

Distribution and status of the Brown Palm Civet in the Western Ghats, South India

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Introduction

The Brown Palm Civet or Jerdon's Palm Civet (*Paradoxurus jerdoni* Blanford, 1885) is an endemic carnivore restricted to the rainforest tracts of the Western Ghats, a 1,600 km long hill chain along the west coast of India. The species has been reported from an altitudinal range of 500–1,300 m, being more common in higher altitudes (Mudappa, 1998). They are known to occur in tropical rainforests of the Western Ghats, and in areas such as Coorg they are known to use coffee estates as well (Report of G. C. Shortridge in Ryley, 1913; Ashraf *et al.*, 1993). Due to the nocturnal and arboreal habits of this viverrid, there have been few reliable records of its occurrence and its distribution and abundance has remained poorly documented. This knowledge is critically needed, especially in the light of the major conservation concern in the Western Ghats, which is the loss of large tracts of forest to commercial plantations of coffee, tea, *Eucalytus* spp., and teak (*Tectona grandis*), and other developmental activities (Menon & Bawa, 1997).

The Brown Palm Civet replaces the Common Palm Civet (*P. hermaphroditus*) in tropical rainforests of the Western Ghats. It may be sympatric with the Common Palm Civet only in the transition zones between the rainforests and drier habitats. It has a uniformly brown pelage, darker around the head, neck, shoulder, legs, and tail (see cover). Sometimes the pelage may be slightly grizzled. Two subspecies have been described on the basis of the colour of the pelage but both Pocock (1933) and Hutton (1949) state that the colour is extremely variable going from pale buff over light brown to dark brown. The dark tail sometimes has a white or pale-yellow tip; white in four out of 14 examined (Corbet & Hill, 1992). It has no distinct markings on the body or the face as in the common palm civet. A distinctive feature is the reversed direction of hair growth on the nape, similar to that in the Golden Palm Civet (*P. zeylonensis*) of Sri Lanka. It is about as large as the Common Palm Civet, but with a long and sleek tail. The body weight of the males ranges from 3.6 kg to 4.3 kg, head and body length 430 mm to 620 mm, and tail length from 380 to 530 mm (Mudappa, 2001; measurements of museum specimens listed in Table 1). In the 1920s-1930s two individuals were kept in Bronx Zoo for respectively 11 years & 6 months and 11 years (P. Thomas, *in litt.*).

Former and recent distribution

Until recently, the Brown Palm Civet was known only from museum collections (Table 1), captive animals in two European zoos and one American zoo (Schreiber *et al.*, 1989), and more recently from a captive in Katrej Snake Park, Pune (Ashraf, 1992). In one early report, Ryley (1913) found them to be fairly plentiful in Coorg (Kodagu district in Karnataka), although not nearly so common as *P. hermaphroditus*. There were reports of the species from many sites in Tamil Nadu, including High Wavy hills of Madurai district (Hutton, 1949), Khukal in Palani hills (Pocock, 1933), Kateri in Nilgiri hills (Pocock, 1939), and from Tirunelveli (Webb-Peploe, 1947). In the past, the Brown Palm Civet has also been recorded in Trivandrum in Kerala (Pocock 1939), and from Castle Rock in North Kanara district of Karnataka (Kinnear, 1913).

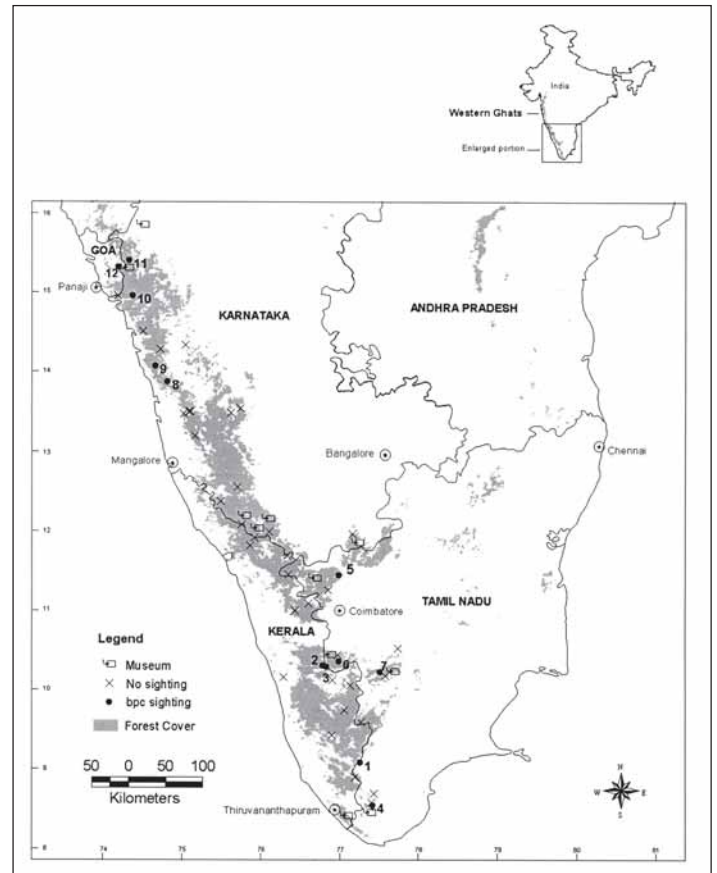


Fig. 1. Distribution of the Brown Palm Civet (BCP) in the Western Ghats as inferred from museum specimens and field survey.

Recent reports include photographs or sight records from Anamalais, Nilgiris, Coorg (Schreiber *et al.*, 1989 and references therein), Silent Valley (Ramachandran, 1990), and Kalakad-Mundanthurai Tiger Reserve (Ganesh, 1997; Mudappa, 1998). Ashraf (1990) found no evidence of the Brown Palm Civet during a survey (in 1989) in the Anamalais. He also opined that the species was probably exterminated from localities like Ooty, Coonoor, Wellington, and Kodaikanal. Ashraf *et al.* (1993) stated that the Brown Palm Civet probably occurs in low densities throughout its range. However, the species appears to be fairly common in Kakachi-Upper Kodayar (Ganesh, 1997) and other areas above 1,000 m within the Kalakad-Mundanthurai Tiger Reserve in the Agasthyamalai hills and also in the Anamalai hills (Mudappa, 2001). Recent studies also suggest that the civets are not as rare as they were thought to be (Mudappa, 2001).

A survey conducted by the first author along the Western Ghats has thrown more light on the distribution and conservation status of this species, including evidence of its occurrence in some of the localities where it was not found by Ashraf (1990). This article is based on the sightings of Brown Palm Civets during a survey of flying squirrels carried out by the first author in 2001 and 2002 along the Western Ghats in Kerala, Tamil Nadu, Karnataka, and Goa.

Table 1. Records of the Brown Palm Civet in Bombay Natural History Society Museum (BNHS), The Natural History Museum, London, UK (BMNH), Zoologisches Museum, Universität Hamburg, Germany (ZMUH), American Museum of Natural History (AMNH), and Museum of Michigan State University, East Lansing, USA (MMSU).

REG.No	DATE	MUSEUM	LOCALITY, STATE	COLLECTOR	CURRENT STATUS
5695	00/04/1937	BNHS	Injipara Estate, Nilgiri Hills, Tamil Nadu	Col. H.G.H. William	Present
5697	26/10/1931	BNHS	Nilgiri hills, Tamil Nadu	Maj. Phytian Adams	Present
5699	22/01/1914	BNHS	Kotagiri, Tamil Nadu	C. Primrose	Present
5705	17/04/1934	BNHS	Nilgiri hills, Tamil Nadu	Maj. Phytian Adams	Present
5709	25/01/1924	BNHS	Kotagiri, Tamil Nadu	C. Primrose	Present
5700	14/10/1912	BNHS	Dhud Sagar, Goa	S. Prater	Present
5696	29/03/1923	BNHS	Belgaum, N. Kanara, Karnataka	L. E. Arkinson	Unknown
5703	-	BNHS	Billigirirangan Hills, Mysore, Karnataka	R.C. Morris	Likely
5704	27/01/1940	BNHS	Billigirirangan Hills, Mysore, Karnataka	R.C. Morris	Likely
6346	-	BNHS	Billigirirangan Hills, Mysore, Karnataka	R.C. Morris	Likely
5701	28/12/1912	BNHS	Haleri, N. Coorg, Karnataka	G.C. Shortridge	Likely
5706	29/12/1912	BNHS	Haleri, N. Coorg, Karnataka	G.C. Shortridge	Likely
5707	13/05/1913	BNHS	Haleri, N. Coorg, Karnataka	G. C. Shortridge	Likely
?	1914	BNHS	S. Coorg, Karnataka	?(GM, Madras)	Likely
5698	6/8/1918	BNHS	Aulikal	A.K. Weldo Dour	Unknown
?	1888	Indian Museum, Calcutta	Ootacamund, Tamil Nadu	W. L. Sclater	Present
33214	28/02/1931	BMNH	Haleri, N. Coorg, Karnataka	J.A.Graham	Likely
1382223	29/01/1913	BMNH	Virajpet, S. Coorg, Karnataka	G.C.Shortridge	Likely
1382224	28/01/1913	BMNH	Virajpet, S. Coorg, Karnataka	G.C.Shortridge	Likely
35116	?	BMNH	Billigirirangan Hills, Kollegal, Coimbatore, Karnataka/Tamil Nadu	R.C.Morris	Likely
5000	16/01/1957	ZMUH	Gund, N. Kanara, Karnataka	Baron von Maydell	Unknown
4925	18/01/1956	ZMUH	Gund, N. Kanara, Karnataka	Baron von Maydell	Unknown
4999	12/01/1957	ZMUH	Gund, N. Kanara, Karnataka	Baron von Maydell	Unknown
87791		BMNH	Kateri, Nilgiri Hills, Tamil Nadu	G.F.Hampson	Likely
3612141		BMNH	Lovedale, Ootacamund, Tamil Nadu	Maj. G.G.Phytian Adams	Likely
3612142		BMNH	Lovedale, Ootacamund, Tamil Nadu	Maj. G.G.Phytian Adams	Likely
3612143		BMNH	Lovedale, Ootacamund, Tamil Nadu	Maj. G.G.Phytian Adams	Likely
3612144		BMNH	Lovedale, Ootacamund, Tamil Nadu	Maj. G.G.Phytian Adams	Likely
6711141		BMNH	Madras?, Tamil Nadu	H.Day	Unknown
33212		BMNH	Pamba River, Kodaikanal, Tamil Nadu	C.McCann	Likely
251017	22/04/1922	BMNH	Tiger Shola, Nilgiri Hills, Tamil Nadu	C.McCann	Likely
251018	07/04/1902	BMNH	Tiger Shola, Nilgiri Hills, Karnataka	C.McCann	Likely
19371108		BMNH	Nilgiri Hills, Tamil Nadu	Maj. G.G.Phytian Adams	Likely
19371109		BMNH	Nilgiri Hills, Tamil Nadu	Maj. G.G.Phytian Adams	Likely
9410211	01/1892	BMNH	Near end of Mt. Range, Travancore, Kerala	H.S.Ferguson	Likely
94718		BMNH	Trivandrum, Travancore, Kerala	H.S.Ferguson	Likely
9712181	11/12/1884	BMNH	Near Wellington, Nilgiri Hills, Tamil Nadu	Capt. F.Sapte	Likely
5887	25/04/1961	MMSU	5 mi W Sarestal Resthouse Dindori (Mandla), MP	J.Touborg	Erroneous?
80124	21/03/27	AMNH	??	Zoo specimen	
88396	?	AMNH	??	Zoo specimen	
119488	?	AMNH	??	Zoo specimen	

Study Area

The Western Ghats is a 1,600 km long chain of mountains that runs parallel to the west coast of peninsular India from the river Tapti in the north to Kanyakumari in the south. Covering an area of 132,606 km², approximately 4.03% of the land area of India (Rodgers *et al.*, 2000), the Western

Ghats extends over five states (Kerala, Tamil Nadu, Karnataka, Goa, and Maharashtra) between 8° and 21°30' N latitude and 75° and 78°30' E longitude. The average elevation of the hills is 900–1,500 m, rising up to heights of more than 2,000 m. The diversity of rainfall regimes and topography has resulted in a variety of vegetation types in the Western Ghats, including tropical evergreen forest (Champion & Seth, 1968). The structure and species composition of evergreen forests varies with altitude, latitude, and bioclimatic factors along the length of the Western Ghats (Pascal, 1988).

Both protected areas (National Parks, Wildlife Sanctuaries, and Tiger Reserves) and non-protected areas (Reserve Forests and private land) were surveyed in Kerala and Tamil Nadu between January and May 2001 and in Karnataka and Goa between January and April 2002. The forest types surveyed during the study were tropical evergreen, moist deciduous, and dry deciduous forests, and plantations (teak, coconut, coffee, and cardamom) across a range of elevation gradients (0 – 2,050 m asl).

Methods

Existing trails were walked primarily between 19:00 and 01:30 hrs and spotlighting was the primary method used to locate animals, though animals were also detected by the sound of their movement through the canopy and their vocalisations. The vegetation was scanned at all levels with spotlights and flashlights and once eye-shine was detected, the animal was identified with 10 x 50 or 8 x 50 binoculars. A modified torch fitted with a halogen bulb and connected to a 12-volt battery was used in addition to torches and flashlights.

The vegetation characterisation is based on samples from random sites and sites where flying squirrels were seen within the same habitat. In 2001, plots were laid around sighting trees and the distance to the nearest four trees, their girths and heights were recorded. In 2002, this was revised to include the distances, heights, and girths of all trees within a radius of 12 m around the sighting tree in order to estimate tree density with greater accuracy.

The encounter rate of the Brown Palm Civet was calculated as the number of animals seen per km of walk. The encounter of Brown Palm Civets was explored with respect to latitude. Encounter rate was regressed with latitude to reveal any trend in the variable, and a chi-square test was performed on the frequency of encounter at each latitude to test the homogeneity of the distribution. Statistica (StatSoft, Inc., 1999) was used to perform the analysis.

Results

A total of 47 sites were surveyed, of which, 33 were wet evergreen forest sites (Table 2). Within these sites, 186 km in evergreen forest, 88.35 km in moist deciduous forest, 13.3 km in

Table 2. A summary of the survey of the Brown Palm Civet in the Western Ghats, India.

State	Total sites	Evergreen sites	km walked (evergreen)	# sites with BPC	# BPC sighted	Encounter rate (No./km)
Tamil Nadu	7	5	56.3	4	8	0.14
Kerala	20	13	55.3	3	3	0.54
Karnataka	18	15	81.1	4	7	0.08
Goa	2	1	3	1	4	1.33

dry deciduous forest, and 18.7 km in plantations were surveyed (Fig. 1). Twenty-three Brown Palm Civets were sighted in 12 of these surveyed sites (Table 2) – 11 individuals between January and May 2001 (in Kerala and Tamil Nadu), and 12 between January and April 2002 (Karnataka and Goa). All twenty-three sightings of Brown Palm Civets were in evergreen forests, including five in high altitude montane evergreen forests or sholas (Southern Tropical hill forest 8A/C1; Champion & Seth, 1968), which typically have stunted trees with epiphyte-laden boles (Tables 3 and 4). No Brown Palm Civets were sighted in any of the other forest types surveyed. Although, no Brown Palm Civets were sighted between north Tamil Nadu (11° N) and Central Karnataka (13° N) during this survey, there were reliable reports of the species' occurrence in the region. Six Common Palm Civets were sighted in moist deciduous forests and one in a coffee estate in Mukkali, Kerala, in 2001. A dead Common Palm Civet, shot in an evergreen patch, was also seen with a hunter during the survey.

Examining encounter rates of Brown Palm Civets with respect to the four states surveyed revealed no significant differences in their occurrences ($X^2 = 2.86$, $df = 3$, $p > 0.05$). There was also no significant difference in the occurrence of the Brown Palm Civet across different latitudes ($X^2 = 2.88$, $df = 7$, $p > 0.05$). The encounter rate of the species was not significantly correlated with latitude ($R^2 = 0.0704$, $F = 0.6815$, $p > 0.05$, $n = 11$). The pattern observed was haphazard, with encounter rate neither consistently increasing nor decreasing with latitude. Encounter rate was highest in Goa and lowest in Kerala. However, only one site was surveyed in Goa and thus the data from this survey are not large enough to explain trends in occurrence of the species across states/latitude.

Brown Palm Civets were detected both in undisturbed and large patches of contiguous forests as well as in fragments (e.g. Konavakarai), surrounded by plantations of tea, and also human habitations. They were encountered both along forest trails, as well as along main roads, often exposed to traffic even during nighttime (Sites 3, 5, 7, 11). Peringyalkuthu (Site 2) and Megani valley (Site 9) were close to human settlements within large patches of forest, while Konavakarai (Site 5) was a forest fragment adjoining human habitation and plantations. Bombay shola (Site 7) was a fragment adjoining the Kodaikanal township and is bisected by roads, and surrounded by human habitation. All the above-mentioned sites suffer some degree of disturbance with exploitation for firewood, and movement of people from nearby villages. Arashinagundi Falls (Site 8) and Doodsagar (Site 12) are major tourist attractions and the vegetation at these sites is disturbed and degraded along the edges of the road. The other four sites (1, 4, 6, and 10) were relatively undisturbed and three of these were included under the Protected Areas.

Brown Palm Civets were seen alone on 19 occasions and in pairs on two occasions. They were sighted mainly between 19:30 hrs and 23:30 hrs. Animals were seen resting on 6 occasions, and

were observed using branches of diameter >40 cm. Brown Palm Civets were also often disturbed by the presence of the observer and reacted by moving away (on 3 occasions), or by moving up or along a branch while continuing to gaze at the torch beam (on 2 occasions). Animals were seen feeding on 5 occasions (once on *Ficus* sp.), and on one occasion two individuals were seen foraging together on the same tree. One animal was observed feeding on flowers at a height of >14 m for over half an hour, and was observed to defecate from the tree in between the feeding bouts.

On two occasions intra- and inter-specific interactions were observed – one was between a Brown Palm Civet and a Large Brown Flying Squirrel (*Petaurista philippensis*) and the other between two Brown Palm Civets. In the first instance, a Brown Palm Civet chased a Large Brown Flying Squirrel which had moved on to the tree the civet was resting on. As the squirrel reached the tree, the civet made a spitting noise (similar to a domestic cat in a fight) and chased the animal away (23:00 hrs, March 2001, Site 7). On another occasion (22:00 hrs, February 2002, Site 9) two Brown Palm Civets were detected by a similar loud prolonged spitting/ brawling noise, and two civets were detected on the same tree. The animals immediately moved away, and it could not be ascertained if this noise was related to aggression or mating. At Dhud Sagar, long calls ending in a shriek were heard repeatedly between 20:30 and 21:15 hrs while sampling in March 2002. Though Brown Palm Civets were encountered along the trail close to the source of the calls, none was seen vocalising.

Conclusion

The Brown Palm Civet seems to be holding its own in its entire distributional range from the southern extremity of Western Ghats in Kalakad-Mundanthurai Tiger Reserve to Dhud Sagar in Goa in the north. As noted by Mudappa (2001), they do not seem to be as rare as they were previously thought to be. There were sightings of the species even in some places like Kodaikanal and Ootacamund, where they were otherwise believed to have been driven locally extinct. However, its presence in some of the earlier known locations like the site in Madhya Pradesh (MMSU-5887)

could not be confirmed during this survey. We believe that the locality for that particular specimen could be erroneous. Some of the other sites which can cause certain confusion are the museum specimens from Belgaum and Biligirirangan Hills, since the former is located in an arid zone of the Deccan Plateau and the latter is more a semi-evergreen forest in the eastern aspect of the Western Ghats. No brown palm civet was sighted in Biligirirangan hills during the survey, nor were there any recent reports of the species. Both the sites, however, are geographically close to typical tropical wet evergreen forests in north Karnataka and Nilgiris, respectively.

It cannot be stated from the data collected during this survey if the species is more common in the southern Western Ghats, though earlier studies (Mudappa 2001) have suggested such trends. In Kalakad-Mundanthurai Tiger Reserve and the Indira Gandhi Wildlife Sanctuary in Anamalais, Tamil Nadu, southern Western Ghats, the Brown Palm Civet was more abundant in evergreen forests above 900 m in altitude. However, in the northern Western Ghats, particularly in Karnataka and Goa, where the wet evergreen forests do not extend above 800 m, they seem to be equally abundant. This probably indicates that they are more dependent on the structure and floristics of the forests rather than the altitude.

So far, the Brown Palm Civet has been reported largely from tropical rainforests of the Western Ghats. Even during this survey, Brown Palm Civets were sighted only in tropical rainforests. However, earlier, this species has been reported from coffee estates in Coorg and Anamalais (Ryley, 1913; Mudappa, 2001). Since the species is mainly arboreal and frugivorous in habit, it can survive in areas with relatively undisturbed canopy with adequate food resources, such as in coffee estates retaining most of the natural rainforest canopy tree and liana species. In the light of their requirements, the species will not be able to withstand conversion of its rainforest habitat to plantations such as tea, *Eucalyptus*, and teak, while it may continue to use patches that have been converted to coffee and cardamom without much loss of large canopy trees.

Table 3. Locations of Brown Palm Civet sightings during the present survey in the Western Ghats (2001–2002). RF = Reserve Forest, TR = Tiger Reserve, WLS = Wildlife Sanctuary, NP = National Park

No.	Location and State	Latitude & Longitude	Distance walked (km)	Number sighted	Encounter rate (No./km)
1	Achankovil RF, Kerala	09°10' – 77°16'	4*	1	0.25
2	Peringyalkuthu, Chalakudy RF, Kerala	10°28' – 76°47'	1	1	1
3	Malakapara RF, Kerala	10°17' – 76°50'	1.6	1	0.625
4	Kakachi, Kalakad-Mundanthurai TR, Tamil Nadu	08°48' – 77°25'	3	2	0.666
5	Konavakarai, Nilgiris, Tamil Nadu	11°27' – 76°59'+	3	2	0.666
6	Manamboly, Indira Gandhi WLS, Tamil Nadu	10°30' – 77°01'	5.5	1	0.181
7	Bombay Shola, Kodaikanal RF, Tamil Nadu	10°23' – 77°31'	2	3	1.5
8	Arashinagundi Falls, Mookambika WLS, Karnataka	13°53' – 74°49'	5.75*	1	0.173
9	Megani Valley, Sharavathy WLS, Karnataka	14°04' – 74°40'	2.75	2	0.727
10	Barpal, Anshi NP, Karnataka	14°57' – 74°23'	4	4	1
11	Castle Rock, Haliyal RF, Karnataka	15°26' – 74°19'	**	1	
12	Dhud Sagar, Bhagwan Mahaveer WLS, Goa	15°19' – 74°19'	3	4	1.33

* Onward and return walk included. All other walks are only onward walks.

+ GPS location taken approximately 5 km from site.

** Opportunistic sighting while driving through a forest patch.

Table 4. Forest classification and vegetation characteristics of sites where Brown Palm Civets were recorded during the survey (standard error in parenthesis).

No.	Location and State	Forest classification (Champion & Seth, 1968)	Altitude (m)	Canopy height (m)	Tree density (#/ha)
1	Achankovil RF, Kerala	West coast tropical evergreen forest 1A/C4	250	n.a.	n.a
2	Peringyalkuthu, Chalakudy RF, Kerala	West coast tropical evergreen forest 1A/C4	330	19.62 (2.09)	160.91 (11.15)
3	Malakapara RF, Kerala	West coast tropical evergreen forest 1A/C4	960	n.a.	n.a
4	Kakachi, Kalakad Mundanthurai TR, Tamil Nadu*	Southern hill top tropical evergreen forest 8A/C1	1200	23.83 (0.70)	851 (61.3)
5	Konavakarai, Nilgiris, Tamil Nadu	Southern tropical hill forest 8A/ C1	1800	11.40 (1.09)	299.78 (46.82)
6	Manamboly, Indira Gandhi WLS, Tamil Nadu*	West coast tropical evergreen forest 1A/C4	760	16.38 (0.53)	122.44 (32.84)
7	Bombay Shola, Kodaikanal RF, Tamil Nadu	Southern hill top tropical evergreen forest 8A/C1	2050	17.68 (.63)	153.84 (51.87)
8	Arashinagundi Falls, Mookambika WLS, Karnataka *	West coast tropical evergreen forest 1A/C4	190	14.53 (0.32)	228.41 (23.56)
9	Megani Valley, Sharavathy WLS, Karnataka*	West coast tropical evergreen forest 1A/C4	230	12.56 (0.74)	458.49 (83.24)
10	Barpal, Anshi NP, Karnataka	West coast tropical evergreen forest 1A/C4	560	12.42 (1.01)	1046.56 (124.75)
11	Castle Rock, Haliyal RF, Karnataka	West coast tropical evergreen forest 1A/C4	690	n.a	n.a
12	Dhud Sagar, Bhagwan Mahaveer WLS, Goa*	West coast tropical evergreen forest 1A/C4	110	n.a	n.a

*Sites that are included within the Protected Area network in the country.

Threats

Many regions, particularly the reserve forests and even some protected areas in the Western Ghats are threatened by development programmes. Mining activities in Kudremukh, hydroelectric projects, and large-scale plantations of coffee, cardamom, and tea in and around these protected areas have vastly depleted the forest cover (Ashraf *et al.*, 1993). Menon & Bawa (1997) estimated that between 1920 and 1990, forest cover in the Western Ghats declined by 40%, resulting in a four-fold increase in the number of fragments, and an 83% reduction in size of forest patches. In the present state of habitat loss and alterations, most species, particularly the endemics such as the Brown Palm Civet, face an uncertain future.

Hunting is unlikely to be a major threat to the species; however, illegal hunting is still common in privately owned coffee, cardamom, and tea estates (Ashraf *et al.*, 1993). Although occasional hunting of this species has been reported, there is no evidence so far of commercial trade (Hanfee & Ahmed, 1999; Madhusudan & Karanth 2000). A specimen was offered for sale in the Periyar Tiger Reserve by local tribesmen (Narikoravas) in 1997 (Gupta, 1997). Apparently, the Brown Palm Civet is a preferred wild meat in many regions of Karnataka (H. N. Kumara, *pers. comm.*). This species, together with the Common Palm Civet, is hunted for its fat, which is used for medicinal purposes as well as for food (M. D. Madhusudhan, *pers. comm.*).

At the same time, there is little awareness among people of the existence of many of the small carnivore species and their ecological roles. Sometimes, herpestids, viverrids, and mustelids are captured from the wild and sold to private collections and zoos. Roadkills are found commonly on busy highways, both within and outside wildlife reserves (Kumara *et al.*, 2000; D. Mudappa, *pers. obs.*).

The extent of persecution of small carnivores in the Western Ghats is not clearly known. The fate of more restricted and endemic species such as the Brown Palm Civet, Malabar Civet (*Viverra civettina*), and the Nilgiri marten (*Martes gwatkinsi*) remains threatened in the face of changing and developing landscape in the Western Ghats (Mudappa, 2001).

Protection and conservation

The Brown Palm Civet is listed in Schedule II part II of the Indian Wildlife (Protection) Act 1972 (Anonymous 1994), Vulnerable (VU B1+2c) in IUCN Red List, and Appendix III in CITES. This level of conservation protection appears adequate for the present, given the species' wide distribution range along the Western Ghats. However, long-term protection of primary rainforests, both large stretches as well as fragments, is imperative. Conservation value of shade coffee and cardamom estates with natural canopy for the Brown Palm Civet needs to be recognised.

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