

Length-Weight Relationship, Condition Factor and Feeding Habit of Fishes from Mangrove of Santubong Estuary, Sarawak, Malaysia

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ABSTRACT

Length-weight relationship (LWR), condition factor (K) and feeding habits of *Coilia dussumieri*, *Nemapteryx nenga* and *Nibea soldado* from Santubong Estuary, Sarawak, Malaysia were reported in the present study. The sampling was conducted during the non-monsoon season and monsoon season from April to November 2017 at Buntal, Penambir and Demak rivers using three-layered gillnets. A total of 182 fish samples were caught and measured for the total length and body weight. Then, the data were analysed by the equations for LWR and K. The feeding behaviour analysis was carried out using Relative Gut Index (RGI) and Frequency of Food Occurrence method. The log-transformed regression showed that most of the fishes exhibited negative allometric. K showed a significant difference between seasons. The RGI values of the fishes showed that they were carnivorous. The highest frequency of food occurrence in both seasons was gastropods (94-95 %) and the food items were found to be more variable during monsoon season (gastropods insect, worms, fish, asteroidea, phytoplankton and bivalve). The b value is an exponent to measure the growth pattern of fish and in this study, the b values were in the expected range of 2.5-3.5 and not affected by seasonal variation. The K values suggesting that most of the species were surviving well in the river and was influenced by seasonal change. The RGI and frequency of food occurrence showed that all fish in this study species were carnivorous with more variability in food was observed during the monsoon season. The data of this study are important for a sustainable fisheries management in this area.

Keywords: Estuary, fish, fish diet, length and weight, seasonal

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INTRODUCTION

Fishes from families of Engraulidae, Ariidae and Sciaenidae are widespread in tropical estuaries (Fauziyah *et al.*, 2019). They are commercially important as they are delicacy in the diet of local communities. Length-Weight Relationship (LWR) provides information on the fish stock composition, life span, mortality, growth patterns, fish production, indications on the climate and environmental changes as well as human subsistence. LWR is widely used in planning a better management strategy fisheries resources (Huang *et al.*, 2018). Growth patterns of fish usually follow the cube laws but the actual relationship may differ due to environmental factors (Yosuva *et al.*, 2018). Condition Factor (K) is used to measure the health and general well-being of a fish concerning to its environment. The K values reflect their gonadal development, degree of food supply availability and environmental

conditions (Rodriguez *et al.*, 2017). The value K is required for effective fish management and exploitation as it suggests the life cycle and physiological state of the fish concerning to its welfare. In fisheries, both LWR and K are crucial in predicting the best length and time to harvest a specific species of fish (Abobi, 2015). The analysis of feeding habit of fish is important to provide information on the life history facilitating rational exploitation and management of commercial species (Kiran *et al.*, 2017). In this study, monsoon season refers to the Northeast and Southwest monsoon while the non-monsoon season refers to the Inter-monsoon. The monsoon season occurs between November to March and May to September which usually brings rainfall. The non-monsoon season is the transition period between monsoons, typically occur between April to May and September to October and the winds are generally light and variable (Malaysian Meteorological Department, 2017).