Ecomorphological correlates with food habits of fish assemblages in brush parks of the Negombo estuary, Sri Lanka

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Ecomorphological correlates with dietary habits of 41 fish species in brush parks in the Negombo estuary, Sri Lanka were investigated in the present study. Fifteen morphometric variables (Five coded and ten measurable) and data on diets of eleven food categories, based on stomach content analysis were compared by a principal component analysis (PCA).

The morphometric data were reduced using principal component analysis into three axis explaining 61% of the cumulative variation. The positive loading first principal component scores (eigenvalue=4.42) accounted for 29.5% of cumulative variance, was most influenced by higher body height, greater height of the head, higher relative eye diameter and relative snout length associated with predominantly herbivorous or omnivorous feeding habits with more plant material in their diet. The negative loading of first PC axis was mainly influenced by position of the eyes, presence of barbles and higher width of the mouth associated with highly carnivorous feeding habits. The second PC axis (eigenvalue=2.68) which explained 47% of the cumulative variance was positively influenced by possession of greater head length, relative higher width and height of the mouth, which appear to be characteristics of piscivorous species and macrocrustacean predators. With increasing magnitude along first PC axis (Food 1), feeding habits of fish species varied from animal matter to more plant matter. The significant linear negative correlation was observed (P<0.001) between second PC axis of morphological traits (Morpho 2) and first PC axis of dietary (Food 1), substantiating the ecomorphological hypotheses that fish morphology influences type of food used by fish assemblages in brush parks in the Negombo estuary.

Keywords: Ecomorphology, feeding ecology, trophic organization, diet