Name	Counterpart	Title
Tia Wulandari	B09	Freshwater Stream Quality and Biodiversity in Rainforests versus Oil Palm Plantations

Background and Methodology

Land use transformation from rainforest to oil palm plantation can affect freshwater streams. This study was carried out in oil palm plantations and rainforest streams in PT. Berkat Sawit Utama Oil Palm Plantation, Humusindo Oil Palm Plantation and Harapan Rainforest, Bungku District, Batanghari, Jambi Province (Figure 1). The condition of freshwater streams situated in oil palm plantations and rainforest habitats was measured based on physicochemical measurements and aquatic arthropod diversity.

Figure 1A and 1B. Oil palm plantation stream and rainforest stream

In each habitat, we analyzed four streams. Each stream is independent with its own watershed. Water quality is measured based on physicochemical parameters, using a Hanna-HI9829 multiparameter device. For biodiversity, we sample freshwater arthropods (insects and crustaceans) using a surber sampler (square nets) (Figure 2).

Figure 2. Collecting fresh water arthropods

Figure 3 a–c. Freshwater arthropods (a) Crustacea; (b) Odonata; (c) Hemiptera

Result

This study shows there were detectable significant differences in some of the physicochemical parameters of water streams in oil palm plantation streams and rainforest streams (temperature, pH, turbidity, and conductivity). The type of substrates in both of the land use systems (oil palm plantation and rain forest) were dominated by the sandy type. We collected 342 individuals of arthropods that are included in 3 main groups, which are Crustacea, Odonata and Hemiptera. From the identification, we found 3 families for Crustacea (Atydae, Palaemonidae and Gecarcinucidae), 5 families for Odonata (Coenagrionidae, Calopterygidae, Libellulidae, Gomphidae, and Macromiidae), and 4 families for Hemiptera (Geridae, Veliidae, Holobatinae and Hydrometridae).

The significant differences of physicochemical parameters in the stream measurements, leads to differences in the number of arthropods in both land uses. The different numbers of arthropods between oil palm plantation streams and rainforest streams could be caused by the leaf litter in the streams and affecting the water quality. Conventionally, management such as presenting a buffer zone around streams in oil palm plantations might enhance arthropod biodiversity.

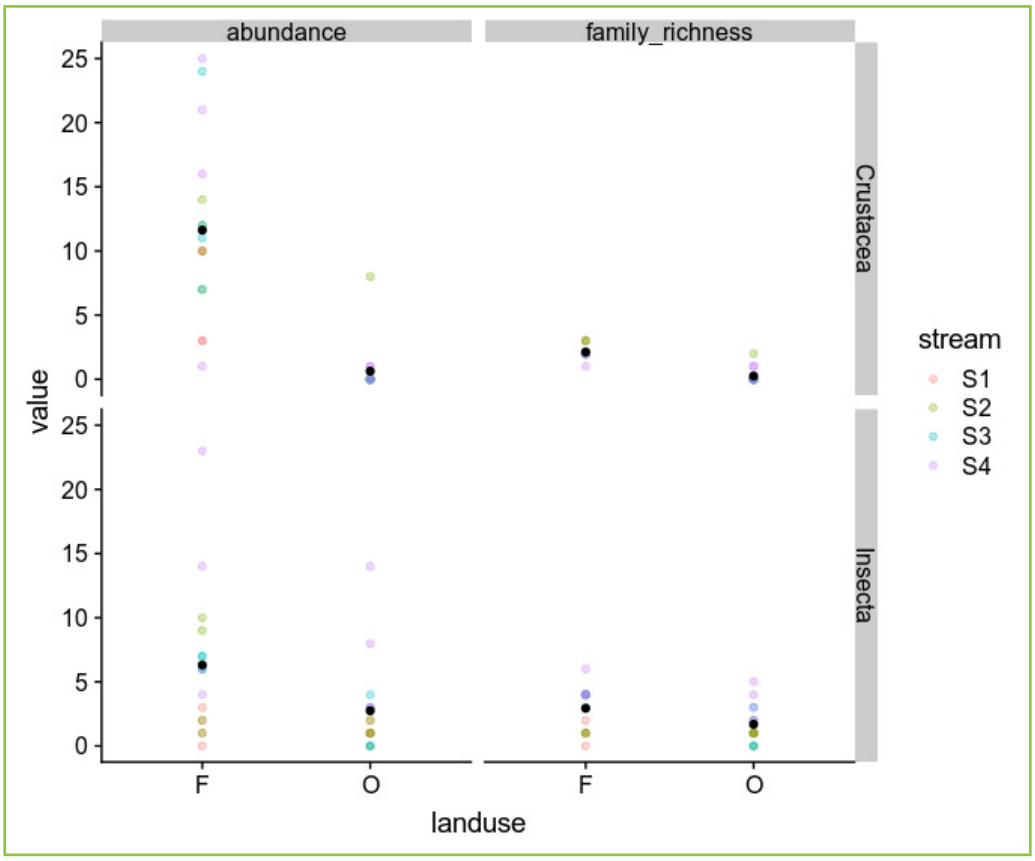

Figure 4. Abundance and Family richness of freshwater arthropods