Food and feeding habits of *Notopterus notopterus* (Pallas) of Saroornagar Lake, Hyderabad (A.P.)

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**ABSTRACT**

Gut content analysis of *N. notopterus* of length ranging from 11.2-32.2 cm showed that the fish is a carni-omnivorous, euryphagic, bottom feeder which feeds on aquatic insects, small fishes, prawns, nematodes, aquatic weeds, sand and mud, in the order of preference. Feeding intensity which is maximum in summer and minimum in winter is related to maturity. The fish is capable of adjusting and widening its food spectrum, when preferred items become scarce. They appear to thrive on other food easily and readily available in the area.

*Notopterus notopterus* is oblong, compressed and deep, with long and tapering caudal region. The Saroornagar lake is 27 years old with a surface area of 0.41 sq. km and a depth of 6.1 m and contains organic and inorganic materials along with a lot of biomass. The lake is situated at 17° 22' N and 78° 27' E at an elevation of 540 m from sea level.

The reports on feeding biology of fresh water fishes are sporadic. Radhakrishnan (1957) worked on the food and feeding habits of *Sillago sihama* and Parameshwaran and Sinha (1966) on feather back (*N. notopterus*). The present work is on the feeding biology of *Notopterus notopterus* during 1996-97.

Three hundred and fifty four specimens of *N. notopterus* in the size range of 11.2-32.2 cm were collected from June 1996 to May 1997 by random sampling. The fishes were segregated to 12 length groups. Gut analysis was done by qualitative and quantitative methods. The various food items were analysed up to the species level. In the volumetric method, the gut contents of each fish were taken as a unit and the various food items were identified by eye estimation method after Pillay (1952). In the occurrence method the number of stomachs containing a particular item of food was expressed as a percentage of the total stomachs examined (Hynes 1950). The relative preference of various food items was calculated as the average percentage using index of preponderance after Natarajan and Jhingran (1963) (Fig.1).

Fluctuation in the percentage composition of food items in different months
and length groups are shown in Table 1 & 2.

**Chironomids**: Both larval and pupal stages were observed in the gut contents. Larval stages appeared throughout the year. Pupal stages occurred only in March. Percentage of occurrence of larva was maximum in June (95.86) and minimum in September (13.79). It is the most preferred food of the fish. They were not observed in smaller and larger length groups of fish.

**Notonecta (Back swimmers)**: These insects were seen in the gut contents throughout the year except in September, December and January. Maximum percentage composition was seen in February (17) and in the class interval of 14-16 cm and minimum in May (3.03).

**Dragonfly nymph**: These were found only during the monsoon season. Maximum percentage (27.27) was observed in July and minimum in August (9.09). Highest percentage was noticed in the length group 30-32 cm and in the lower length groups ranging from 10-18 the nymphs were completely absent.

**Nematodes**: The fish builds nests
and spawns among the aquatic weeds. They feed on these aquatic weeds during the post spawning period. Hence nematodes occurred in the food contents from October to January in the mature fishes of length group 16-28 cm.

*Sigara atropodonta*: These occurred only during the summer season. Percentage of occurrence was maximum in February (78.20) and minimum in March (6.67) in all the length groups.

*Hydrophilid beetles*: These aquatic insects occurred only in April (35 %) and May (66. 67 %).

*Sand & mud*: These are found only during the breeding season in mature fishes of length group 16-30 cm.

*Aquatic weeds*: *Chara* and *Eichornia* weeds growing in the lake form food for the fish during the post spawning season. Maximum percentage was seen during August (68.18) and minimum during April (8) in the mature fishes of length groups ranging from 16-30 cm.

*Miscellaneous*: This include fish scales, rice husks, semidigested gastropods, roots of aquatic weeds, appendages of crustaceans and odonate nymphs throughout the year in all the length groups.

*Fish*: Young fishes of about 2-3 mm size were present in semi-digested and completely digested state (only vertebral column was present). Occurrence of fish in the gut was not seasonal. Maximum percentage composition was 35.71 in December and minimum 3.44 in September in the length group of 16-32 cm.

*Prawns*: Larval and adult stages of *Macrobrachium* were found from September to December and May with maximum in May (18.18 %) and mini-
mum in September (6.89%). These were absent in smaller length groups.

According to Menon and Chacko (1956), fishes which feed on molluscs, sand and mud are bottom dwellers. Similar type of bottom feeding was noticed in Wallago attu (Rajanikant, 1981). From the present study it was observed that the fish is omnivorous with tendency towards carnivorous feeding habit. As the fish feeds upon a variety of food items it is termed as euryphagic fish as observed by Nickolsky (1963). Therefore N. notopterus is considered as a carni-omnivorous and euryphagic fish.

The fish mostly preferred aquatic insects (carnivorous habit) than the weeds, fishes and prawns. Among the aquatic insects, hydrophilid beetles predominated over the other food items. Nematodes occupied 2% which may be accidental. Among the aquatic insects chironomids occurred throughout the year. Hydrophilid beetles occurred during April and May. Among the two, the percentage composition of beetles was more than chironomids as shown in Fig 1. The average food items in the order of preference is beetles, chironomids, Sigara, weeds, fish, dragonfly nymph and nematodes (Fig.1). Feeding intensity of fish is related to maturity, spawning and the availability of food items. Feeding intensity of mature fishes decreases during the breeding season, as the gonads are compactly arranged with the ova occupying a major portion of the abdominal cavity, which exert pressure on the stomach as reported by Rajanikanth (1981) in Wallago attu. Feeding intensity increases after spawning.

In the present study different individuals of different size groups were found to feed on the same type of "food. The competition for food is minimised by feeding on each type of food at different rates. The relative importance of different food items in the diet is not constant throughout the year. However, a seasonal difference in the relative importance of a particular food item in the diet does not really indicate a change in the abundance of it in environment because when the occurrence of a certain type of food is low in one size group, it may be higher in another size group. Feeding on a certain food item at different intensities may be an adaptation to minimise the intra-specific competition for food as observed for many species of grey mullet (Wijeyaratne and Costa, 1988). In the present study it was observed that younger fishes which are in different stages of growth consumed more food. Adult fish showed maximum feeding intensity which when compared to their body weight was very low. Odum (1959) also described an inverse relationship between size and metabolism of fish.

References


