Intake of an ethnomedical shrub by Yellow-bellied Weasel *Mustela kathiah*

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**Abstract**

An episode of consumption of the bark, stem and/or fluid of the ethnomedical plant *Mallotus peltatus* by Yellow-bellied Weasel *Mustela kathiah* was camera-trapped in Yinggeling Nature Reserve, Hainan, China. This behaviour lasted about one minute and involved the weasel’s climbing into the crown, so seemed to be intentional. More behavioural and dietary studies would inform understanding of ethnomedical plant usage by carnivores.

**Keywords**: camera-trapping, China, diet, Hainan, *Mallotus peltatus*, medical treatment, plant consumption

Yellow-bellied Weasel *Mustela kathiah* is a small carnivore distributed from South and East China, west to the Himalayan region and south to West Thailand and southern Vietnam (Corbet & Hill 1992, Abramov *et al.* 2013, Chutipong *et al.* 2014, Phan *et al.* 2014). It is not considered threatened in South China, although its ecology is still poorly known (Lau *et al.* 2010). Camera-trapping was conducted as part of training in wildlife monitoring at Yinggeling Nature Reserve (18°49′–19°06′N, 109°11–34′E), Hainan province of China in 2009–2010. One of the seven infrared auto-triggered cameras-traps (Wildlife II, Shenzhen Changxin Electronics Technology Co. Ltd, China) was set 1.5 m above ground, facing an animal trail on a rocky steep slope 15 m from the nearest water source, at 400 m asl in a scrub valley dominated by fig trees *Ficus virens*. No lure or bait was used.

A series of photographs taken at 06h55–06h56 on 8 May 2009 showed a Yellow-bellied Weasel biting a branch of the shrub *Mallotus peltatus* (Fig 1). The action lasted about one minute despite the presumed disturbance from the camera-trap’s flash. It therefore seems to have been intentional feeding. The camera-trap was in position for three weeks from 1 May, but the Yellow-bellied Weasel was photographed only once, on the eighth day, so presumably did not return in the subsequent fortnight. A careful check of the plant in the field showed no bee hive or ant nest (Hymenoptera) on the branch. Xylophagous beetle (Coleoptera) larvae, which live in decaying wood, were unlikely to have been present in this fresh branch. The weasel seems, therefore to have been feeding on the plant directly.


This Yellow-bellied Weasel might have been feeding on *M. peltatus* because of these medicinal properties. The five most preferred plant species in the exudativorous diet of Bengal Slow Loris *Nycticebus bengalensis* have high medicinal value and are used traditionally by people (Das *et al.* 2014). Great apes are known to ingest plants rich in non-nutritional secondary compounds that may help reducing parasites (Huffman 2003). Evidence suggestive of self-medication in animals, including carnivores, was summarised by Huffman (2003), who documented the use of bark, root and fruit. Bengal Slow Loris’s consumption of plants also used medicinally by local people might be why the local people use the lorisises themselves as medicine (Nekaris *et al.* 2010, Das *et al.* 2014). Although being hunted for pelts, weasels are not valued in China medicinally or as food compared with other small carnivores like Masked Palm Civet *Paguma larvata*, Common Palm Civet *Paradoxurus hermaphroditus*, Small Indian Civet *Viverricula indica* and Eurasian Otter *Lutra lutra* (Wu 1993), but there is one record of Stripe-backed Weasel *M. strigidorsa* in trade in adjacent Lao PDR, for medicinal use (Hansel & Tizard 2006).

Alternatively, this episode might have been purely dietary, with no medicinal basis. Consumption of plant parts,
in particular fruit, is widespread among members of the Carnivora: in addition to the extensively frugivorous palm civets (Paradoxurinae), this includes in tropical Asia species such as Yellow-throated Marten *Martes flavigula*, Small-toothed Ferret Badger *Meogale moschata* and Small Indian Civet (*e.g.* Rabinowitz & Walker 1991, Corlett 1996, 1998, Zhou *et al.* 2008a, 2008b, 2008c). Nectarivory has been documented in palm civets and Yellow-throated Marten (*Joshi et al.* 1995, Nandini & Karthik 2007, Lau 2012, Moore & Wihermanto 2014). Although *M. peltatus* flowers and fruits in February–June and June–November respectively (*eFloras* 2014), neither flower (hence nectar) nor fruit is visible in the photographs nor was noted at time of camera setting. Grass is consumed as an intestinal scourer or a digestion aid by Sulawesi Civet *Macrogalidia musschenbroekii* and Viverra civets in northern and central Sulawesi (Wemmer & Watling 1986). It is unlikely that this camera-trapped Yellow-bellied Weasel fed on the *Mallotus* plant, which grew on a steep slope so was perhaps more difficult to reach than were many other plants nearby, as an intestinal scourer, although Yellow-bellied Weasel is apparently at least a fair climber (*Supparatvikorn* *et al.* 2012).

This seems to be the first description of the intake of non-fruiting parts of any ethnomedical plant by any small carnivore in Southeast Asia or China, perhaps over a wider area. In Latin America, coatis *Nasua* have been documented grooming with resin of the plant genus *Trattinnickia*, perhaps because of its medicinal properties (Gompper & Hoytman 1993). Yellow-bellied Weasel diet seems not to have been studied. As well as an expected diet of rodents, other small mammals and birds, it reportedly eats fruit (Larivière & Jennings 2009). Wu (1993) noted that some local people in Guangxi province of China described Yellow-bellied Weasel as fond of feeding on mushrooms; they thus call it ‘mushroom weasel’. Although weasels are generally considered highly carnivorous, at least one species, Siberian Weasel *M. sibirica*, consistently eats fruit, at least in some of its range (Tatara & Doi 1994).

The camera-trapped Yellow-bellied Weasel was chewing on the stem with its molars. It was clearly not merely licking the food. Such biting suggests that it was either consuming the bark itself or was trying to damage the stem so it could consume an exudate. A weasel consuming exudate would be startling; exudativory is a rare dietary niche known mainly in primates, with only seven genera known so far to gouge for exudate (Nash 1986, Nash & Burrows 2010, Smith 2010, Starr & Nekaris 2013). Evidence of carnivores incorporating plant solids or exudates in their diet could perhaps be provided by comparative studies of dental morphology from skull collections; dental signals of such diet are evident in galagos (Galagidae) (Burrows & Nash 2010). Further studies on diet, including close examination of camera-trap images, would allow a better understanding of ethnomedical plant usage by carnivores.
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