BIOMONITORING OF STREAMS: USING EPHEMEROPTERA, PLECOPTERA AND TRICHOPTERA (EPT) IN RESPONSES TO THE DIFFERENT TYPES OF LAND USE AT TABIN WILDLIFE RESERVE (TWR), LAHAD DATU, SABAH, MALAYSIA

Abstract

A preliminary study on three aquatic insect orders, namely Ephemeroptera (mayfly), Plecoptera (stonefly), and Trichoptera (caddisfly) (EPT) was conducted at Tabin Wildlife Reserve (TWR), Lahad Datu, Sabah in January and February 2015. The objectives of this study were to determine (i) the composition of EPT along a stream at TWR, (ii) the distribution of EPT in each different land use at TWR, and (iii) the relationship between EPT communities and the water quality of the stream at TWR. Kick net sampling technique was used for collecting the EPT communities along Sg. Lipad of TWR. The most dominant order was Ephemeroptera consisting of 11 families with 1,354 individuals out of the total of 1,724 individuals and 26 families of EPT communities sampled. Trichoptera was the second most abundant order with nine families and 258 individuals, and lastly, Plecoptera with only six families and 112 individuals. There were more families of EPT communities distributed in secondary forest as compared to the oil palm plantation. Several exclusive families were found in secondary forest, while only one family was found in oil palm plantation. The habitat run showed the highest in abundance of EPT, while pool recorded the least in abundance. Four biotic indices (BMWP, ASPT, FBI, and INWQS) and a few physico-chemical parameters (pH, temperature, conductivity, and DO) were used in this study to determine the water quality of the sampling location. Based on the biotic indices and physico-chemical parameters, the status of water in Sg. Lipad was in excellent condition. The two water quality tests showed profound consistency. This serves as a confirmation that the EPT communities are effective to be used as a biomonitoring tool at TWR.