



**TITLE OF RESEARCH:**

**EFFECT OF LAND USE (LOGGED FOREST AND OIL PALM PLANTATION)  
ON FRESHWATER MACROINVERTEBRATES ASSEMBLAGES IN VICINITY  
OF TABIN WILDLIFE RESERVE, LAHAD DATU, SABAH.**

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**ABSTRACT**

A study on the effect of land use (Logged Forest and Oil Palm Plantation) on freshwater macroinvertebrates assemblages in vicinity of Tabin Wildlife Reserve, Lahad Datu, Sabah was conducted from August 2014 to February 2015. The sampling was done in the stream which flows across secondary forest area and plantation area. Kick net method was used to sample the freshwater invertebrates at both area. A total of 3,579 individuals were sampled consisting of 76 families from eight orders of freshwater invertebrates from both of the land use. The diversity of aquatic macroinvertebrates in secondary forest was found to be slightly higher than plantation area with  $H' = 3.213$  and  $H' = 3.188$  respectively. The aquatic macroinvertebrates were also found to be more abundance in riffle habitat and least in pool habitats. The diversity for pool habitat, however, was the highest among all other habitats with  $H' = 3.709$ . Both physico-chemical parameters and biotic indices indicated that the invertebrate communities were affected by the water quality in their surrounding and may be use for rapid assessment of water quality in TWR.

**INTRODUCTION**

Aquatic ecosystems are recognised as one of the most threatened components of global biodiversity in the world despite its richness of biodiversity (Dudgeon *et al.*, 2006; Sala and Jackson, 2006). The Environmental Protection Agency (USEPA, 2013) reported that of the rivers and streams in the United State (U.S.), about 55% of the river and stream length is in poor condition. In Malaysia, there has been a decrease of more than half in term of percentage of clean water from year 2008 to 2012, based on Ammoniacal Nitrogen pollutant (Department of Statistics Malaysia, 2013). Although there is been highlight on global diversity issue, however, Strayer and Dudgeon (2010) argued that less attention was focused on the loss of biodiversity in tropical aquatic ecosystems.

Riparian vegetation is greatly related to the stream ecosystems as it could alters the biological dynamics, physical and chemical properties of the streams, and even the function and structure of their ecosystems (Dosskey *et al.* 2010). Habitat fragmentation is one of the important conservation issues in preservation of natural biodiversity (Fahrig, 2003; Monaghan *et al.* 2005). It is partly a consequence from human development activities such as constructions, natural resources extractions, building of dams, and agricultural land-use (Fahrig, 2003). Fragmentation of forests resulted in habitat isolation which leads to reduction in taxonomic richness (Chase, 2003; Forbes and Chase, 2002; Ims *et al.* 2004; Kneitel and Miller, 2003). Azhar *et al.* (2011), Corley (2009), Fitzherbert *et al.* (2008), and