

## DIURNAL VARIATIONS IN FOOD RESOURCE PARTITIONING AMONG SOME CO-OCCURRING FISHES IN THE NEGOMBO ESTUARY OF SRI LANKA

R.R.A.R. Shirantha and M.J.S. Wijeyaratne\*

Department of Zoology, University of Kelaniya, Kelaniya, Sri Lanka.

### ABSTRACT

The diurnal variation in the % overlap of the diet and coefficient of electivity for different food items in 10 species of food fishes namely *Acanthopagrus berda*, *Ambassis commersoni*, *Chanos chanos*, *Etroplus maculatus*, *Etroplus suratensis*, *Epinephelus tauvina*, *Lates calcarifer*, *Leiognathus splendens*, *Tricanthus brevirostris* and *Tachysurus caelatus*, co-occurring in the northeastern region of the Negombo estuary, a highly productive brackish water body in the western coast of Sri Lanka was studied to get an insight on their ecological segregation. High dietary overlap was evident among *A. berda*, *A. commersoni* and *T. caelatus* and between *C. chanos* and *E. suratensis*. Most of the co-occurring fishes feed on different food items resulting in ecological segregation. If they feed on the same food items, feeding is at different intensities. These intensities as well as the preference for a particular food item vary with the time of the day. Some of the food items such as insect larvae, fish and detritus were selected by fish whenever these are the components of the diet. Diurnal variation in the intensity of feeding on different food items and preference for different food items appear to be among the major factors that contribute to ecological segregation of co-occurring fish species in the northeastern region of the Negombo estuary.

### INTRODUCTION

Fish communities in the tropics are highly complex and found to consist of specialized co-evolved populations (Fryer and Illes, 1972; Lowe-McConnel, 1975; Welcome, 1976; Goulding, 1980; Moyle and Senanayake, 1984). High diversity in these fish communities is maintained by localized environmental conditions and preference for different microhabitats and food items (Costa and Fernando, 1967; Lowe-McConnel, 1975; Connel, 1978). Closely related and morphologically similar species in a fish community utilize the same food and habitat resources for their co-existence. Earlier studies have shown that there is a high ecological overlap among the co-occurring fish species with respect to space and food (Costa and Fernando, 1967; Bishop, 1973).

Resource partitioning among the co-occurring fish species in some water bodies in Sri Lanka has been studied by several workers (Costa and Fernando, 1967; Moyle and Senanayake, 1984; Edirisinghe and Wijeyaratne, 1986; Wijeyaratne and Costa, 1992; Wijeyaratne and Perera, 2001). Although there appears to be a high overlap in the dietary composition of co-occurring fish species, it is hypothesized that ecological segregation exists due to differences in their feeding chronology. However, not much information is available on the diurnal variation in the food resource partitioning among the co-occurring fish species in highly productive habitats such as lagoons and estuaries in Sri Lanka. The present study was therefore carried out in one of the highly productive estuaries in Sri Lanka, namely the Negombo estuary which extends for about 3200 ha and sustains a commercial fishery yielding around 294,000 kg year<sup>-1</sup> (Samarakoon and Van Zon, 1991) to have an insight on the ecological segregation of co-occurring fish species by analyzing the diurnal variation pattern in the food resource partitioning.

---

\*Author for correspondence. Email: jayantha\_kln@hotmail.com