Larval fish assemblage, diversity and habitat ecology in the Matang Mangrove Ecosystem, Perak, Malaysia

ABSTRACT

Aim: In this study, habitat ecology, abundance and diversity indices were combined to characterize spatial distribution and seasonal patterns of larval assemblages at three sites with different levels of disturbance at Matang mangrove ecosystem. Methodology: Three sampling stations were selected, namely S1 - most disturbed, S2 - moderately disturbed? and S3 - least disturbed. Larval fishes were collected using oblique tows of a bongo net (450 μm mesh size) equipped with a flow meter every month for one year from April 2015 to March 2016. A total of 14 families were identified with nine families dominating at S1, eight at S2 and 10 at S3. Results: Gobiidae was the most abundant at 80.68% total abundance, followed by Mullidae (3.26%), Rachycentridae (3.07%), Blenniidae (3.01%), Engraulidae (2.22%) and Ambassidae (1.68%). The highest and lowest Shannon-Wiener diversity index was recorded at S3 (H'=1.04) and S1 (H'=0.35), respectively. Water temperature showed a positive significant correlation with Blenniidae ($p < 0.05$) and a negative significant correlation with Gobiidae and Syngnathidae ($p < 0.05$). Similarly, Gobiidae and Syngnathidae were negatively correlated with salinity, TDS, conductivity and pH. However, multiregression analysis indicated a weak overall relationship (4 - 41%) between larval abundance and environmental variables. This suggests that habitat structure of mangroves was more important in determining larval abundance than water quality. Interpretation: This study emphasizes the need to conserve mangrove ecosystems as important nursery grounds for various fish larvae to ensure adequate recruitment and ultimately sustainable fisheries management.

Keyword: Abundance; Density; Larval fish composition; Matang Mangrove; Malaysia