

The Dispersal of Taro by Common Palm Civets

G.G. Hambali
National Biological Institute
Bogor, Indonesia

Abstract

The dispersal of taro by common palm civets is discussed in terms of the behavior of this viverrid as a settlement animal. It is suggested that this animal might have an important role in the early domestication of taro by dispersing the seeds around human settlements.

In early 1977 while I worked in the taro plot of the Bogor Botanic Garden (West Java), I often wondered if the fruits of 'talas lampung putih' and also those of 'talas paris' (both are local cultivars of *Colocasia esculenta* var. *esculenta*), which I had previously left to ripen, had been eaten by common palm civets (*Paradoxurus hermaphroditus* (Pallas)). Marks left by the claws and teeth of this animal were seen on the remaining infructescence stalk. Another visit of this animal to this section of the garden was also detected later when I saw in the same taro plot fragmented inflorescence of 'talas paris' which seemed to be chewed but then rejected by this intruder. A piece of hair characteristic of the hair of common palm civets was seen stuck on the broken inflorescence stalk. This animal appeared to be attracted to the taste of the inflorescence which possessed a smell reminiscent of that of ripe papaya.

Solid evidence of the participation of common palm civets in the dispersal of taro was obtained later, when on 15 May 1977, I came across an excretion of this animal in a disturbed secondary forest on the slope of Mt. Welirang (East Java), at an altitude of ca. 1.300 m. Germinating taro seeds were seen along with seeds of *Pinanga kuhlii* Bl. on a fallen tree trunk. Another excretion containing taro seeds was also noticed two months later in a small path in Cibodas Nature Reserve on the slope of Mt. Gede (West Java) at about the same altitude. The two batches of taro seeds dispersed by this animal belonged to *C. esculenta* var. *antiquorum* Hubbard & Rehder which in Java grows wild at this altitude. On 21 May, 1978 I encountered one more excretion of a common palm civet which contained seeds of *C. esculenta* var. *esculenta* and also those of *Argyreia hookeri* Clarke, a berry-producing morning glory, on the unused road close to my institute's taro garden in Baranangsiang, Bogor, where several cultivars of this botanical variety (including 'talas sutera,' 'talas burkok,' 'talas paris' and 'talas lampung putih') were in fruit.

Docter van Leeuwen (1932) reported that the seeds of *C. gigantea* Hook. f., another edible but less popular taro species, were dispersed by common palm civets. In Bogor Botanic Garden I once saw an excretion of this animal containing seeds of *C. gigantea* on the parapet which is passed almost every night by this animal. In fact, on one occasion, I managed to trap a male common palm civet by using the sweet but itchy *C. gigantea* fruits as bait. At present, seedlings of this plant can sometimes be seen in the parts of the garden frequented by this animal. I also saw such ephemeral epiphytic seedlings on a secondary forest tree on the foot of Mt. Penanggungan (East Java). Docter van Leeuwen also reported that birds may participate in the dispersal of *C. gigantea*. He suggested that the epiphytic seedlings of *C. gigantea* which he saw on the palm *Attalea macrocarpa* Lindl. in the Bogor Botanic Garden grew from the seeds dispersed

by Philippine glossy starlings (*Aplonis panayensis strigatus* Horsf.).

At the moment, it is still not known if animals other than the common palm civet also significantly participate in the dispersal of *Colocasia esculenta*. Docter van Leeuwen (1935) suggested the possibility that frugivorous bats might be involved in the dispersal of an unidentified *Colocasia* species. He observed that the young plants of this *Colocasia* species were found under the resting and sleeping places of frugivorous bats. His observation, however, needs further verification since he overlooked the possibility that the seedlings might have grown from the seeds dispersed by common palm civets which could have been attracted to the resting places of the bats because of the decaying fruit odor. This suggestion is supported by his observation of the presence in the same place of young *Arenga pinnata* Merr. and *Caryota rumphiana* Mart. two palm species so far to be definitely dispersed by common palm civets which he hastily assumed to be also dispersed by frugivorous bats.

The itchy and usually green ripe fruits of *C. esculenta* taste sweet to sourish sweet. The smell varies from the fragrant smell of *Pandanus amaryllifolius* Roxb. leaves to the sourish smell of acetic acid or to the smell of an overripe pineapple. The itchy ripe fruits of *C. gigantea* are dirty yellow and taste sweet. The smell is reminiscent of an overripe pineapple. The strong ripe fruit smell of these two species of *Colocasia* is of high dispersal value since the common palm civets which disperse their seeds possess an acute olfactory organ (Bartels, 1964), and they usually forage during the night when visibility is low. In Bogor Botanic Garden, the ripe fruits of *Homalomena pendula* (Bl.) Bakh. f., another aroid with a distinctive fruit smell similar to that of an overripe pineapple, are also usually eaten by common palm civets. The telltale claw marks are usually left on the soft petioles of this plant.

Bartels (1964) mentioned that common palm civets prefer to defecate on bare places, namely on landslides, on protruding rocks in river beds, on top of rocky ridges, on border paths along clearings or plantations especially where a footpath forks off into the jungle. In Bogor Botanic Garden this animal occasionally forages in the small river beds when the water level is low as is evidenced by the coarse fragments of fresh water snails (*Bellamya javanica* (v.d. Busch) and fresh water crabs (*Parathelphusa* sp.) in the excretions on top of the parapet frequented by this animal. In the dry season, the common palm civets of the Ci Apus gorge are used to visiting the Ci Apus river bed as shown by the excretions on tops of river stones. Some of the defecating places of this animal and the places adjacent to them constitute the natural habitat of *C. esculenta* and *C. gigantea*.

Considering the habit of common palm civets as a settlement animal (Walker 1968, Hoogerwerf 1970, Ducker 1975, Lekagul & McNeely 1977), it is not very unlikely that this animal perhaps played an important role in the early domestication of taro by dispersing the seeds around human settlements, hence facilitating selection by early settlers. Common palm civets occur from sea level up to 3,000 m (Bartels, 1964), and are found from Kashmir in the West to the Philippines in the East; from Southern China and the Himalayas in the North to the Greater and many Lesser Sunda Islands in the South (Bartels 1964, Walker 1968, Hoogerwerf 1970, Ducker 1975, Lekagul & McNeely 1977). These areas cover the natural distribution areas of taro.

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