

Ecological impacts of oil palm agriculture on forest mammals in plantation estates and smallholdings

ABSTRACT

Global oil palm expansion has caused substantial ecological damage to tropical biodiversity. We quantified wild mammal richness in large oil palm plantation estates and semi-traditional oil palm smallholdings in Peninsular Malaysia. We sampled 41 plantation estates and 14 smallholdings, and used line-transect surveys coupled with semi-structured interviews to develop a database of the native mammals found in oil palm landscapes. Semi-structured interviews revealed a total of 32 mammal species, including 13 IUCN Red Listed taxa of high conservation value. Our results showed that human activity and the size of patches of remnant rainforest were important factors influencing the richness of mammal species in oil palm landscapes. More carnivorous and herbivorous species were reported in smallholdings than plantation estates, most probably as a response to greater habitat heterogeneity in smallholdings. All species, irrespective of conservation status, were more likely to be recorded in oil palm plantation estates and smallholdings that supported large areas of native forest. Our findings suggest that biodiversity conservation in oil palm landscapes will require a variety of conservation approaches. Minimizing poaching, reducing disturbance from human activity, and protecting existing forest patches appear particularly important. Strategies to promote the persistence of both high and low conservation value species should be adopted as part of a strengthened certification scheme for oil palm production.

Keyword: Mammals; Oil palm; Plantation estates; Smallholdings; High conservation value species; Forest patch; Omnivorous; Carnivorous; Herbivorous; Peninsular Malaysia