

FOOD AND FEEDING HABITS OF
PENNAHIA MACROPHthalmus BLEEKER AT VISAKHAPATNAM

T. APPA RAO

Waltair Research Centre of CMFR Institute, Waltair.

ABSTRACT

The food and feeding habits of *Pennahia macrophthalmus* Bleeker, a sciaenid occurring in the trawl catches at Visakhapatnam, was studied during the period March 1968–December 1973. *P. macrophthalmus* is a macrophagous carnivore feeding on teleosts and prawns. Among the teleosts, *Bregmaceros maccellelandi* and *Anchoviella* sp. are predominant. Prawns namely *Penaeus* sp., *Metapenaeus* sp., *Acetes* sp. are found to be major components among the crustaceans. Study of food in relation to different size groups showed *P. macrophthalmus* became more ichthyophagous with age. Low feeding between February–April, moderate feeding between May–July and high feeding during the rest of the months seemed to prevail.

INTRODUCTION

Sciaenids form nearly 10-15% of the total catches of Govt. of India exploratory fishing vessels at Waltair. Among them *P. macrophthalmus* contributes to more than 60%. Since knowledge of the food and feeding habits of this species is of considerable importance to understand the fishery an investigation on these aspects was initiated during 1966. Jayaprakash (1974) giving the results of his investigations on the food and feeding habits of juveniles of 'Koth', *Otolithoides brunneus*, (Day) in Bombay waters, has reviewed the results of investigations made by previous workers on different species of sciaenids. Qasim (1972) critically discussed the dynamics of food and feeding habits of some sciaenid fishes.

MATERIAL AND METHODS

The material was collected from the landings of Govt. of India trawlers operated from Visakhapatnam. During the period of investigations, 1966-73, 2885 fish were examined. After noting the total length, sex and stage of maturity, fish were dissected, stomachs removed and preserved in 5% formalin. Quantitative analysis of stomach contents of *P. macrophthalmus* was made following the method of Hynes (1950). The condition of stomach was taken into account. It was observed that sciaenids caught by trawlers had stomachs in extraoverting condition, perhaps due to causes explained by Rao (1963).

Unverted stomachs were classified as 'gorged,' 'full,' '½ full,' '¼ full,' '¼ full' and empty. Fish with gorged and full stomachs were considered as 'actively fed.' From the points assigned, the percentage composition of different items of food was calculated. Identification of different components of stomach was made at least up to genera when the food had not been subjected to much digestive action.

COMPOSITION OF FOOD

Fig. 1 shows the percentage composition of food items in the stomach contents of *P. macrophthalmus* during 1966-73. It was observed that fish and crustaceans formed the main food of this species. Although items such as 'Polychaetes' sometimes constituted one of the components their inclusion could be considered as only secondary.

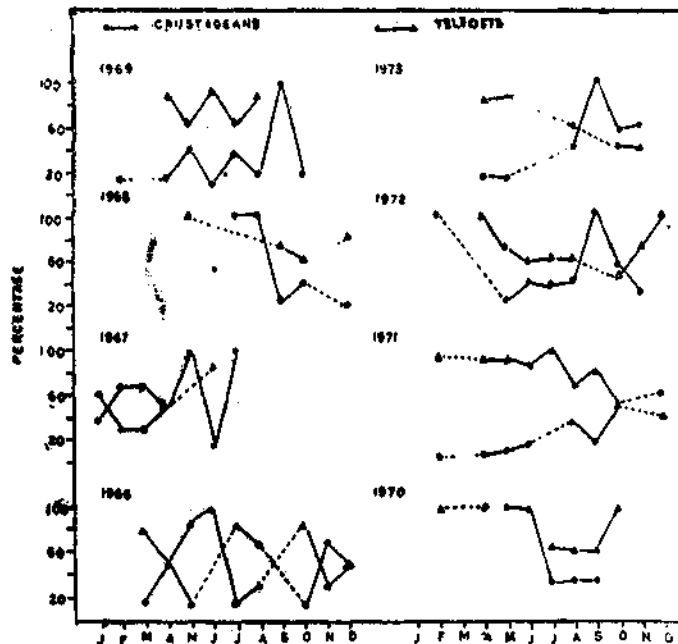


FIG. 1. Percentage composition of food items in the stomach contents of *Pennahla macrophthalmus* during 1966-73.

Fish items: Among the fish components 10 species of teleosts were noted viz., *Anchoviella* sp., *Bregmaceros* sp., *Pseudosciaena* sp., *Trichurus* sp., *Caranx* sp., *Opisthopterus* sp., *Saurida* sp., *Uranoscopus* sp., *Cynoglossus* sp., and *Platycephalus* sp., which were prominent during May, June and October 1966. *Bregmaceros macclellandi* and *Anchoviella* sp. were predominant. In 1967 and 1968 maximum values of preponderance for teleosts were obtained in June (87%) and May (100%). In 1969, it was 92.5% observed in June. During 1970,

Bregmaceros macclellandi and *Anchoviella* sp. were found to be prominent among the teleostean item during February, April and October. However, in April and July 1971, *Anchoviella* sp. and *Saurida* sp. dominated among the teleosts, the maximum values of preponderance of 100% and 88.2% were observed in December and May respectively.

Crustacean items: Among the crustaceans, both penaeid and non-penaeid prawns, viz., *Acetes* sp., *Penaeus* sp., *Metapenaeus* sp. and *Solenocera* sp. were present. Other crustaceans such as *Squilla* sp., *Neptunus* sp., *Alima* sp., *Mysis* sp., *Megalopa* sp. were also encountered in small proportions. In 1966 and 1967, maximum values of preponderance for crustaceans were observed in July (84.8%) and May (100.0%). In 1968, it was in July and August. Further, the highest value of 100% was also recorded in September 1969. In 1970, *Metapenaeus* sp. and *Acetes* sp. were found to be predominant during May (100%) and June (100%). In 1971 and 1972, the maximum values of preponderance for *Penaeus* sp. and *Acetes* were recorded in December (60%) and February (100%) and September (100%) respectively. In 1973, it was 100%. Other items like *Squilla* sp., *Hippolytes* sp., *Solenocera* sp., *Megalopa* sp. were rather infrequent.

Food in relation to size: Preliminary studies on food in relation to size at 1+ cm-Class intervals did not show differences in the feeding habits between sizes. Hence the food and feeding habits of *P. macrophthalmus* was studied with re-

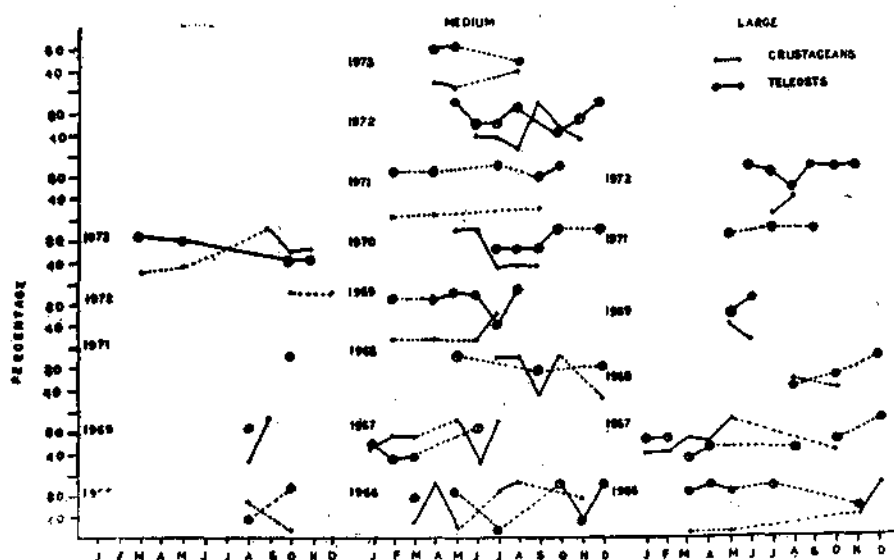


FIG. 2. Percentage composition of food items in the stomach contents of *P. macrophthalmus* in small, medium and large sized fish during 1966-73.

ference to small, medium and large sized individuals. Among these three groups, the main food components did not differ but the percentage occurrence of teleosts was more in 'large sized' individuals.

Percentage of gorged and full stomachs were higher in July and November in 1966, May-June in 1967 and December in 1968 (Fig. 3). Similarly, high percentages of gorged and full stomachs were noticed in September in 1969, June in 1970, August in 1971, July in 1972 and August in 1973. The percentage of $\frac{1}{2}$ full and $\frac{1}{4}$ full stomachs were greater usually during May-July. The percentage of empty stomachs was high usually during February-April. Thus low feeding activity was observed during the period February-April, moderate feeding during May-July and high feeding during the rest of the months.

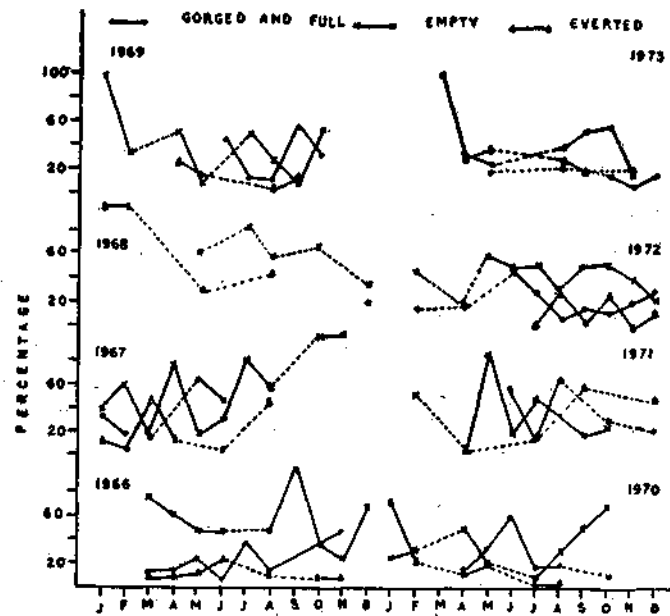


FIG. 3. Month-wise percentage occurrence of gorged and full, empty and everted stomachs in *P. macrophthalmus* during 1966-73.

CONCLUSIONS

The present investigations have revealed that *P. macrophthalmus* is a carnivorous feeder. The fish feeds mainly on teleosts and crustaceans. *P. macrophthalmus* showed some selectivity since it fed mainly on four items. Study of food in relation to different size groups showed that *P. macrophthalmus* became more ichthyophagous with age. Jayaprakash (1974) also stated that 'Koth' became more ichthyophagous with age. Disgorging and extroversion was also

noted in the case of thread-fin by Mohamud (1955). The occurrence of everted stomachs did not show any relation either to season or to size of the fish. *P. macrophthalmus* did not appear to be a bottom feeder. Absence of bottom fauna in the stomach contents suggests that it is not a bottom feeder.

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