristic bushy, conical tail and black feet. The brown mongoose in the Western Ghats occurs in tropical rainforests up to an altitude of 1850 m. Even within its range of distribution in the Western Ghats, it is relatively rare (Mudappa 1998). It is also found in coffee plantations. The Sri Lankan race is more common and is considered a major pest of poultry.

Stripe-necked mongoose *H. vitticollis*

It is restricted to the Western Ghats in India and Sri Lanka. In the Western Ghats, it is found south from north Kanara in Karnataka. The species has a distinct black stripe with a white border on the sides of the neck. Its fur is a reddish brown, being more reddish in the southern populations. The stripe-necked mongoose occurs in well-wooded habitats, particularly in the dry and moist deciduous forests. It is known to prefer streams and rivers and is believed to feed extensively on crabs. There are reports of it hunting small mammals such as mouse deer in Sri Lanka (Prater 1971).

CONCLUSIONS

As can be gathered by the specific accounts, very little is known of the ecology and conservation status of most small carnivores in the wild. Most of these are not common in captivity either. Even knowledge of their range of distribution is lacking. Small carnivores form diverse assemblages in tropical forests (Rabinowitz 1991). A few studies have shown that habitat loss and alterations adversely affect wide ranging carnivorous and frugivorous mammals (Heydon & Bulloh 1996). A number of small carnivore species are considered vulnerable and threatened in tropical Asia (Schreiber *et al.* 1989). Most small carnivores are hunted throughout the world for meat and are an important protein source for many local tribal communities in the tropics. Often, accidental trapping contributes to the death of many small carnivores. Meat, fur, scent extract, internal organs, fat and skin are used in many local Indian medicines for their purported aphrodisiac and magical properties. True civets (such as African and small Indian civets) are used to extract 'civet' for the scent glands, to be used as a base in perfume industries. This is got from either wild caught civets or civets kept in farms as in Kerala.

In the Western Ghats, hunting or poaching for commercial use in local markets is negligible. Most people are not even aware of the existence of many of the species found in the Western Ghats. Sometimes, mustelids,

Table 1. Morphological measurements of small carnivores of the Western Ghats.

Species	Head and body length (cm)	Tail length (cm)	Body weight (kg)	Source*
FAMILY MUSTELIDAE				
1. Nilgiri marten	30-60	38-43	?	1,2
2. Honey badger	60	15	8-10	1,2
3. Common otter	54-80	45	?	1,2
4. Smooth-coated otter	52-75	40-45	7-11	1,2
5. Small clawed otter	36-55	25-35	3-6	1,2
FAMILY VIVERRIDAE				
6. Malabar civet	c. 76	c. 45	?	1,2
7. Small Indian civet	46-63	30	3-4	1,2
8. Common palm civet	42-69	c. 60	2.7-4.5	1,2
9. Brown palm civet	46-62	40-50	2-3.6	3
FAMILY HERPESTIDAE				
10. Common grey mongoose	36-45	45	1.4	1,2
11. Ruddy mongoose	39-47	c. 45	c. 1.5	1,2
12. Brown mongoose	33-50	30	2.7	1,2
13. Stripe-necked mongoose	43-53	c. 40	3.2	1,2

* 1 = Corbet & Hill 1992, 2 = Prater 1980 and 3 = Mudappa, unpublished data

viverrids and herpestids are captured from the wild and sold to private collections and zoos. Road kills are found commonly on busy highways, both within and outside wildlife reserves. The extent of persecution of small mammals in the Western Ghats is not clearly known. However, if not checked immediately, aided by habitat loss and fragmentation, their decline may go unnoticed until it is too late.

As long as they don't antagonise man, more widespread, common and adaptable species such as the common palm civet and the common grey mongoose are likely to benefit from expansion of human habitation and activities. The fate of more restricted and endemic species such as the brown palm civet, Malabar civet and the Nilgiri marten remains threatened by habitat loss and fragmentation. It is time that more attention is paid to small carnivores to understand their importance in the ecosystem and their conservation status. Research on the ecology and behaviour of all small carnivores needs to be encouraged. Protection of large tracts of undisturbed habitats and key resources in disturbed areas will help in the conservation of small carnivores.

ACKNOWLEDGEMENTS

I would like to thank Dr. Ravi Chellam, Dr. Ajith Kumar and Mr. B. C. Choudhury for their constant encouragement and support to carry out the small carnivore study. The Tamil Nadu Forest Department provided permission and support in the field. Many people, particularly Sridhar, Karthik, Ishwar and Jeganathan, contributed much for the study in the field. WII, USFWS, CWS and WCS provided financial support.

REFERENCES

Ashraf, N.V.K., Kumar, A. & Johnsingh, A.J.T. (1993) A survey of two endemic civets of the Western Ghats: the Malabar civet (*Viverra civettina*) and the brown palm civet (*Paradoxurus jerdoni*). *Oryx*, **27**, 109-114.

Bartels, E. (1964) On *Paradoxurus hermaphroditus javanicus* (Horsfield, 1824) the common palm civet or toddy cat in western Java: notes on its food and feeding habits, its ecological importance for wood and rural biotopes. *Beaufortia*, **124**, 193-201.

Christopher, G. & Jayson, E.A. (1996) Sightings of Nilgiri marten (*Martes gwatkinsii* Horsfield) at Peppara Wildlife Sanctuary and Silent Valley National Park, Kerala, India. *Small Cam. Conserv.*, **15**, 3-4.

Corbet, G.B. & Hill, J.E. (1992) *The mammals of the Indomalayan region: a systematic review.* British Museum (Nat. Hist.), London.

Gokula, V. & Ramachandran, N.K. (1996) A record of the Nilgiri marten (*Martes gwatkinsi* Horsfield) in Upper Bhavani. *J. Bombay nat. Hist. Soc.*, **93**, 82.

Grassman, L.I. Jr. (1998) Movements and fruit selection of two Paradoxurinae species in a dry evergreen forest in southern Thailand. *Small Cam. Conserv.*, **19**, 25-29.

Heydon, M.J. & Bulloh, P. (1996) The impact of selective logging on sympatric civet species in Borneo. *Oryx*, **30**, 31-36.

Hutton, A.F. (1944) Feeding habits of the Nilgiri marten. *J. Bombay nat. Hist. Soc.*, **48**, 374-375.

Joshi, A.R., Smith, J.L.D. & Cuthbert, F.J. (1995) Influence of food distribution and predation pressure on spacing behaviour of palm civets. *J. Mamm.*, **76**, 1205-1212.

Kurup, G.U. (1989) The rediscovery of the Malabar civet (*Viverra megaspila civettina* Blyth) in India. *Tigerpaper*, **16**, 13-14.

Madhusudan, M.D. (1995) Sighting of the Nilgiri marten (*Martes gwatkinsi*) at Eravikulam National Park, Kerala, India. *Small Carnivore Conservation*, **13**, 6-7.

Mudappa, D. (1998) Use of camera-traps to survey small carnivores in the tropical rainforest of Kalakad-Mundanthurai Tiger Reserve, India. *Small Carnivore Conservation*, **18**, 9-11.

Pocock, R.I. (1941) *The Fauna of British India including Ceylon and Burma. Vol. II.* Taylor & Francis, London, 503 pp.

Pocock, R.I. (1934) The palm civets or 'Toddy cats' of the genera *Paradoxurus* and *Paguma* inhabiting British India. *J. Bombay nat. Hist. Soc.*, **37(1)**, 172-192.

Pocock, R.I. (1933a) The palm civets or "toddy cats" of the genera *Paradoxurus* and *Paguma* inhabiting British India. *J. Bombay nat. Hist. Soc.*, **36**, 855-877.

Pocock, R.I. (1933b) The palm civets or "toddy cats" of the genera *Paradoxurus* and *Paguma* inhabiting British India. *J. Bombay nat. Hist. Soc.*, **37**, 172-192.

Prater, S.H. (1971) *The book of Indian animals.* III editionn. Bombay Natural History Society, Oxford University Press, Bombay, 324 pp.

Rabinowitz, A.R. (1991) Behaviour and movements of sympatric civet species in Huai Kha Khaeng Wildlife Sanctuary, Thailand. *J. Zool.*, **223**, 281-298.

Schreiber, A., Wirth, R., Riffel, M. & Van Rompaey, H. (1989) *An Action Plan for the Conservation of Mustelids and Viverrids.* IUCN, Gland, Switzerland. 99 pp.

Yoganand, T.R.K. & Kumar, A. (1995) The distribution of small carnivores in the Nilgiri Biosphere Reserve, southern India: a preliminary report. *Small Carnivore Conservation*, **13**, 1-2.