

**DECOMPOSITION RATE OF LEAF LITTER BETWEEN THE  
PROTECTED AND UNPROTECTED MANGROVE AREAS**

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## ABSTRACT

### DECOMPOSITION RATE OF LEAF LITTER BETWEEN THE PROTECTED AND UNPROTECTED MANGROVE AREAS

The decomposition rate of leaf litter between the protected (KKWRS) and unprotected (UiTM Sabah) mangrove areas were investigated during this study by using litter bags, where visibly both areas had different level of solid waste pollution where the unprotected area (UiTM Sabah) had high level of solid waste pollution. This study was conducted from March 2019 until July 2019. The mangroves species that was used in this study is *Rhizophora mucronata*, where the species is the dominant species in both mangrove areas. This study also focused on the factors that affect the decomposition rate of leaf litters, which are the soil organic matter and soil pH. Line transect and quadrat sampling was used to collect the soil samples and checked the soil pH. The leaf litter decomposition rate showed that the protected area (KKWRS) had faster decomposition rate compared to the unprotected area (UiTM Sabah). Soil organic matter and soil pH were higher at the unprotected area (UiTM Sabah) compared to the protected area (KKWRS). There is no correlation between both the soil organic matter (SOM) and soil pH to the leaf litter decomposition rate within the protected (KKWRS) and unprotected (UiTM Sabah) mangrove areas. In conclusion, both SOM and soil pH have no effect on the leaf decomposition rate within the protected (KKWRS) and unprotected (UiTM Sabah) mangrove areas.

# CHAPTER 1

## INTRODUCTION

### 1.1 Background of study

Mangroves are an important ecosystem that provide many benefits to both terrestrial and ocean ecosystem as it is located between the land and ocean (Nagelkerken, *et al.*, 2008). Mangroves also acts as breeding site and nursery for the multiple species of juvenile aquatic life to grow hence, it can give a huge impact to the economic value (Sabah Wetland Conservation Society, 2018). Mangroves also stored huge amount of carbon in the sediment of the forest contribute to maintaining the climate (Kristensen *et al.*, 2008). However, this ecosystem has been disturbed and plenty of deforestation occur due to construction at the coastal area and these activities lead to releasing carbon into the atmosphere, resulting in climate change (Donato *et al.*, 2011).

Dynamic of leaf litter decomposition rate plays an important role in determining the variation and type of the forest (Robertson, 2003). The breakdown of leaf litter and other organic material provides nutrient, which is required by the trees in the forest (Berg and Claugherty, 2003). Leaf litter decomposition consist of four basic steps: (1) removal of soluble