INTROPica
HIGHLIGHTS

CAN FOREST PLANTATIONS SUPPORT TROPICAL WILDLIFE SPECIES?

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▶ INTRODUCTION

The establishment of forest plantations in Malaysia can be traced back as early as 1930s and 1970s for West and East Malaysia, respectively. However, it is only about 15 years ago that efforts to establish large-scale commercial forest plantations in Malaysia have been commenced through the planting of fast-growing species comprising both native and non-native trees. Eucalypts (*Eucalyptus* spp.), Mangium (*Acacia mangium*), Kelampayan (*Neolamarckia cadamba*), Teak (*Tectona grandis*), Sentang (*Azadirachta excelsa*) and Binuang (*Octomeles sumatrana*) are among the species that have been planted in the country. Such initiatives are made as a long-term strategy to ensure continuous supply of timber for the downstream industry as well as reduce the land use pressure on natural forests. However, it is not fully understood the effects of forest plantations to wildlife especially those that strictly rely on forest habitats for their survival.

▶ WILDLIFE IN FOREST PLANTATIONS

In view of the difference in terms of habitat structure and floristic species composition, as compared to natural forest, it is expected that some wildlife species may able to thrive in forest plantations but not all (Barlow et al., 2007; Intachat et al., 1999; Scholten, 2013; Zanzini et al., 2017). Similar to monoculture agricultural crops, forest plantations also suffer damage from invertebrates that adapt well to such a habitat. This includes various species of wood borers, leaf-eating beetles, gall wasps, termites and psyllids (Schabel et al., 1999). Kelampayan and *Eucalyptus* plantations have often been infested by wood borers which result in wood quality degradation and a loss in timber value (Nair, 2001). It is reported in a study on Kelampayan that about 70% of wood borer attacks had occurred in major forest plantations in Sarawak (Chai et al., 2010). Other than pest species, comparison of four plantations planted with indigenous and non-native species in Sabah and Peninsular Malaysia found higher diversity of geometrid moths in areas planted with indigenous species (Intachat et al., 1999).

In the case of vertebrates, wildlife composition in the forest plantations has also been shown to be influenced by both local and landscape factors (Duff et al., 1984; Stuebing & Gasis, 1989; Styring et al., 2011). In Sabah, besides scansorial small mammals such as Whitehead's Spiny Rat (Maxomys whiteheadi), Common Treeshrew (Tupaia glis) and Large Treeshrew (Tupaia tana) (Stuebing & Gasis, 1989), terrestrial vertebrates including deer, civets, pig (Sus barbatus) and Leopard Cat (Felix bengalensis) have been found to be abundant in non-native tree plantations especially those located close to a natural forest (Duff et al., 1984). In the Mangium plantations in Sabah, the diversity of birds was also found to increase with the age of the plantations, although such results were only observed for the small common species, not the large specialized ones (Styring et al., 2011). Elsewhere, similar studies carried out in Brazil found that both mammal (Zanzini et al., 2017) and bird (Scholten, 2013) species richness were higher in the natural forests as compared to Eucalyptus plantations, albeit the presence of arboreal species such as Southern Brown Howler (*Alouatta guariba*), Black-fronted Titi (*Callicebus nigrifrons*) and Black-tufted Marmoset (*Callithrix penicillata*) was more noticeable in the latter (Zanzini et al., 2017).

▶ CONCLUSION

In conclusion, past studies in the tropics have shown that factors, e.g. tree species planted, the associated habitat structure as well as the distance of a plantation to natural forest influenced wildlife composition in forest plantations. Different taxa tend to respond differently to the condition of the plantations. Rare and specialised forest species may not able to persist in such landscape and their response to forest plantation development in the tropics deserves further investigation. Even forest plantations have a great potential to support future demand for biomaterials, increasing concerns over their role in biodiversity conservation (Sheldon & Styring, 2011) should not be overlooked. Nonetheless, it is expected that forest plantations may serve as suboptimal habitats for certain wildlife species. Planting of mixed species especially indigenous trees is likely to be beneficial to certain fauna species that are able to adapt to the habitat created through such planting system as compared to a monoculture environment.

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FIGURE CAPTION:

Figure 1: Common bird species such as the Zebra Dove (*Geopelia striata*) seems to do well in young forest plantations

Figure 2: The response of primate species such as the Long-tailed Macaque (*Macaca fascicularis*) to the establishment of forest plantations awaits further research.

Figure 3: The Oriental Garden Lizard (Calotes versicolor) can be commonly bserved at the edge of forest plantations