

# LINKING ECOSYSTEM SERVICES, AGRO-BIODIVERSITY CONSERVATION AND SUSTAINABLE PALM OIL: FLOWER-VISITING PARASITOID DIVERSITY, INSECT- FEEDING BIRD COMPLEX, AND NON CROP VEGETATION IN OIL PALM LANDSCAPE

Bandung Sahari, Henny Hendarjanti, Gilang F Ramadhan and AdlanYusran

PT Astra Agro Lestari, Jl Puloayang Raya Blok OR-I, Kawasan Industri Pulogadung, Jakarta.

## ABSTRACT

Oil palm landscape is a complex ecosystem containing a high extent of agrobiodiversity that provides various ecosystem services. Natural control of pest by existing natural enemies, such as predators, parasitoids and insect-feeding birds is an important service that can be used to enhance crop productivity. Development of ecological infrastructure is a critical foundation to ensure the long lasting natural biological control services. Habitat management through the establishment of non- crop vegetation i.e flowering herbs such as *Turnera subulata*, *Turnera umnifolia*, *Cassia tora*, and *Antigonon leptopus* has been widely applied to maintain parasitoids community and birds. Three years research was conducted in oil palm landscape in Central Kalimantan. Ecological samplings were conducted to evaluate flower-visiting parasitoid community by collecting insects from inside plantations and flowers of *T.subulata*. Vegetation analysis was established to identify complex of non- crop vegetation community inside plantations from different ages. Physical environment such as ambient temperature, humidity and light intensity was also recorded. Birds were directly observed by transect walks. We sampled 5,235 specimens of Hymenopteran parasitoids belonging 146 species visiting flowers of *T subulata*. *Brachymeria lasusis* was the most abundant parasitic wasp species found to visit *T subulata*. About 42 non-crop vegetation species were identified to occur inside plantations for 89 plots surveyed We also identified 26 species of birds in the plantations. The importance of non-crop vegetation community for maintaining beneficial insects and birds especially insect-feeding bird community is confirmed. Future development of oil palm landscape should take into account non-crop vegetation community as an important aspect to ensure the contribution of existing agrobiodiversity especially beneficial insects and bird continue to provide long lasting ecosystem services such as pest control.

*Keywords: Birds, Insects, Parasitoids, non-crop vegetation, conservation.*