



Research project of counterparts funded at IPB

Name	Counterpart	Title
Purnama Hidayat, Rawati Panjaitan	Z02	Diversity of butterflies at the Biodiversity Enrichment Experiment (BEE) plots in palm oil plantation in Jambi, Indonesia.

The Biodiversity Enrichment Experiment (BEE) at PT Humusindo, Jambi consists of several sizes of plots planted with local plants in the form of tree islands between oil palm plantations (Teuscher *et al.* 2016). The BEE is expected to demonstrate that these tree islands provide habitats for plants and animals, including butterflies, that will be able to indirectly benefit humans by providing diverse sources of income, and more diverse communities of animals contributing to natural pest control. In our study we examined the diversity of butterflies and flowering plants in the BEE plots. The research was conducted from 13 August to 14 October 2018. Plot sizes were 5 × 5, 10 × 10, 20 × 20 and 40 × 40 m² with four replicates of each plot size. The method used was catch, mark and release; butterflies were captured by sweeping from 08:00 to 17:00 local time. Butterfly diversity ($H' = 2.15$) was highest in 10 × 10 m² plots (Table 1). The Simpson index value was close to 1 (0.74-0.79) indicating that the butterfly community in all plot sizes was complex. NMDS based on Bray Curtis showed that 5 × 5 and 40 × 40 m² plots differed in species composition. However, 10 × 10 and 20 × 20 m² plots were similar in species composition (Fig. 1 and 2).

It seems that the sizes of BEE plots has little effect on butterfly species diversity but does affect their abundance.

Table 1. Species richness of butterflies in the Biodiversity Enrichment Experiment (BEE) at PT Humusindo Jambi

Plot size (m ²)	Number Individual	Number Species	Index Shannon-Wiener (H')	Index Simpson (D)
5 × 5	562	31	2.13	0.79
10 × 10	824	34	2.15	0.76
20 × 20	845	31	2.08	0.75
40 × 40	1143	40	2.05	0.74

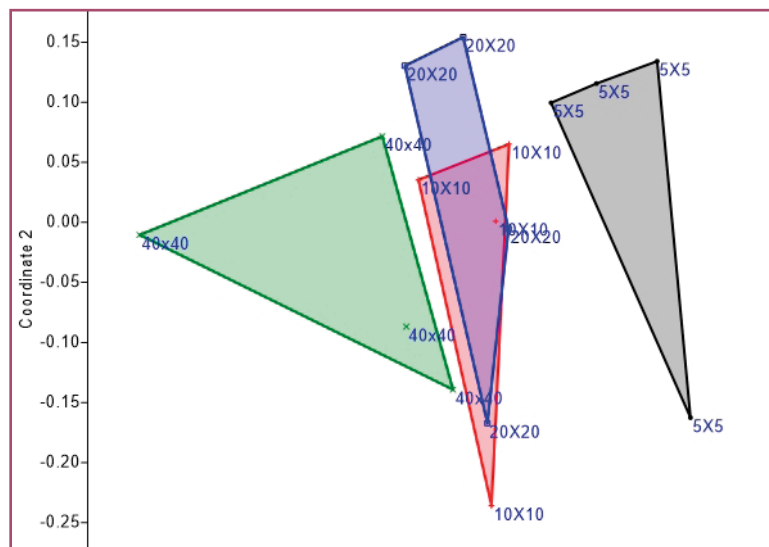


Figure 1. NMDS plot of the composition of butterflies species in the Biodiversity Enrichment Experiment (BEE) at PT Humusindo Jambi based on Bray Curtis similarity

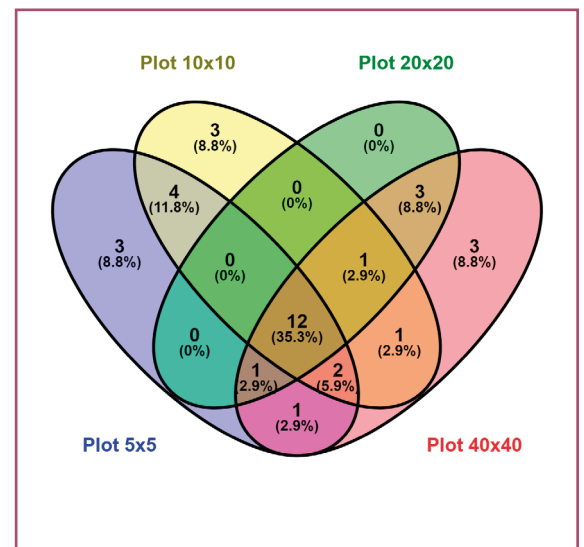


Figure 2. Venn diagram on butterfly species numbers in the Biodiversity Enrichment Experiment (BEE) at PT Humusindo Jambi

References:

Teuscher M, Gérard A, Brose U, Buchori D, Clough Y, Ehbrecht M, Hölscher D, Irawan B, Sundawati L, Wollni M and Kreft H (2016) Experimental biodiversity enrichment in oil-palm dominated landscapes in Indonesia. *Front. Plant Sci.* 7:1538