

Occurrence of Small-toothed Palm Civet *Arctogalidia trivirgata* in Dampa Tiger Reserve, Mizoram, North-east India

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Abstract

Single Small-toothed Palm Civets *Arctogalidia trivirgata* were seen and photographed on two consecutive nights in March 2014 in Dampa Tiger Reserve, Mizoram, India. They visited a fruiting tree used also by Masked Palm Civet *Paguma larvata* and Common Palm Civet *Paradoxurus hermaphroditus*. The present note describes the observation, adding to the few recent records of *A. trivirgata* from North-east India. The sighting was close to the location of a 1995 sighting of Stripe-backed Weasel *Mustela strigidorsa*, another species rarely recorded in the region. We suggest further targeted spotlighting and camera-trap surveys for better documentation of the occurrence and distribution of small carnivores in Dampa.

Keywords: Lushai hills, *Mustela strigidorsa*, northeast India, small carnivores, Stripe-backed Weasel, survey

Dampa Tiger Reserve (Dampa TR) is the largest protected area in the state of Mizoram in the Lushai hills of North-eastern India, having a core area of around 500 km² and buffer zone of 488 km². The Reserve is notable for its carnivore richness, with at least 11 small carnivore species reported (Zathang 2012, 2014). This paper provides photographic confirmation of Small-toothed Palm Civet *Arctogalidia trivirgata* in the tropical wet evergreen rainforests of the Reserve, which adds to the few recent confirmed records of the species in India (Choudhury 2013, Mudappa 2013, Naniwadekar *et al.* 2013, Kakati & Srikant 2014, Murali *et al.* 2014) and is an additional small carnivore species record for Dampa TR. While this civet species has been listed as occurring in Mizoram state (Choudhury 2013, Sawmliana 2013), no specifics of earlier records could be traced from Mizoram. The range of Small-toothed Palm Civet includes parts of Southeast Asia and South Asia (see Murali *et al.* 2014, for distribution and reports from India).

Between 22 and 28 March 2014, as part of a bird survey in Dampa TR, we were camped at Tuichar Puk, a cave (puk = cave in Mizo language). The cave is located at 23°40'19.6"N, 92°25'10.7"E (WGS 84 datum, elevation 350 m measured on a Garmin eTrex GPS, verified with altimeter) along Tuichar Lui, a perennial stream running through primary tropical wet evergreen forests. The forest canopy height is around 30–35 m with evergreen and some deciduous trees, and lianas, interspersed with tall (about 40 m) emergent trees such as *Dipterocarpus turbinatus*, *Tetrameles nudiflora* and *Artocarpus chaplasha*. Besides this forest type, Dampa TR has tropical semi-evergreen and moist deciduous forests and extensive bamboo and secondary forests, across the elevation range of about 100–1,100 m within the Reserve.

During our stay at Tuichar Puk, three species of civets were seen visiting and foraging on a particular fruiting tree that was less than 20 m away from the cave: Masked Palm Civet *Paguma larvata*, Small-toothed Palm Civet and Common Palm Civet *Paradoxurus hermaphroditus*. Single Masked Palm Civets were seen on the first two nights (Fig. 1). On 22 March, at 19h20, we heard branches rustle on the tree and when we scanned with torchlights, we saw the eye-shine of a Masked Palm Civet. The civet had prominent dark facial mask, greyish brown pelage, white whiskers, dark ears, and long tail (tail coloration not clear in dense vegetation). The civet, observed

until 19h45 from a distance of about 25–30 m, did not appear disturbed and moved along the branches, remaining partly hidden in the dense canopy much of the time, foraging on the terminal branches that held clusters of fruit. When a field assistant moved to get a better look from below the tree, the civet unhurriedly walked along a branch to where it intersected a tall bamboo culm, then walked head first down the culm and disappeared into the forest.



Fig. 1. Masked Palm Civet *Paguma larvata* on fruiting tree, looking towards Small-toothed Palm Civet *Arctogalidia trivirgata* on liana on neighbouring tree. Dampa Tiger Reserve, Mizoram, India, 23 March 2014.



Fig. 2. (left) Faecal piles on the fruiting tree and (right) herbarium specimen with fruit and seeds (seeds from faeces placed on separate leaf on right include three seeds from fresh faeces on right). Dampa Tiger Reserve, Mizoram, India, 25 March 2014.

When examining the fruiting tree on 23 March, blackish conical piles (13 cm tall, 15–20 cm diameter) of seed-containing faeces, each clearly the result of multiple defecations and none very fresh, were observed on the sloping main trunk and branches (Fig. 2a). The tree, tentatively identified as a species of the family Oleaceae (Fig. 2b), was 117 cm in diameter at breast height and grew sloping towards the river, with its canopy at least 15 m above the ground.

On the night of 23 March, at 19h55, two civets were seen near Tuichar Puk: a Masked Palm Civet on the fruiting tree, and another civet which we first thought may be the same species, on a liana draped over a tall tree a few meters from the fruiting tree. This second civet kept looking towards the Masked Palm Civet but did not join it on the fruiting tree. When the animal moved to a better position on the liana we took a closer look through a pair of 8.5 x 42 Swarovski binoculars from a distance of less than 20 m, and observed that it was a Small-toothed Palm Civet. This individual had a dark face with dark (blackish) whiskers and pale (whitish) ears (Fig. 3). The animal's pelage was distinctly more brown than the greyish *Paguma*, unmarked dorsally but for three distinct dark stripes running along the top of the body to the rump, with a long brown tail darker in the distal half, appearing black for the last 12–15 cm towards the tip (Fig. 4). The Small-toothed Palm Civet, apparently ignoring us, moved down closer on the lianas to the same level as the fruiting tree's canopy, but did not move onto the fruiting tree. The Masked Palm Civet was also seen looking repeatedly in the direction of the other civet that was approximately 15–20 m away. No direct interaction between the two species was noticed, besides the apparent avoidance by the Small-toothed Palm Civet of the fruiting tree where the Masked Palm Civet was foraging. At 21h00, when we decided to leave the animals, the Masked Palm Civet was still foraging on the fruiting tree, and the Small-toothed Palm Civet moved higher up on the liana onto the taller tree's branches and was lost to sight.

On 24 March, soon after 20h00, two civets were again observed on the same fruiting tree. One was a Common Palm Civet, foraging in the dense branches, and only its head with more distinct white facial markings and dark throat were visible most of the time (Fig. 5). The second was a Small-toothed Palm Civet, also foraging on the branches with fruits. Although



Fig. 3. Small-toothed Palm Civet *Arctogalidia trivirgata* on a liana in Dampa Tiger Reserve, Mizoram, India, 23 March 2014.



Fig. 4. Small-toothed Palm Civet *Arctogalidia trivirgata* on liana. Left: view of tail and part of rear dorsal pelage showing dark stripes. Right: side view showing unmarked pelage except for dorsal stripes. Dampa Tiger Reserve, Mizoram, India, 23 March 2014.



Fig. 5. Common Palm Civet *Paradoxurus hermaphroditus* on fruiting tree in Dampa Tiger Reserve, Mizoram, India, 24 March 2014.

the two civets did not appear to have any close confrontation, 3–4 spitting snarls were heard at one point. It could not be confirmed which civet had made the sounds. The civets were observed foraging and moving for around 45 minutes, mostly hidden behind leaves and less than 10 m apart from each other. Both were still on the tree when we stopped observation to minimise disturbance.

On 25 March 2014, one of the conical faecal piles had fresh deposition on top, perhaps from one of the palm civets. Examining a small part of fresh and old faeces revealed seeds of this fruiting tree species in the old faeces, while the fresh faeces had one intact and one slightly damaged seed of the tree, and a third green seed of an unidentified plant species. During the day, White-throated Bulbuls *Alophoixus flaveolus* fed in the same tree, pecking at ripe fruit and swallowing bits of pulp. Civets were not seen again on the tree for the remainder of the stay at the cave, possibly because few ripe fruits remained.

Extensive camera-trapping and opportunistic surveys by Forest Department staff in Dampa TR since 2006 has recorded various small carnivores: camera-trap photographs of Yellow-throated Marten *Martes flavigula*, Hog Badger *Arctonyx collaris*, ferret badger *Melogale*, Large Indian Civet *Viverra zibetha*, Small Indian Civet *Viverricula indica*, Common Palm Civet, Masked Palm Civet, Binturong *Arctictis binturong* and Crab-eating Mongoose *Herpestes urva*; and field photographs of Asian Small-clawed Otter *Aonyx cinereus* (Zathang 2012, 2014, V. Lal Fala verbally 2014). The absence of camera-trap records of Small-toothed Palm Civet from Dampa TR may reflect the species's arboreal nature (see Willcox *et al.* 2012). Another possibility is that the species might have been overlooked in the camera-trap data, which could be investigated by further scrutiny of earlier camera-trap photographs. No systematic spotlighting surveys have been carried out for small carnivores in Dampa TR and this could be another reason why the species had not been sighted earlier.

Dampa TR might also have other small carnivore species remaining to be confirmed. Less than 50 m away from this Small-toothed Palm Civet sighting location, on 18 January 1995, TRSR had a fleeting glimpse of a Stripe-backed Weasel *Mustela strigidorsa*, then reputed to be one of the rarest and least-known mustelids in the world (Abramov *et al.* 2008). The animal, seen from a few meters away in poor light during early dawn, ran quickly across the rocks of Tuichar Lui and disappeared into a crevice. The dorsal stripe and throat appeared yellow against a rufous pelage; the animal had a bushy tail concolorous with the rest of the pelage. No other details could be noted. On the present survey, the location noted for the Tuichar cave (23°40'19.6"N, 92°25'10.7"E, about 30 m from the sighting location) is more accurate than the location (23°35'N, 92°22'E) reported to Abramov *et al.* (2008) for the sighting. One other small carnivore, the Spotted Linsang *Prionodon pardicolor*, is mentioned as occurring in Dampa TR (Zathang 2012), but no specific sight record or photograph is known (L. Zathang verbally 2014). It would be worthwhile to corroborate the presence of Stripe-backed Weasel and to confirm the possible occurrence of Spotted Linsang through baited camera-trap photographs in the future.

Additional surveys may determine if Small-toothed Palm Civet occurs elsewhere in the Reserve and surrounding landscapes, particularly if appropriate methodology such as spot-

lighting is used to survey for the species. Because the western edge of Dampa TR runs along the international boundary with Bangladesh, where the status of Small-toothed Palm Civet was reported as uncertain although suitable habitat remains in the adjoining hill tracts (Duckworth *et al.* 2008), the present report suggests the possibility of its occurrence in the wider region.

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