

Short Communication

Pak. J. Sci. Ind. Res. 2010 53 (1) 50-51

Feeding Inter-Relationship of *Caranx hippos* (Linnaeus), *Chrysichthys nigrodigitatus* (Lacepede), *Ethmalosa fimbriata* (Bowdich) and *Mugil cephalus* (Linnaeus) in Lagos Lagoon, Nigeria

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(received July 17, 2009; revised November 23, 2009; accepted December 5, 2009)

Abstract. Study of the feeding inter-relationship of *Caranx hippos*, *Chrysichthys nigrodigitatus*, *Ethmalosa fimbriata* and *Mugil cephalus* in the Lagos Lagoon, Nigeria, revealed that algae and diatoms formed the main food items of the four fish species; other food items were crustaceans, molluscs and detritus. Utilization of nearly identical food items suggested inter-specific competition for food.

Keywords: feeding habits, *Caranx hippos*, *Chrysichthys nigrodigitatus*, *Ethmalosa fimbriata*, *Mugil cephalus*, Nigeria

Study of food and feeding habits of fish requires continuous research, since successful fishery management, aquaculture and capture fishery programmes are based on it (Oso *et al.*, 2006).

Caranx hippos, *Chrysichthys nigrodigitatus*, *Ethmalosa fimbriata* and *Mugil cephalus* are some of the fish species readily available in the Lagos Lagoon, Nigeria in West Africa, and make up an important part of artisanal fisheries. Several studies of the food and feeding habits of these four fish species have been made, some of which include the work of Oronsaye and Nakpodia, (2005) and Blay (1995). However, information on the feeding inter-relationship of these species is lacking. In this paper, a report on the feeding inter-relationship among the four fish species is presented.

Forty specimens of the above-mentioned four fish species were caught in the Lagos lagoon each month during February to May 2001. Body weights and lengths of fish were measured and the stomach contents were studied. The organisms found were identified to the species level and analyzed by numerical and frequency of occurrence method.

Analysis of the food of *C. hippos* revealed diatoms and algae to form the major food items. Other food items were molluscs (*Aloidis trigona*, bivalve shell and *Tympanotonus fuscatus*), crustaceans (*Calanus finmarchicus*, shrimp and shrimp parts), fish (eggs, bones, scales and flesh) and detritus and other unidentifiable matter (Fig. 1).

Diatoms formed the major food items of *C. nigrodigitatus*. Other food items were molluscs (*Aloidis trigona*, bivalve shell and *Tympanotonus fuscatus*), crustaceans (shrimp parts,

Calanus finmarchicus, cladocera and crab appendages), fish (fins, scales, eggs and bones), algae, plant material and unidentifiable matter (Fig. 2).

Diatoms were the major food items of *E. fimbriata* as well. Other food items were crustaceans (*Calanus finmarchicus*, shrimp parts, isopods and cladocera), fish (bones, scales and eggs), algae, plant materials and unidentifiable matter (Fig. 3).

Major food items in the gut of *M. cephalus* were diatoms. Other food items were crustaceans (*Calanus finmarchicus* and shrimp parts), fish (scales and bones), algae, plant materials and unidentifiable matter (Fig. 4).

Analysis of the food items in the gut of four fish species revealed that *C. hippos* did not feed on fish in February and April, molluscs in April and did not feed on plant material at all. *C. nigrodigitatus* fed on plant material in February and fish in May. *E. fimbriata* did not feed on fish in February and April, on plant material in April and did not feed on molluscs at all throughout the months studied. *M. cephalus* did not feed on fish in April and May and did not feed on molluscs at all.

The study reveals the food and feeding habits of the four fish species. *M. cephalus* is a plankton feeder, feeding mainly on algae and diatoms (Ramirez-Luna *et al.*, 2008). In this study the important food item of *M. cephalus* comprised of diatoms, while other food items were algae, crustaceans, plant material and detritus. The food items of *C. nigrodigitatus* included plant materials, molluscs, crustaceans, fish and detritus. Dada and Araoye (2008) also discovered similar food items in the stomach of *C. nigrodigitatus*. Ajah *et al.* (2006) reported

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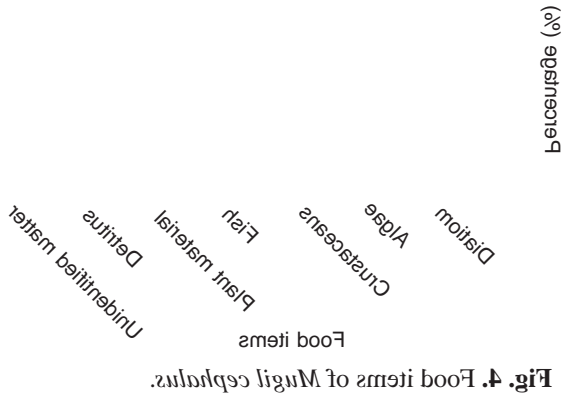


Fig. 4. Food items of *Mugil cephalus*.

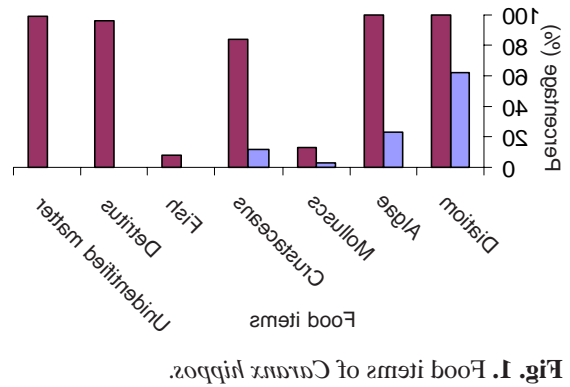


Fig. 1. Food items of *Caranx hippos*.

as another important food. It can, therefore, be concluded that there was an inter-relationship in the food and feeding habits of the four fish species. This inter-relationship would lead to a high competition for food in the Lagos lagoon.

Acknowledgement

The author is grateful to the Department of Marine Sciences, University of Lagos, for providing the facilities used for this study and to Prof. K. Kusumjin for academic assistance.

References

Ajah, P.O., Georgewill, M.N., Ajah, M.O. 2006. The food and feeding habits of five freshwater and brackish-water fish species in Nigeria. *African Journal of Aquatic Science*, **31**: 313-318.

Blay, J. (Jr). 1997. Food and feeding habits of four species of juvenile mullet (*Mugilidae*) in a tidal lagoon in Ghana. *Journal of Fish Biology*, **46**: 134-141.

Dada, J.O., Arayoye, P.A. 2008. Some aspects of the biology of *Chrysichthys nigrodigitatus* (Pisces: Siluriformes) in Asa Lake, Ilorin, Nigeria. *Nigerian Journal of Fisheries*, **2**: 73-84.

Orosaye, C.G., Nakhpodia, F.A. 2005. A comparative study of the food and feeding habits of *Chrysichthys nigrodigitatus* and *Brycinus nurse* in a tropical River. *Pakistan Journal of Scientific and Industrial Research*, **48**: 118-121.

Oso, J.A., Ayodele I.A., Fasburo, O. 2006. Food and feeding habits of *Oreochromis niloticus* (L) and *Sarotherodon galilaeus* (L) in a tropical reservoir. *World Journal of Zoology*, **1**: 118-121.

Ramirez-Luna, V., Navas, A.F., Rubio, E.A. 2008. Food habits and feeding ecology of an estuarine fish assemblage of Northern Pacific Coast of Ecuador. *Pan-American Journal of Aquatic Sciences*, **3**: 361-372.

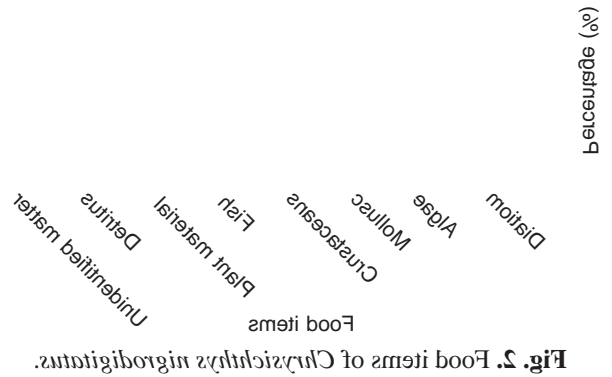


Fig. 2. Food items of *Chrysichthys nigrodigitatus*.

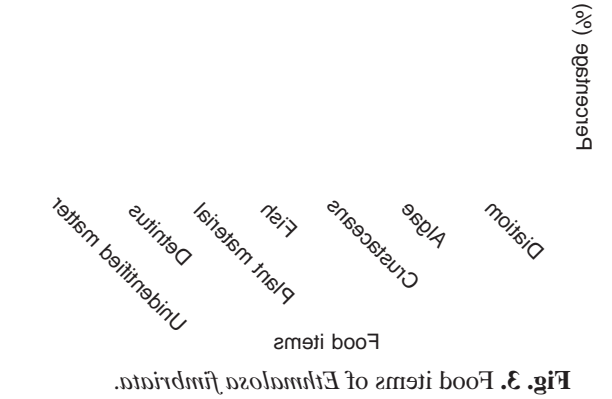


Fig. 3. Food items of *Ethmalosa fimbriata*.

the food items of *C. nigrodigitatus* to include gastropods, nematodes, diatoms and crustaceans. However, in this study nematodes were not recorded.

From this study, it appears that there is likely to be inter-specific competition for food among the four fish species, due to the fact that they all seem to have the same important food item, i.e. diatoms, in common and thus competition for diatoms was high. *C. hippos* was an exception which had algae