

Masked Palm Civet *Paguma larvata* apparently feeding on nectar of *Mucuna birdwoodiana*

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Abstract

Observations made in Hong Kong of Masked Palm Civet *Paguma larvata* visiting *Mucuna birdwoodiana* flowers, apparently feeding on the nectar, suggest that nectar may be an important food source for this species. More field work is needed to answer: how widespread is nectarivory in Masked Palm Civet and other small carnivores, and, how important are Masked Palm Civet and other small carnivores as pollinators of *Mucuna birdwoodiana* and other *Mucuna* species that are currently considered to be bat-pollinated.

Keywords: Hong Kong, nectarivory, pollination, small carnivore

La Civeta Enmascarada de la Palma *Paguma larvata* aparentemente alimentándose del néctar de *Mucuna birdwoodiana*

Resumen

Se realizaron observaciones de la Civeta Enmascarada de la Palma *Paguma larvata* visitando flores de *Mucuna birdwoodiana* en Hong Kong, en las cuales aparentemente se alimentaban de néctar. Estas observaciones sugieren que el néctar puede ser una fuente alimenticia importante para la especie. Se requiere más trabajo de campo para responder: ¿qué tan común es la nectarivoría en la Civeta Enmascarada de la Palma y otros pequeños carnívoros? y ¿qué tan importante es la Civeta Enmascarada de la Palma, y otros pequeños carnívoros, como polinizadores de *Mucuna birdwoodiana* y otras especies de *Mucuna* que actualmente son consideradas polinizadas por murciélagos?

Palabras clave: Hong Kong, nectarivoría, pequeño carnívoro, polinización

On 3 April 2011 at 20h00, a Masked Palm Civet *Paguma larvata* was seen on a flowering *Mucuna birdwoodiana*, a woody liana, in a small patch of *fung shui* wood (a forest patch preserved and/or planted behind a Chinese village to bring good fortune) at 22°18'49.5"N, 114°17'03.7"E and 100 m a.s.l. near Sheung Yeung Village, Clear Water Bay, New Territories in Hong Kong. The civet was about 10 m above ground, just below the tree canopy. Although it was suspected to be feeding on the nectar in the large number of blooming flowers of this vine, it disappeared into the tree canopy before detailed observation could be made. In addition several Leschenault's Rousette bats *Rousettus leschenaulti* were seen visiting the flowers of different individuals of this liana in the forest. The genus *Mucuna* has a wide distribution in tropical America, Africa, Asia and Australia, and the whole genus is considered to be bat-pollinated (Dobson & Peikert-Holle 1985). *Mucuna birdwoodiana* produces large numbers of robust, pale yellow, pungent flowers in long racemes (Fig. 1) in April (Thrower 1983). These flowers appear to be specially adapted to attract fruit bats, such as rousettes, and bat pollination has been confirmed in Hong Kong (Lau 2000). Pollination of plants by mammals other than bats has rarely been reported (Corlett 2004) and Brown Palm Civet *Paradoxurus jerdoni* is the only civet that has been reported to be a pollinator: the observations occurred in the tree *Cullenia exarillata*, while feeding on the flowers (Ganesh & Devy 2000). Masked Palm Civet is reported to eat mostly fruits but will also eat birds, rodents, insects, rodents, shoots and roots, and its diet shifts in relation to fruit availability (e.g. Shek 2006, Zhou *et al.* 2008).

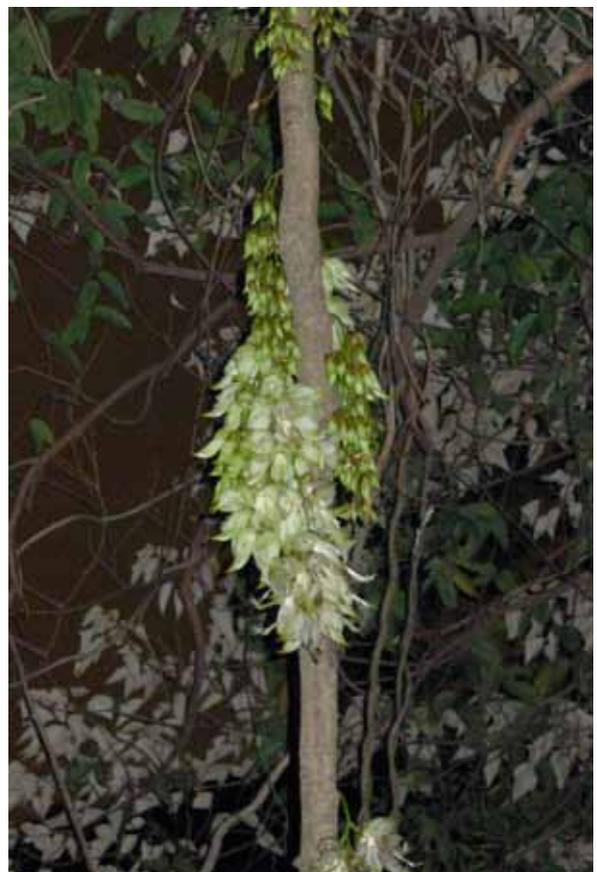


Fig. 1. Raceme of *Mucuna birdwoodiana*, Hong Kong, 30 April 2011.

Because the observation was surprising, against the published record, visits were made in the following nights in the hope of finding the civet again and making more observations to confirm its nectarivory. However, on 4, 5 and 6 April, only Leschenault's Rousettes could be seen visiting the flowers. On 7 April, a Masked Palm Civet was observed on another *Mucuna birdwoodiana* liana in the same forest patch. It was sitting on the liana about 5 m above the forest floor, allowing clear observation. From 21h40 to 22h45, this civet was observed tugging its muzzle among the flowers without chewing, and slowly moving up the liana to reach different racemes on the same plant until it was completely obscured by the thick canopy. In the forest patch just after dark (19h15) the next evening (8 April), a Masked Palm Civet was seen walking along a tree branch at about 5 m above ground, reach a flowering *Mucuna* and display similar behaviour. While observing this animal for about 20 minutes, another Masked Palm Civet was discovered on the same liana, further back among some thick foliage, and apparently feeding on nectar. They stayed on the liana for another 20 minutes. Then one animal moved out of view behind thick foliage. The other fed among the flowers higher in the canopy until 20h31 before disappearing from view. I then left and returned to the forest patch again at 22h10 and observed a Masked Palm Civet apparently feeding on nectar of another *Mucuna* individual until 23h25. Another individual was seen briefly moving on top branches in the canopy at 22h15. During these observations, I heard occasionally the sound of small things dropping to the forest floor beneath the civets; these may have been flowers broken off by the civet. Several Leschenault's Rousettes were seen flying around in the forest and at times landed on *Mucuna* flowers to feed, sometimes within meters of the feeding Civet.

Apparent nectarivory in carnivores has been reported by Yellow-throated Marten *Martes flavigula* feeding on *Cynometra polyandra*, a tree in north-east India (Nandini & Karthik 2007) and by Common Palm Civet *Paradoxurus hermaphroditus* feeding on nectar of Silk-cotton tree *Bombax ceiba* in Nepal (Joshi *et al.* 1995). Photographs of a Masked Palm Civet feeding at Silk-cotton flowers in Hong Kong were taken in March 2006 (<http://www.flickr.com/photos/denn>) and more sightings of Masked Palm Civet visiting Silk-cotton flowers were made in



Fig. 2. Masked Palm Civet *Paguma larvata* feeding in *Mucuna birdwoodiana* flowers, Hong Kong, 8 April 2011.

the area by the photographer and her friends in that season (Denise Chan *in litt.* 2012).

Masked Palm Civet evidently can spend quite a lot of time feeding in *M. birdwoodiana*, presumably on nectar, when it is in bloom (Fig. 2). It also seems that the species may return to feed repeatedly during the rather short flowering period of this liana. In Hong Kong, Masked Palm Civet consumes a lot of fruits, but the availability of fleshy fruits peaks in December and is lowest in May (Dudgeon & Corlett 2004). Hence, nectar may be an important food-source for Masked Palm Civets during a time of the year when few fruits are available. The observations (mentioned above) of Masked Palm Civet repeatedly visiting Silk-cotton flowers, a tree native to tropical South and Southeast Asia and Hainan but only planted in Hong Kong in parks and as roadside trees, further suggest that Masked Palm Civet might readily eat nectar. It would be interesting to determine whether Masked Palm Civet also feeds on nectar of other plant species, how important nectar is in its diet, and how important this small carnivore is as a pollinator to *M. birdwoodiana* and any other species. It might be that nectarivory in Masked Palm Civet and other small carnivores is more common than is documented thus far, because of the nocturnal nature of these animals and the heavily exploited, depleted populations in much of their range make field observations very difficult. The widely adopted method of visual examination of faeces to study diet (e.g. Zhou *et al.* 2008) will not pick up nectar (Joshi *et al.* 1995), although if pollen is also ingested it should be detectable by this method.

What is not clear is how Masked Palm Civets get the nectar from the *M. birdwoodiana* flowers, which are sturdy, papilionaceous with long keel petals that open up later. The calyx is protected by loose hairs (Thrower 1983) which can cause skin rashes in people (Walden & Hu 1976). When checked during the day, damaged flowers could hardly be found on the *M. birdwoodiana* liana and there were only a few fallen flowers scattered on the forest floor. These indicate that Masked Palm Civets did not break into the base of the flowers to get nectar. Do they have tongues long enough to lick nectar from the flowers, or do they wait until the keel petals open? I cannot find information on their tongue morphology; in-depth field study or from observations/experimentation of captive animals would be most informative.

The flowers of *M. birdwoodiana* are robust, mildly pungent with up to 30 flowers in one long raceme. One big liana can produce many racemes and hundreds of flowers open at any one time during the short flowering period. These attributes may be adaptations to attract fruit bats (Dobat & Peikert-Holle 1985), but they also should facilitate use by small carnivores. It would be worth observers paying more attention to other *Mucuna* species during the flowering season, to see if they are also visited by small carnivores and pollinated by them.

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References

Corlett, R. T. 2004. Flower visitors and pollination in the Oriental (Indomalayan) Region. *Biological Review* 79: 497–530.

- Dobat, K. & Peikert-Holle, T. 1985. *Blüten und Fledermäuse*. Kramer, Frankfurt am Main, Germany.
- Dudgeon, D. & Corlett, R. 2004. *The ecology and biodiversity of Hong Kong*. Friends of Country Parks, Hong Kong.
- Ganesh, T. & Devy, M. S. 2000. Flower use by arboreal mammals in a wet evergreen forest, south Western Ghats. *Selbyana* 21: 60–65.
- Joshi, A. R., Smith, J. L. D. & Cuthbert, F. J. 1995. Influence of food distribution and predation pressure on spacing behavior in palm civets. *Journal of Mammalogy* 76: 1205–1212.
- Lau, M. 2004. Bat pollination in the climber *Mucuna birdwoodiana*. *Porcupine!* 30: 11–12.
- Nandini, R. & Karthik, T. 2007. Field observations of Yellow-throated Martens *Martes flavigula* feeding on flowers in Meghalaya, north-east India. *Small Carnivore Conservation* 37: 26–27.
- Shek, C. T. 2006. *A field guide to the terrestrial mammals of Hong Kong*. Friends of Country Parks, Hong Kong.
- Thrower, S. L. 1983. *Hong Kong climbing plants*. Urban Council, Hong Kong.
- Walden, B. M. & Hu, S. Y. 1976. *Wild flowers of South China and Hong Kong*. Sino-American Publishing, Hong Kong.
- Zhou, Y., Zhang, J., Slade, E., Zhang, L., Palomares, F., Chen, L., Wang, X. & Zhang, S. 2008. Dietary shifts in relation to fruit availability among Masked Palm Civets (*Paguma larvata*) in Central China. *Journal of Mammalogy* 89: 435–447.
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