

Abstract of thesis entitled

THE ROLE OF MASKED PALM CIVET (*Paguma larvata*) AND SMALL INDIAN CIVET (*Viverricula indica*) IN SEED DISPERSAL IN HONG KONG, CHINA

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Almost all original forest of Hong Kong has disappeared due to long history of human impact. With subsequent extinction of large mammalian predators, medium-sized frugivorous carnivores should provide even more important ecological services between flora and fauna communities. This study set out to investigate the role of seed dispersal of fleshy fruit in the sympatric Masked Palm Civet (*Paguma larvata*) and Small Indian Civet (*Viverricula indica*) in Hong Kong. Scat analysis, which is a useful way to study elusive mammal species such as these two civets, was used. However, scat morphology alone cannot help us to differentiate the scats of these two species. A combined approach using scat morphology, thin layer chromatography of fecal bile acids and camera trapping were applied. The bile acid profile of *P. larvata* is characterized by a unique blue band with a retention factor of 0.73 which is absent in that of *V. indica*. *Viverricula indica* was found to use hard surfaces such as rocks and concrete as regular defecation points but *P. larvata* showed a more variable defecation habit.

Scat analyses and seed germination tests were conducted using the scats of *V. indica* collected from three sites. A total of 289 and 140 scats were used in scat analyses and seed germination tests. The seeds of 33 native woody species were recorded. Fruits occurred most frequently (94.3 %) in scats, followed by insects (56.6 %), mammals (27.2 %) and birds (7.9 %). The most important seed species dispersed in the dry, transitional



and wet seasons were *Diospyros morrisiana*, *Syzygium hancei* and *Machilus chekiangensis*, respectively. The relative importance of fruits was the highest in the dry season and the lowest in the wet season. The decrease of fruits in the diet in the wet season was substituted by a doubling of insects, particularly the Litter Cockroach (*Opisthopteria orientalis*). However, this shift in diet was more influenced by the availability of fruits than animal prey.

Over 42,800 *V. indica*-dispersed woody seeds of 22 species in 15 families were sowed both in-situ and ex-situ to test viability. The overall germination percentage was 26.1 ± 2.9 %, with the highest germination percentage in *Bischofia javanica* (92.3%). Germination percentage significantly depended on plant species and seed size. Higher germination percentage was detected in large (diameter ≥ 10 mm) and medium seeds (diameter < 10 mm) than small seeds (diameter < 3 mm), although small seeds required the shortest time to germinate. *Viverricula indica* was found to be an important, but inefficient seed disperser in delivering large quantities of viable woody seeds from forests to adjacent open, fire-maintained shrublands and grasslands, including rare native species. Seed dispersal effectiveness of *P. larvata* remained unclear due to low detection rate of scats.

The results of this study suggest that future reforestation projects should include those native plant species that are found to be widely dispersed by civets. This will increase the attractiveness of the resulting plantations to civets, which will then bring in more seeds in various combinations from adjacent forests to the reforested sites through defecation.

