

Influence of habitat structure and environmental variables on larval fish assemblage in the Johor Strait, Malaysia

ABSTRACT

Our previous study demonstrated that among different habitat sites (mangrove, estuary, river, seagrass and Open Sea) in Johor Strait, Malaysia, seagrass showed highest family diversity and abundance of larval fish. However, it is unclear whether this was due to difference in habitat complexity or water quality parameters. To test this, larval fish were collected by using a bongo net equipped with a flow meter by subsurface horizontal towing from different habitats in Johor Strait between October 2007 and September 2008. Various physico-chemical parameters were measured and then examined for any relationship to fish larvae diversity and abundance. Among the 24 families identified from the sites, seven families (Blenniidae, Clupeidae, Mullidae, Nemipteridae, Syngnathidae, Terapontidae and Uranoscopeidae) were significantly correlated with the tested water quality parameters. Salinity showed a positive and negative significant correlation with Clupeidae ($p < 0.01$) and Uranoscopeidae ($p < 0.05$), respectively. Terapontidae was significantly correlated with dissolved oxygen ($p < 0.01$), while both Mullidae and Syngnathidae were significantly correlated with pH ($p < 0.05$). However, a canonical correspondence analysis test indicated weak overall correlation (36.4%) between larval assemblage and in the seagrass-mangrove ecosystem of Johor Strait, Malaysia. This likely indicates that habitat structure was more important in determining larval abundance (highest in the seagrass habitat) as compared to water quality at the tested sites. This study emphasizes the need to conserve seagrass beds as important nursery grounds for various fish larvae to ensure adequate recruitment and ultimately sustainable fisheries management.

Keyword: Abiotic factors; Fish larvae; Mangrove; Population abundance; Seagrass