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Assessment on the Effect of Water Quality on Commercial Finfish Catches Using Fish Based Index of Biotic Integrity (IBI) in Selected Sites of Bolgoda North Lake of Sri Lanka**Dissanayake D.M.C.P. *, De Alwis S.M.D.A.U.**

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Abstract

Bolgoda Lake (6° 40'-49' N: 70° 54'-58' E) is a basin estuary with a declining aesthetic value and is an example of a stressed coastal water body. North Lake is the major artisanal fishing area of the Bolgoda estuarine system and it is reported that the fish catches in this fishing area is on the decline over the last two decades. The main contributory factor for this decline is identified as degrading water quality of the estuary due to various land-based activities. In order to find out the relationship between reduced fish catches and water quality of the estuary, Fish based Index of Biotic Integrity (IBI) which is considered a good indicator of ecosystem health was used in this study. Annual commercial finfish catches from January 2018 to December 2018, at the three major fish landing sites of the North Lake, namely Diggala, Indigahathotupola and Kithalanduwa were calculated and the fish species that were caught were used to construct IBI for these three sites. 12 metrics under fish species richness and composition, trophic condition and health status were used to construct IBI. Diggala landing site having an IBI score of 50 can be classified as having good water quality which also had the highest annual fish catch of 11,250±124.68 kg. Indigahathotupola landing site recorded 38 as its IBI score and this site is classified as having fair-poor water quality and recorded an annual fish catch of 9,371.25±30.845 kg being the second highest catch, while Kithalanduwa recorded the lowest annual fish catch of 5,130±34.47 kg and the lowest IBI score of 22 and classified as having very poor water quality. These results show a positive relationship between water quality and annual fish catches between the three landing sites. Kithalanduwa with the lowest IBI value between the three sites, had no sensitive or endemic fish species and had the highest percentage of introduced species, while tolerant species such as *Heteropneustes fossilis*, *Mystus gulio*, *Oreochromis mosambicus* and *O. niloticus* were dominant. In contrast, Diggala site with highest IBI value contained sensitive species such as *Channa striata*, *Puntius amphibious* and *Glossogobius giuris*. In this context, sensitive species associated with good water quality and tolerant species with poor water quality also gives a good indication of the water quality of the selected sites.

Keywords: Finfish catches, Water quality, Fish based index of biotic integrity, Bolgoda North Lake