

## Short Communication:

# Incidence of insect pest on planted *Shorea macrophylla* at reforestation sites in Gunung Apeng National Park, Sarawak, Malaysia

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**Abstract.** Sidi MB, Wasli ME, Polly E, Jaffar ANNM, Kalu M, Sani H, Nahrawi H, Elias H, Omar D. 2021. Short Communication: Incidence of insect pest on planted *Shorea macrophylla* at reforestation sites in Gunung Apeng National Park, Sarawak, Malaysia. *Biodiversitas* 22: 5162-5168. Incidence of insect pest in *Shorea macrophylla* (de Vriese) P.S. Ashton had critical foliage damage in mono planting technique. The main objectives were to assess the foliage damage intensity of planted *S. macrophylla* by age stands and type of foliage damage. The insect pest attacks the foliage of *S. macrophylla* was determined. The study site was located at Gunung Apeng National Park (GANP), Sarawak, Malaysia, with planted *S. macrophylla* in enrichment planting at different years (planted in 2008, 2009, 2010, and 2011 for age stand 6, 5, 4, and 3, respectively). The results showed that the degree of foliage damage decreases with the age stand of *S. macrophylla* tree. Therefore, foliage damage was suspected to be caused by insect pests. Among the common foliage damages observed was "hole damage" caused by insect order Lepidoptera. Although foliage damage was significant, the severity of the damage will "heal" as the age stand increases. Further investigation on other possible causes of these pest attacks should be initiated to find solutions that may hasten the growth of planted *S. macrophylla* for forest restoration.

**Keywords:** Age stands, foliage damage, insect pest, *Shorea macrophylla*

## INTRODUCTION

Damaging pests are commonly encountered in tropical plantations and natural forests. In a diverse forest ecosystem, it is widely understood that its stability allows the balance in species population to prevent one species from increasing. In a complex tropical rain forest, pests and disease infestations will remain stable due to limited suitable host materials. However, that may not be the case for mono species plantations where the species composition may provide a dominant species ecosystem that supplies an unlimited amount of host biomass for pests and disease that would marginalize the habitat for natural enemies (Nair 2007).

Defoliation is a condition of losing a small part or whole damage on the foliage by the pest. The continuation of defoliation reduced the production of foliage and shoot, dead on lower branches, scattered on tops caused ultimate death of upper branches and occasionally the entire tree (Battaglia et al. 2011; Cavaletto et al. 2019). The nutrient for tree development might deplete as the physical injury on the tree consecutively occurs (Wargo 1996; Marçais and Breda 2006). This situation lessens the ability of the tree to survive, making it prone to insect attack. The termites attacked the young Dipterocarp saplings in enrichment planting sites (Itoh et al. 1995; Kirton and Cheng 2007).

Gunung Apeng National Park (GANP), Sarawak, Malaysia, is one of the sites reforested through enrichment planting (Wasli et al. 2020). With the addition of planted indigenous trees into secondary forest areas through enrichment planting, there are abundant food and good breeding ground for various insect pest species (Itoh et al. 1995). The specific insect pest may defoliate the leaves, destroy the root and shoot, attack the stem and suck the sap in mono-species tree plantation abundantly. A possible increase in insect population can cause insect pest outbreaks in some cases, leading to the destruction of the planted forest area (Allard et al. 2003; Lee 2018; Prastyaningsih et al. 2020).

However, few reports were available on the insect pests incidence in reforestation areas after enrichment planting (Wormald 1992; Watt 1997; Aluja et al. 2014; Saunders et al. 2016). In Sarawak, *Shorea macrophylla* is considered a fast-growing tree species commonly planted for reforestation due to their profuse flowering and fruiting every year (Perumal et al. 2017a, b). The reforestation at GANP emulated this approach where *S. macrophylla* was planted for enrichment purposes where most of the area is planted via mono-species planting. It would be essential to study the incidence of insect pests of planted *S. macrophylla* at GANP. The data on the damaging trend of the tree is vital to formulate the most effective protection strategies. Thus, this study provides information on the