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Morphological correlates with diet of fish assemblages in brush park fisheries of tropical estuaries

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Abstract

Brush park fishery in Negombo estuary, Sri Lanka is a traditional fishing practice which relies on fishes attracted to artificial woody fish aggregation devices. This study investigates whether constituent species in these brush parks exhibit morphological variations in relation to their dietary habits. Fishes caught in brush parks were sampled from April 2014 to April 2016 covering rainy, intermediate and dry seasons. There were 817 specimens of 46 species belonging to 24 families. From each specimen, 17 morphological attributes were determined and diet composition of each species was analyzed in terms of relative biovolume. Trophic index of each species estimated from the proportions of dietary items and their possible trophic level in the community was significantly related to two body proportions (Maximum body height/Maximum body width and Total length/ Maximum body height) which described shape of fish. Principal component analysis of morphometric attributes and dietary habits indicated that the species in the higher trophic levels are characterized by slender, long-body shapes and those occupy lower trophic levels are predominantly laterally compressed with deep body shapes. As such, structure of coexisting species in brush parks of Negombo estuary is predominantly along the trophic dimension and is related to morphological traits of constituent species. The predictive power of ecomorphological correlates with diets of fish species other than mugilids which are attracted to brush parks, can therefore be considered as a useful tool for conducting rapid ecological assessment.

Keywords

Dietary habits ,Ecomorphology ,FADs ,Feeding ecology ,Fish shelters ,Trophic level ,

Electronic supplementary material

The online version of this article (doi: 10.1007/s10641-017-0642-x) contains supplementary material, which is available to authorized users.

Notes

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Supplementary material

10641_2017_642_MOESM1_ESM.docx (19 kb)
Supplementary Table S1 (DOCX 19 kb)
10641_2017_642_MOESM2_ESM.docx (21 kb)
Supplementary Table S2 (DOCX 20 kb)
10641_2017_642_MOESM3_ESM.docx (24 kb)
Supplementary Table S3 (DOCX 23 kb)

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