Gastrointestinal indices and length weight relationship of Mudskipper (*Apocryptes bato)* from two different habitats along the Bay of Bengal coast

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A thesis submitted in the partial fulfillment of the requirements for the degree of Master of Science in Fish Biology and Biotechnology

Department of Fish Biology and Biotechnology

Faculty of Fisheries

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Khulshi, Chattogram-4225, Bangladesh

DECEMBER 2024

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ABSTRACT

The length weight relationship (LWR) of fish is a crucial aspect of fisheries biology and management, providing information on the growth patterns, health, and ecology of fish populations. For the investigations, live *Apocryptes bato*, a mudskipper species was collected by hand net from two different coastal habitats Chattogram and Cox's Bazar along the coast of Bay of Bengal. The objectives were to compare digestive efficiency, feeding patterns, and growth characteristics of *A. bato* across these two different habitats. The length weight relationship was calculated using a power function ($W = aL^b$). The length weight relationship of *A. bato* was found to have an exponent "b" value of 2.78 and 1.72 (negative allometric growth) for both habitats for the pooled data, while the female in the Chattogram demonstrates positively allometric growth pattern here "b" value was 3.51. Measured gastrointestinal indices revealed that fish in the Chattogram region had higher visceral somatic index (VSI) and hepatosomatic index (HSI) values than fish in the Cox's Bazar region. However, relative length of gut (RLG) and intestine somatic index (ISI) values is comparably lower in the Chattogram region than the Cox's Bazar. In Chattogram and Cox's Bazar region, condition factor (K) ranged from 0.44 − 0.87 and 0.76 − 1.32 respectively and no statistically significant difference ($p > 0.05$) was observed between the K and relative condition factor (Kn) values of fishes from these two different habitats. Results of the present study also showed significant differences in the gastrointestinal indices between the two habitats indicating the necessity of habitat specific management for *A. bato*. Future conservation and management plans for coastal ecosystems can benefit from these findings, which expand our knowledge of how habitat specific factors affect mudskipper growth and feeding physiology.

Keywords: *Apocryptes bato,* Length weight relationship, Gastrointestinal indices, Habitats, Bay of Bengal