

Water quality influences on fish occurrence in peat swamp forest and its converted areas in north Selangor, Malaysia

ABSTRACT

Tropical peat swamp forest (PSF) is one of the most endangered ecosystems in the world. However, the impacts of anthropogenic activities in PSF and its conversion area towards fish biodiversity are less understood. This study investigates the influences of water physico-chemical parameters on fish occurrences in peat swamp, paddy field and oil palm plantation in the North Selangor peat swamp forest (NSPSF), Selangor, Malaysia. Fish and water samples were collected from four sites located in the peat swamps, while two sites were located in the paddy field and oil palm plantation areas. Multivariate analyses were used to determine the associations between water qualities and fish occurrences in the three habitats. A total of 1,382 individual fish, belonging to 10 families, 15 genera and 20 species were collected. The family Cyprinidae had the highest representatives, followed by Bagridae and Osphronemidae. The most abundant species was *Barbonymus schwanefeldii* (Bleeker 1854), while the least abundant was *Wallago leerii* Bleeker, 1851. The paddy field and oil palm plantation area recorded significantly higher fish diversity and richness relative to peat swamp ($p < 0.05$). The water physico-chemical parameters, such as pH, DO, NH₃-N, PO₄, SO₄, and Cl₂ showed no significant difference between paddy field and oil palm plantation ($p > 0.05$), but was significantly different from the peat swamp ($p < 0.05$). However, no water quality parameter was consistently observed to be associated with fish occurrences in all of the three habitats, but water temperature, NH₃-N, Cl₂, SO₄, and EC were at least associated with fish occurrences in two habitats studied. This study confirmed that each habitat possess different water quality parameters associated with fish occurrences. Understanding all these ecological aspects could help future management and conservation of NSPSF.

Keyword: Fish occurrences; Oil palm plantation; Paddy field; Peat swamp forest; Water physico-chemical