

SMALL CARNIVORES OF KARNATAKA: DISTRIBUTION AND SIGHT RECORDS¹H.N. KUMARA^{2,3} AND MEWA SINGH^{2,4}¹Accepted November 2006²Biopsychology Laboratory, University of Mysore, Mysore 570 006, Karnataka, India.³Email: lonnavallik@gmail.com⁴Email: msingh@psychology.uni-mysore.ac.in

During a study from November 2001 to July 2004 on ecology and status of wild mammals in Karnataka, we sighted 143 animals belonging to 11 species of small carnivores of about 17 species that are expected to occur in the state of Karnataka. The sighted species included Leopard Cat, Rustyspotted Cat, Jungle Cat, Small Indian Civet, Asian Palm Civet, Brown Palm Civet, Common Mongoose, Ruddy Mongoose, Stripe-necked Mongoose and unidentified species of Otters. Malabar Civet, Fishing Cat, Brown Mongoose, Nilgiri Marten, and Ratel were not sighted during this study. The Western Ghats alone account for thirteen species of small carnivores of which six are endemic. The sighting of Rustyspotted Cat is the first report from Karnataka. Habitat loss and hunting are the major threats for the small carnivore survival in nature. The Small Indian Civet is exploited for commercial purpose. Hunting technique varies from guns to specially devised traps, and hunting of all the small carnivore species is common in the State.

Key words: Felidae, Viverridae, Herpestidae, Mustelidae, Karnataka, threats

INTRODUCTION

Mammals of the families Felidae, Viverridae, Herpestidae, Mustelidae and Procyonidae are generally called small carnivores. This category excludes Family Canidae. About 37 species of small carnivores are reported from India. They belong to the families Felidae (cats), Viverridae (civets, linsangs and binturong), Herpestidae (mongooses), Procyonidae (Red Panda) and Mustelidae (otters, martens, weasels, and badgers). Karnataka state may have 16 to 17 species of small carnivores, being a highly diverse group of mammals.

Small carnivores occupy a variety of habitats ranging from dry plains, thick evergreen forests to coastal plains. However, in Karnataka most species are restricted to the forests of the Western Ghats. They play an important role as pest controllers, prey base for many animals, seed dispersers and pollinators. Some of them are also known to kill domestic chickens, and hence they are considered pests. Most species have similar food habits, feeding mostly on invertebrates, amphibians, reptiles, birds and small mammals. Although they are called carnivores, some of them also feed on fruits and seeds. Many of them are nocturnal in habit, solitary in nature, small in body size and occupy habitats with thick vegetation. Such cryptic nature of these animals made it difficult to study them, and as a result, we know little about them.

There are no detailed studies from Karnataka on any aspect of small carnivores. This is true also for other regions of India, as well as other parts of the world. However, few studies have been initiated in recent years to document the ecological aspects of these species in peninsular India

(Mukherjee 1989; Mudappa 2001; Rajamani *et al.* 2003; Mukherjee *et al.* 2004). Other than these studies, most of the information on these animals comes from anecdotes or sight records, which no doubt, have significantly contributed in understanding the distribution and comparative status of these species. We have attempted to gather basic information on the distribution of small carnivores through direct sightings, and from secondary sources in Karnataka. Each species being elusive requires a long-term investigation, even to learn its distribution and basic biology. What is presented in this paper, therefore, is an updated review based on previous information, and data from the present study.

STUDY SITE

Karnataka State is located between 11° 31'-18° 45' N and 74° 12'-78° 40' E with a total area of 1,91,791 sq. km. The State receives rainfall between 450 and 7,500 mm annually, with a mean rainfall of 1,975 mm. Karnataka has been divided into four biogeographical zones, these include Coastal Karnataka with mangrove forests, Hill Region (the Western Ghats) with rainforests and moist deciduous forests, Southern Plateau and Northern Plains with deciduous forests, scrub forests and open grasslands (Prasad *et al.* 1978; Karanth 1986).

METHODS

The present study was carried out from November 2001 to December 2006 as a part of a larger study on mammals in

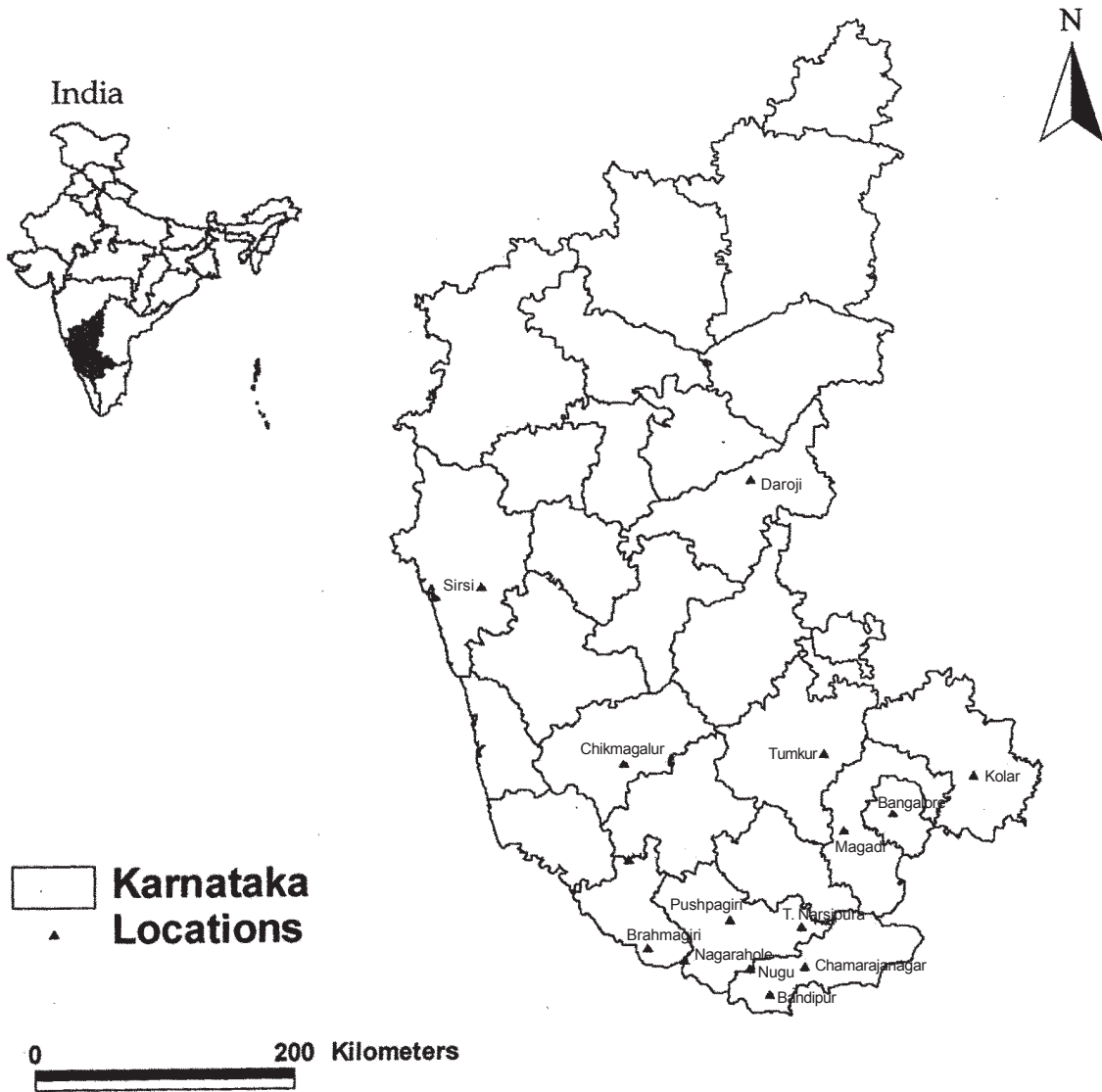


Fig. 1: Map of Karnataka with some localities mentioned in the text

Karnataka. During this period, we travelled *c.* 30,000 km across different talukas* of all districts** of the State. During these visits, we gathered secondary information on occurrence of species in the past, present status of the species, hunting practices in the region, man-animal conflict and pressure on wildlife by talking to the locals (especially elders), hunters, shepherds and forest personnel.

Apart from this, we also conducted a vehicular road survey of 9,853 km in different forests. On the basis of the information from secondary data, literature, forest types and forest status, we selected a few sites for intensive study. In those selected sites, we made 'Recky Walks' (Walsh and

White 1999) of a total of 1,808 km during day and 1,096 km during night. The day survey was made from 0600 hrs, covering about 5 km/day at 0.8 km/hr, on both pre-existing trails and new routes. A pedometer recorded the distance walked. The routes were laid through different forest types. The direct evidence of traps and snares, animal remains left by hunters, hunting camps and presence of hunters was recorded in order to assess the biotic pressures. The night survey was done on foot and in vehicles; we walked after 2000 hrs on pre-existing trails at the speed of 0.5 km/hr, flashing light on both sides of the trail. During the vehicular survey, a researcher sat atop a jeep moving at a speed of 5 to 10 km/hr and flashed light connected to the jeep battery. Whenever an animal was spotted and its identity was doubtful, it was approached as close as possible and a 1millionCP spotlight

* A *taluka* is a revenue jurisdictional unit of about 1000 sq. km.

** A *District* is a revenue jurisdictional unit of eight to twelve talukas.

was flashed. The details on the methods adopted for data collection on hunting practices are published elsewhere (Kumara and Singh 2004).

OBSERVATIONS

Table 1 presents a summary of the information on different species regarding their IUCN status (IUCN 2003), place in various Schedules of the Indian Wildlife (Protection) Act 1972, and the type of habitat inhabited by each species. We sighted a total of 143 animals of 11 species of small carnivores in the State during the present study (Table 2).

Family Felidae

Four species of small cats – Leopard Cat (*Prionailurus bengalensis*), Rustyspotted Cat (*P. rubiginosus*), Fishing Cat (*P. viverrinus*) and Jungle Cat (*Felis chaus*) – are expected to be present in the State. The Jungle Cat is the largest, while the Rustyspotted Cat is the smallest weighing 1-2 kg (Nowell and Jackson 1996). Jungle Cat has the widest distribution globally; Fishing and Leopard cats are distributed in several Southeast Asian countries, and Rustyspotted Cat is endemic to India and Sri Lanka (Nowell and Jackson 1996).

Leopard Cat: It has been reported to occur in some reserves of Karnataka (Karanth 1986), on the basis of secondary information. A total of eleven animals were sighted

during this survey: five in Sharavathi Valley Wildlife Sanctuary, two each in Bandipur National Park and Talakavari Wildlife Sanctuary, and one each in Pushpagiri Wildlife Sanctuary and in a coffee estate in Virajpet adjacent to Brahmagiri Wildlife Sanctuary in Kodagu district (Fig. 1). The animal in the coffee estate was seen among bushes, along the fence of the estate. The local information revealed that Leopard Cats are quite common in Kodagu. The species is found to occur along the forests of the Western Ghats, and also adjacent deciduous forests. No information was available from the drier plains of the State. It has also been sighted on the fringes of a coffee estate adjacent to Bhadra Wildlife Sanctuary in Chikmagalur (Narsimha, pers. comm.). Leopard Cats have often been recorded in evergreen forests and adjacent croplands in Kalakkad-Mundanthurai Tiger Reserve (Mudappa 2002) and Indira Gandhi Wildlife Sanctuary (Kumar *et al.* 2002).

Rustyspotted Cat: We sighted three Rustyspotted Cats during the study period. One animal was sighted in Nugu, one in Bandipur National Park and one in Sira of Tumkur. The sighting in Nugu was at 1950 hrs, on a fig tree (*Ficus bengalensis*) at a height of about 5 m, the tree was 16 m tall. Because of the disturbance caused by our presence, the animal moved to an open area and became completely visible to us. We watched the animal for about 20 minutes. The white ventral portions were dotted with black spots. The dorsal gray hair with a reddish tinge had rusty spots, and the tail was without

Table 1: Official status and distribution of small carnivores of Karnataka

Family	Common name	Scientific name	IWPAStatus	IUCN Red List status	Distribution
Felidae	Leopard cat	<i>Prionailurus bengalensis</i>	I		1,2,3?
Felidae	Rustyspotted cat	<i>Prionailurus rubiginosus</i>	I	VU	2?,3,4
Felidae	Fishing cat	<i>Prionailurus viverrinus</i>	I	VU	1?
Felidae	Jungle cat	<i>Felis chaus</i>	II		1,2,3,4
Viverridae	Malabar civet	<i>Viverria civettina</i>	I	CR	1?
Viverridae	Small Indian civet	<i>Viverricula indica</i>	II		1,2,3,4
Viverridae	Asian palm civet	<i>Paradoxurus hermaphroditus</i>	II		1,2,3,4
Viverridae	Brown palm civet	<i>Paradoxurus jerdoni</i>	II	VU	1
Herpestidae	Common mongoose	<i>Herpestes edwardsii</i>	IV		1,2,3,4
Herpestidae	Ruddy mongoose	<i>Herpestes smithii</i>	IV		2,3,4
Herpestidae	Stripe-necked mongoose	<i>Herpestes vitticollis</i>	IV		1,2,3
Herpestidae	Brown mongoose	<i>Herpestes fuscus</i>	IV	DD	1
Mustelidae	Eurasian otter	<i>Lutra lutra</i>	II		?
Mustelidae	Smooth-coated otter	<i>Lutrogale perspicillata</i>	II		?
Mustelidae	Small-clawed otter	<i>Aonyx cinereus</i>	I		?
Mustelidae	Nilgiri marten	<i>Martes gwatkinsii</i>	II	VU	1?
Mustelidae	Ratel	<i>Mellivora capensis</i>	I		2?,3,4?

IWPA-Indian Wildlife (Protection) Act 1972.

IUCN-The World Conservation Union.

I, II and IV-Schedules In Indian Wildlife (Protection) Act.

VU-Vulnerable; CR-Critically Endangered; DD-Data Deficient

1-Wet forests of the Western Ghats (evergreen forest), 2-Dry forests adjacent to Western Ghats (deciduous forests),

3-Dry forests of southern plateau (deciduous forests, including forests of Eastern Ghats), 4-Northern plains

?-No reliable information

any spots or markings. We identified the animal as Rustyspotted Cat and later confirmed it by referring to Prater (1971). The animal was in a tree at the border between the Sanctuary and cultivated croplands. The closest village was about half a kilometer away. The other sighting at three and a half kilometers from Sira town was at a roadside Tamarind tree (*Tamarindus indica*) at 2330 hrs. It was at a height of about 2 m, the tree was about 6 m tall. The cat remained on the tree for about 5 min. It moved to another branch, due to disturbance, but remained there in spite of our presence. The sighting locality was close to human habitation, which is adjacent to a reserve forest. The general forest type of the region is dry scrub or dry deciduous. The interesting observation was that both the sightings were on trees, and the animals were not unduly disturbed. Rustyspotted cats are known to be arboreal and nocturnal (Nowell and Jackson 1996). The sighting in Bandipur National Park was on October 11, 2006 in Bandipur Range at 2130 hrs. The animal was on ground adjacent to bushes and remained there without any movement for about 12 min. It later moved inside the bushes.

The only published report on the occurrence of Rustyspotted Cat from southern India was from Andhra Pradesh (Rao *et al.* 1999) and drier forests of Kalakkad-Mundanthurai Tiger Reserve in Tamil Nadu (Mudappa 2002). Mudappa (pers. comm.) also reported its occurrence in Indira Gandhi Wildlife Sanctuary in Tamil Nadu. Karanth (1986) considers southern plateau as a nominal distribution range of this species, but no sighting or occurrence was reported in Bhadra Wildlife Sanctuary (Karanth 1982) and Bandipur (Karanth 1988). However, the recovery of one skin from the outskirts of Bangalore city was reported. Although there are no published sight records, there are few sightings from different parts of the State, e.g. the animal was sighted in Chikmagalur (Fig. 1), Kadur and Ranebennur (D.V. Girish, pers. comm.). Our report confirms its occurrence in Karnataka.

Fishing Cat: Prater (1971) reported the Fishing Cat to occur in some coastal districts of Karnataka; no recent sightings are reported from any part of the State. Along the coastal districts, the local information revealed no sightings of this species in recent years. Even in the past, the information on the species was vague. Karanth (1986) also reported no reliable information on this species in recent years from the West coast, and he suspects that the species could be locally extinct.

Jungle Cat: This is one of the most common species of small carnivores found to occur in all the districts of the State. They occur at all altitudes ranging from the coast to high altitudes of the Western Ghats. Further, they occupy most of the habitat types varying from coastal habitat, evergreen forests of the Western Ghats to dry plains. We saw scats and

pugmarks of the species in the forests in the Western Ghats, one animal was sighted at Pushpagiri Wildlife Sanctuary, twice in Nugu, five times in Tumkur, once in Kolar and once in the Chamundi hill near Mysore (Fig. 1). All sighted animals were adults. Most sightings were close to some water bodies or in the croplands.

Viverridae

Four species of civets: Malabar Civet (*Viverria civettina*), Small Indian Civet (*Viverricula indica*), Asian Palm Civet (*Paradoxurus hermaphroditus*), and Brown Palm Civet (*P. jerdoni*) are expected to occur in Karnataka. The Malabar and Brown Palm civets are endemic to the Western Ghats, whereas the Small Indian and Asian Palm civets have wide distribution in South-east Asia.

Malabar Civet: The species is extremely rare, and is listed under Schedule I of the Indian Wildlife (Protection) Act. We did not sight the animal during the present study. The only information available on this species is 'a possible sighting in Kudremukh' (Karanth 1986). A later survey (Rai and Kumar 1993) also revealed a 'possibility of occurrence' along certain regions of the Western Ghats in Karnataka. The only evidence of its occurrence in its distributional range is the recovery of two skins from Nilambur in northern Kerala (Ashraf *et al.* 1993). According to Rai and Kumar (1993), Malabar Civets probably occur widely in Karnataka due to the presence of extensive lowland forests along the Western Ghats.

Small Indian Civet: The Small Indian Civet is widely distributed in Karnataka, and is found to occur in various habitat types. The habitats range from coastal plains to wet evergreen forests, deciduous forests, dry scrub and rock dominated dry forests. They occur at altitudes ranging from <50 m to 1,400 m above msl. We sighted 13 animals during this study, one animal each in Brahmagiri-Makut, Bandipur National Park and Nugu, five animals in Nagarahole, three animals in Tumkur district and one each in Kolar and Chikmagalur districts. The sightings varied from crop fields in the drier plains to evergreen forests of the Western Ghats. All sightings were during night.

Asian Palm Civet: Asian Palm Civet is found in most of the forest types including coast to dry plains, except in high altitude evergreen forests. The species is capable of adapting to various habitats, forest types, including living in townships. They have often been observed to breed in house roofs in coastal plains of Udupi, and also in dry plains, such as Bidar district with little forest. However, they are very rare or absent in areas completely bare and without any vegetation. We sighted 32 animals during the present study. The sightings included two animals each in Brahmagiri-Makut and Sirsi-

Honnavaara, nine animals in Nagarahole (Fig. 1), five animals in Chamundi hill, three animals each in Sharavathi Valley Wildlife Sanctuary and Bandipur National Park, and four animals each in Talakaveri Wildlife Sanctuary and Pushpagiri Wildlife Sanctuary. Although 15 animals were sighted in the Western Ghats region, the sightings were mostly from moist deciduous or deciduous forests.

Brown Palm Civet: Brown Palm Civets are considered to be restricted to the evergreen forests and the adjacent forests of the Western Ghats, ranging from Brahmagiri in the south to Khanapur (Belgaum district) in the north. During the present study, we found them to be absent in deciduous forests adjacent to the Western Ghats. We have not sighted the species in Nagarahole in spite of every effort. We sighted a total of 18 animals in different regions of the Western Ghats. The sightings were more in Brahmagiri-Makut and Sharavathi Valley Wildlife Sanctuary (5 animals each) followed by Sirsi-Honnavaara (4 animals) and Pushpagiri-Bisale and Pushpagiri Wildlife Sanctuary (2 animals each). Rajamani *et al.* (2003) reported high encounter rate of Brown Palm Civet in other parts of the Western Ghats in Karnataka. All sightings were during nights in evergreen forests and on trees. Earlier, it was thought that the species is rare in its entire distributional range, but recent studies show that it is quite common (Mudappa 2001), and is distributed from the southern extremity of the Western Ghats in Kalakkad-Mundanthurai Tiger Reserve to Dhud Sagar in Goa in the north (Rajamani *et al.* 2003). Rajamani *et al.* (2003), based on the specimen collected by R.C. Morris in Bombay Natural History Society Museum, considered the species to occur in Biligirirangan Hills near Mysore. However, it needs further investigation since no information was found on occurrence of this species in these hills during the present study.

Family Herpestidae

Four species of Herpestidae: Common Mongoose (*Herpestes edwardsii*), Ruddy Mongoose (*H. smithii*), Stripe-necked mongoose (*H. vitticollis*), and Brown Mongoose (*H. fuscus*) are expected to occur in Karnataka. The Common Grey mongoose has a wide range in India, Persia, Mesopotamia and southwards to Sri Lanka. The Stripe-necked and Brown mongoose are restricted to the Western Ghats and the Ruddy Mongoose is restricted to central and southern India (Prater 1971).

Common Mongoose: It is one of the common animals in the open countryside in India. In Karnataka, they are found in coastal plains, disturbed evergreen forests and dry plains. However, they may be rare or even absent in high altitude rain forests. We sighted two animals each in Tumkur, Nugu and Chikmagalur, three in Bandipur National Park, four in Mysore, and one in Bangalore (Fig. 1). In spite of the vigorous efforts in evergreen forests of the Western Ghats and deciduous forests of Nagarahole, no animal was sighted. All the sightings were during the day. We sighted young ones during September-October (2003).

Ruddy Mongoose: Ruddy Mongoose is absent in coastal and evergreen forests of the Western Ghats. They occur in dry forests and forests with rocky outcrops, and are absent in completely barren areas. We sighted five animals in Nagarahole, three in Bandipur National Park, one each in Hasanur forests in Chamarajnagar and Savandurga forests in Magadi of Bangalore district, and six in Daroji Bear Sanctuary (Fig. 1) in Bellary district. All sightings were either in the morning or in the evening, in dry forests or rocky areas. Animals were seen in pairs thrice. Animals are also sighted frequently in Bhadra (Narasimha, pers. comm.) and Bandipur (Karanth 1986, 1988).

Table 2: Sightings of small carnivore species only during night walk

Area	km walked	Leopard Cat	Rustyspotted Cat	Jungle Cat	Small Indian Civet	Asian palm Civet	Brown palm Civet	Nilgiri Marten
Brahmagiri-Makut	51	1	-	-	1	2	5	-
Pushpagiri-Bisale	123	-	-	-	-	-	2	-
Sirsi-Honnavaara	119	-	-	-	-	2	4	-
Nagaraahole	121	-	-	-	5	9	-	-
Nugu	60	-	1	2	1	-	-	-
Tumkur	105	-	1	5	3	-	-	-
Bangalore	102	-	-	-	-	-	-	-
Kolar	92	-	-	1	1	-	-	-
Chamundi Hill in Mysore	22	-	-	1	-	5	-	-
Sharavathi Valley WS	69	5	-	-	-	3	5	-
Pushpagiri WS	32	1	-	1	-	4	2	-
Talakaveri WS	80	2	-	-	-	4	-	1
Bandipur NP	120	2	1	-	1	3	-	-

Stripe-necked Mongoose: Stripe-necked Mongoose occurs in evergreen forests of the Western Ghats and adjacent dry deciduous forests in the State. We sighted 12 animals in Nagarahole, five in Bandipur, and four in Talakaveri Wildlife Sanctuary. They have been frequently sighted in Bhadra (Narasimha, pers. comm.). All sightings were during the daytime, especially in the early mornings and late evenings. Pairs were sighted four times. It appears that Stripe-necked Mongoose is more common than other mongoose species in deciduous forests like Nagarahole and Bhadra.

Brown Mongoose: It is a rare species sighted very infrequently. There are no sighting records from Karnataka in recent years, and they were not sighted during the present study too. Karanth (1986) reported the occurrence of the species in the Western Ghats and in the southern plateau, especially in Nagarahole, but we doubt its occurrence in Nagarahole. They are relatively rare even in other parts of its distribution in India (Mudappa 2002).

Family Mustelidae

Of the Mustelids, Smooth-coated Otter (*Lutrogale perspicillata*), Small-clawed Otter (*Aonyx cinereus*), Eurasian Otter (*Lutra lutra*), Nilgiri Marten (*Martes gwatkinsi*) and Ratel (*Mellivora capensis*) are known to occur in the State. Among otters, the Eurasian Otter has a large distribution ranging across different continents, including Europe, North Africa and Asia, whereas the other two species are restricted to South-east Asia. The Small-clawed and Eurasian otters usually inhabit high altitude mountain streams, whereas the Smooth-coated Otter inhabits streams and lakes of plains. The distributional range of Nilgiri Marten is restricted to the Western Ghats, and the Ratel has a wide distribution from south-western Asia to Africa (Prater 1971).

Otters: During this study, we encountered otters only at two sites of Cauvery river near T. Narasipura (three animals) and at Sangama (one animal). The species could not be identified with certainty and hence the distribution could not be provided at species level. The otters occur in Bheema, Krishna, Ghataprabha, Malaprabha, Tunga, Bhadra, Hemavathi, Kapila, and Cauvery rivers that run east of the Western Ghats, and in the Western Ghats and rivers draining towards west. We noticed large number of scats along the River Cauvery and its tributaries, indicating high density of otters. The rivers draining west from the Ghats in Dakshina Kannada, Udupi and Uttara Kannada also appear to have good population of otters. The local information revealed that during the high tide and monsoons, otters are seen even at the coastline; otherwise they are seen at estuaries or just before the estuaries where the population is continuous towards fresh water. Karanth (1982) reported the Common

Otter from the Bhadra Reservoir in Shimoga district.

Nilgiri Marten: Nilgiri Marten is endemic to the Western Ghats, and is reported from Nilgiris, south Coorg and Travancore (Prater 1971). During the present study, we sighted one animal in Talakaveri Wildlife Sanctuary. However, local information revealed that the Nilgiri Marten is still found along the Western Ghats. Earlier they were present in large numbers, but due to the conversion of the forests of the Western Ghats to coffee plantations and honey culture, the intensity of hunting increased. Nilgiri Martens were believed to raid Bee hives, and hence planters considered them as pests, and killed them. Even today, people have a tendency to kill martens if they see them. Marten is also hunted for domestic consumption. Although no data are available regarding its earlier status, the local information revealed that the population of Nilgiri Marten in Karnataka has gone down drastically.

Ratel: Ratel is usually found in plains and lives by making a den in the earth. Before 1960s, it was reported from some parts of Kolar district in Karnataka. However, there has been no information during the recent decades on this species. We talked with the people, described the animal, and showed its picture, but there was no positive response for the occurrence of this species from any part of the State. However, during 2003, one animal was recovered from 'Sathanur' of Kanakapura taluka of Bangalore (Rural) district. The animal was found in a shallow well, just outside the village, where cropland and shrub forest is interspersed (Doddalanahalli village). The animal was shifted to Sri Chamarajendra Zoological Garden, Mysore. It survived for only a few days. Interviews with the villagers and forest officials in the range revealed no sighting of the species in the same locality. The species is present probably in very low numbers.

Threats

Local hunting and habitat loss are the major factors affecting the status and distribution of small carnivore species. In addition, road network with busy traffic in forest areas also causes many road kills of small mammals (Kumara *et al.* 2000). Although Western Ghats, where most of the small carnivore species occur, have been recognized as one of the Hotspots of World Biodiversity (Myers *et al.* 2000), the attention paid to conserve this region is still not satisfactory. Among such biodiversity hotspots, Western Ghats also have high human density (Cincotta *et al.* 2000). Menon and Bawa (1997) reported a 40% loss in forest cover between 1920 and 1990 in the Western Ghats. Such a sharp decline of forests results in habitat alteration, degradation of the forest and an increase in number of forest fragments. Such factors certainly make an uncertain future for small carnivores.

In addition to habitat loss, local hunting has made small carnivores uncommon in their natural habitats. All small carnivore species are hunted. There are no taboos attached to hunting of such species in any community or ethnic group. The hunting or capturing techniques vary between species. Jungle Cat, Leopard Cat, Asian Palm Civet, mongoose species and Nilgiri Marten are hunted for meat throughout their distributional range in the State. Commercial hunting of these species has gone unnoticed in the State. Common mongooses are hunted for their hair, and they are also captured to keep as pets and for use in the local circus or road shows for snake-and-mongoose fights. The hunting methods vary from use of muzzle load guns to various types of traps, depending on the access to arms.

Along the west coast, especially in Dakshina Kannada, commercial captive rearing of the Small Indian Civet is common. Animals are captured from the forest and they are kept in specially designed cages. The cage could be of a circular or a rectangular shape with about 1 m each in radius and height. It has a smooth pole at the centre, and the rest of it is fixed with wire mesh. The animals rub their glands on the pole and deposit the secretions. Once the deposition reaches a certain amount, it is scraped. Each gram of this secretion costs around Rs. 900 to Rs. 1000 in the market, as it is used in ayurvedic medicine and for perfume manufacture. This practice has resulted in an indiscriminate capture from nature without any legal approval. If this practice continues unchecked, it can significantly affect the status of the species. Small Indian Civets are also hunted using various methods throughout Karnataka for meat. In spite of its widespread distribution and adaptability to a variety of habitats, the above factors can cause local extinction of this species.

The body weight of Brown Palm Civets varies across seasons. They are believed to hunt more during August and

October, when they become fat. People who hunt this species consider its meat very relishing. Hence, the hunting pressure on this species is severe and people go on hunting expeditions during the post-monsoon period. Locals also devise special traps designed exclusively to capture brown palm civets. Brown Palm Civets usually use dead wood or exposed rocks to excrete, and use fallen wood (especially fallen wood across valleys/streams) to move. The traps are fixed on such fallen wood. On several occasions we found leftovers, such as skin and bones after the hunting expeditions. Brown Palm Civets are also recovered from the nests of Giant Squirrels. However, no commercial trade of this species was observed in Karnataka.

In some regions of the Western Ghats, especially Kodagu and Dakshina Kannada districts, people of certain communities (Erava, Kuruba, Kodava, Naika) hunt otters. The otters are caught in nets fixed in shallow waters. Trained dogs are used to catch the animal from these nets. Otters are also killed using guns, and retrieved using trained dogs.

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