



Feeding behavior of Catfish, *Ompok pabda* from Indus River near Jamshoro, Sindh

D. S. THEBO, N. T. NAREJO*, P. KHAN*, H. KALHORO, G. DASTAGIR**, A. H. QADRI

Department of Zoology University of Sindh, Jamshoro, Pakistan

Received 4th December 2018 and Revised 10th April 2019

Abstract: The present investigation on feeding behavior of catfish, *Ompok pabda* from river Indus near Jamshoro was initiated for the period of three months from March to May 2017. Total 200 specimens ranged from 4.0 -30.0 cm and 6.1-60.5 g in length and weight respectively were procured from the catch of local fishermen. The collected specimens were brought to laboratory preserved in 5% formalin. Results of the present investigation revealed that the feeding behavior of *Ompok pabda* was found to be carnivorous with higher feeding preferences for insect larvae (60.43%), followed by zooplanktons (23.58) and 3rd preferred food was debris (11.93).

It was noted during the present course of investigation that small fish (4.0-10.0 cm) preferred zooplankton, protozoa and debris while medium sized fish (11.0-16.0 cm) showed preference to insect larvae, worms and detritus and large fish (17.0-30.0 cm) exhibited insect larvae, zooplankton, detritus and debris. The gape of mouth was measured in relation to total length and found to be positively correlated with length of fish in the present study.

Keywords: Feeding behavior, Indus River, Catfish, *Ompok pabda*

1. INTRODUCTION

Ompok pabda is a freshwater catfish, commonly found in rivers, canals, streams, lakes, ponds, and in undated fields (Mirza 1982). *O. pabda* is medium-sized belongs to family Siluridae of order Siluriformes is native to Pakistan, India, Bangladesh and Myanmar (Banik and Malla (2011). It is delicious, well preferred and high priced due to relatively few bones (Sarkar et al., 2005). The knowledge on feeding biology and behavior is the key for selection of cultural species for stocking purpose. The availability of natural food items in the environment vary with the season, temperature and time of the day (Narejo et al 2016). There is no published information is available on any aspect of the biology of this commercially important catfish from Pakistan. So, that the present study was designed to supply such information and that will serve as a basis for subsequent studies on food feeding behavior of this important freshwater catfish from Pakistan.

Few isolated studies carried out by Banik and Malla (2011) and Banik et al (2011) are available. The results of the present studies have practical values and would be useful in future for the development of culture techniques of this species in ponds. *O. pabda* is suitable candidate for the artificial culture in future, so knowledge of various aspects of biology is considered as pre requisite.

2. MATERIAL AND METHODS

Feeding habit

To investigate the food and feeding habits of *O. pabda* was enumerated from the guts content which were

collected from river Indus near Jamshoro, Sindh Pakistan during three months from March to May 2017. Total 200 specimens ranged from 4.0 -30.0 cm and 6.1-60.5 g in length and weight respectively were procured from the catch of local fishermen. The collected specimens were brought to laboratory preserved in 5% formalin. Collected samples were analyzed in virtue of total length and weight by use of scale (measuring board) and balance (digital balance) and kept in vials for subsequent studies and classified as empty, full and half. Sample gut preserved in formaldehyde were cut up and examined by use of counting chamber following the standard methods for quantitative analysis of plankton sort and recognized on specie level.

Contents of Gut

The gut contents from the anterior portion of the gut that is stomach were carefully washed into a Petri dish. Dissected and observed under a light microscope (Olympus, model B-2000) by using Sedgwick-Rafter counting Cell. Analysis was followed by the method of Ivlev (1961). Ivlev's index; Electivity (E) was calculated according to following formulae:

$$E = \frac{r_1 - P_1}{r_1 + P_1}$$

Whereas, relative contents of items represented as r_1 , items present in the environment donated (+1) positive value (-1) while negative value resulted as avoidance of food substances.

*Department of Freshwater Biology and Fisheries, University of Sindh, Jamshoro

**Department of Zoology, University of Balochistan, Quetta

Several workers like Hobson, 1974; Narejo *et al* 2016; Tesfahun 2018 studied gut contents by using volumetric frequency of gut matters. Below equation was applied for assessment

$$I_1 = \frac{V_1 \cdot O_1}{\sum V_1 \cdot O_1} \times 100$$

V_1 is the volume and % of occurrence I = is the preponderance index of particular items of food respectively. The percentage volume of gut contents was determined by the eye estimation method (Pillay, 1952). The percentage occurrence of all different food items were determined by summarized up to the total occurrence of all items from which the percentage occurrence of each items was calculated (Hynes, 1950). Feeding rate of the fish was determined by calculating the gut content and weight of gut (Gastro somatic index).

3. RESULTS

The fish sample comprised of a total 200 specimens ranged from 4.0 -30.0 cm and 6.1-60.5 g in length and weight respectively. The food of *Ompok pabda* was determined from the gut analysis and revealed that the feeding behavior of *Ompok pabda* was found to be carnivorous with higher feeding preferences for insect larvae (60.43%), followed by zooplanktons (23.582) and 3rd preferred food was debris (11.93) (Table 1).

It was noted during the present course of investigation that the small fish (4.0-10.0 cm) preferred zooplankton, protozoa and plant debris while medium sized fish (11.0-16.0 cm) showed preference to insect larvae, worms and detritus and large fish (17.0-30.0 cm) exhibited insect larvae, zooplankton, detritus and debris. It was concluded that feed preference of *Ompok pabda* in the present study was carnivorous in feeding habits with soft invertebrates, the percentage of different food items from the gut of *O. pabda* from River Indus are shown in (Table 2). The gape of mouth was measured in relation to total length of *O. pabda* from river Indus and found positively co-related with the total length, that indicated that the mouth gape is increases with the increase in total length of fish (Table 3).

Table 1. Categories of food item (%) observed from stomach of *O. pabda* from Indus River near Jamshoro, Sindh, Pakistan

| Food categories | Months | | | |
|-----------------|--------|-------|-------|--------------|
| | March | April | May | % Mean ± |
| Insect Larvae % | 60.53 | 61.23 | 59.55 | 60.43 ± 1.67 |
| Zooplankton % | 24.52 | 23.77 | 22.45 | 23.58 ± 1.42 |
| Debris % | 12.0 | 11.80 | 12.0 | 11.93 ± 0.07 |
| Miscellaneous | 2.95 | 3.20 | 6.0 | 4.06 ± 1.94 |
| Total | 100 | 100 | 100 | 100 |

Table 2 Percentage (%) of food items at different length groups in the stomach of *O. pabda* from Indus river near Jamshoro, Sindh, Pakistan

| Length group | Insect larvae | Zooplankton | Debris | Protozoa | Worms | Detritus |
|--------------|---------------|-------------|--------|----------|-------|----------|
| 4.1-10.0 | 2.5% | 58.0% | 16.0% | 20.5% | 0.0% | 3.0% |
| 11.1-16.0 | 46.6% | 1.4% | 6.5% | 3.5% | 25.5% | 16.5% |
| 17.1-30.0 | 58.8% | 21.2% | 8.4% | 0.5% | 1.5% | 9.6% |

Table 3. Relation of gape of mouth with total length of *O. pabda* from Indus River near Jamshoro, Sindh, Pakistan

| Length group | Stomach weight (g) | Gape of mouth (cm) |
|--------------|--------------------|--------------------|
| 4.1-10.0 | 1.0 | 0.5 |
| 11.1-16.0 | 2.5 | 1.0 |
| 17.1-30.0 | 4.0 | 1.6 |

4. DISCUSSION

The food of *Ompok pabda* in the present course of investigation was determined from the gut analysis and revealed that the feeding behavior of *Ompok pabda* was found to be carnivorous with higher feeding preferences for insect larvae (60.43%), followed by zooplanktons (23.582) and 3rd preferred food was debris (11.93). Similar observation on food and feeding habit of various catfish from different countries like in *Mystus vittatus* by Azadi *et al* (1987) from Bangladesh, Joadder (2006) in *Gagatayoussoufi* from River Padma Bangladesh and Narejo *et al* (2016) in catfish, *Heteropneustes fossilis* from Pakistan. The small *O. pabda* in the present study preferred zooplankton, protozoa and plant debris while medium sized showed preference to insect larvae, worms and detritus and large exhibited insect larvae, zooplankton, detritus and debris. Jaya and Parihar (2012) reported similar result in Catfish, *Mystus cavasius* and *Xenentodon cancella* from India. In the present study the gape of mouth was measured in relation to total length of *O. pabda* from river Indus and found positively co-related with the total length. Narejo *et al* (2016) in catfish, *Heteropneustes fossilis* reported that the increase of mouth gape with total length indicated that the fish change their feed preference in different stages of life span. The above observation is in accordance with the present finding.

5. CONCLUSION

It was concluded that the food of *Ompok pabda* contained insect larvae, zooplankton, detritus and debris. It indicated that the catfish, *O. pabda* from river Indus is mainly carnivorous in feeding habit and change their feed preference according to size.

REFERENCES:

- Azadi M.A., M.A Islam, and S. R Dev, (1987). Some aspects of biology of *Mystus vittatus* (Bloch): 1. Food and Feeding habits and Fecundity, Bangladesh Assoc. Adv. Sci. Dhaka (Bangladesh) Abstract of the 12th Annual Bangladesh Sci. Conf. Sec.2, Dhaka (Bangladesh), 36 Pp.
- Banik, S., and S. Malla, (2011) Habitat Mapping for *Ompok pabda* (Hamilton-Buchanan, 1822) in Gomoti River of Tripura. Proceedings of the 10th Agricultural Science Congress, February 10-12, Lucknow India. Lucknow, National Bureau of Fish Genetic Resources (ICAR), 388-390.
- Banik, S., P. Goswami, and S. Malla, (2011) Ex-Situ Studies of Captive Breeding of *Ompok bimaculatus* (Bloch, 1794) in Tripura. *J. Adv. Lab. Res. Bio.*, 2(3), 133-137.
- Hynes, H.B.N (1950) The food freshwater sticklebacks (*Gasterosteus aculeatus* and *Pygosteus pungitius*) with a review of methods used in studies of the food of fishes. *J. Anim. Ecol.* 19:26-28
- Hobson, E. (1974) Feeding relationships of Teleostean fishes on coral reefs in Kona, Hawaii. *Fishery Bulletin* Vol. 72, No. 4. 1031 Pp
- Ivlev V.S. (1961). Experimental ecology of the feeding of fishes Yale University Press, New Heaven Connecticut, USA
- Joadder, A. R. (2006): Food and feeding habitat of *Gagatayoussoufi* (Rehman) from the River Padma in Rajshahi. *Univ. J. Zool. Rajshahi Univ.* Vol. 25. 69-71.
- Jaya, C. and D. S. Parihar (2012): Food and Feeding Habits of Two Freshwater Catfish, *Mystus cavasius* and *Xenentodon cancila* from Chambal River (M.P). *Int. J. of Sc. and Res.* Vol. 3(8). 639-642
- Mirza, M. R. (1982). A contribution to the fishes of Lahore. Polymer Publication Urdu Bazaar, Lahore. 48 Pp.
- Narejo, N. T., S. Jalbani, P. Khan, F. Memon (2016). Food and Feeding Habits of Sting Catfish, *Heteropneustes fossilis* (Bloch) From Manchar Lake District Jamshoro Sindh Pakistan. *Sindh Univ. Res. Jour. (Sci. Ser.)* 48 (3): 473-476.
- Pillay, T.V.R. (1992). A critique of the methods of study of food of fishes. *J. zool. Soc. India.* 4: 185-200.
- Sarkar, U. K., P. K. Deepa, R. S. Negi, S. K. Poul, and S. K. Siongh, (2005) Captive breeding of an endangered fish *Ompok pabda* (Hamilton-Buchanan) using different doses of ovaprim. *J. Inland Fish. Soc. India* 37, 37-42.
- Tesfahun, A. (2018) Feeding biology of the African catfish *Clarias gariepinus* (Burchell) in some of Ethiopian Lakes: A review. *International Journal of Fauna and Biological Studies* 5(1): 19-23