



Food and Feeding Habits of Sting Catfish, *Heteropneustes Fossilis* (Bloch) From Manchar Lake District Jamshoro Sindh Pakistan

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Abstract: The analysis of food and feeding habits of *Heteropneustes fossilis* from Manchar Lake district Jamshoro Sindh, Pakistan were assessed from 110 specimens size ranged from 5.1 to 30.0 cm during March – June 2014. The study revealed that the feeding habit of *Heteropneustes fossilis* was found to be carnivorous with main preference of crustacean (60%) followed by animal matter (30%) and lowest preference worms (10%). The ratio of stomach weight versus body weight of *H. fossilis* from Manchar Lake was calculated and it indicated that the feeding activity of fish increase with increase in the stomach weight and body weight. Finally it was resulted that *H. fossilis* from Manchar Lake, District Jamshoro Sindh Pakistan was found to be crustacean feeder.

Keywords: Sting catfish, food and feeding, Manchar Lake, *Heteropneustes fossilis*

1. INTRODUCTION

Study of feeding habits and inheritance characteristics of fish are importance factors for better growth and propagation. The food habits of fishes vary from month to month due to change in the composition of food organisms found in different seasons of year. Feeding habit of fish is of significance in fisheries production (Azadi and Naseer 1996). Food is primarily prerequisite for development, existence, survival and growth of organisms Narejo *et al.*, (2003). It has been reported that in freshwater fish species, the study of feeding biology plays an important role in fisheries management and successful development programs. Inter- specific competition for survival and food is mutual hill steam in fishes but each species of fish has different feeding niche (Kumar, 2009 and Lashari, *et al* 2010). Sting catfish is suitable candidate for the artificial culture in ponds so that the food feeding study of this commercially important fish is prerequisite for its mass production.

2. MATERIALS AND METHODS

To investigate the food and feeding habits of *Heteropneustes fossilis* stomach of 110 samples were examined, collected from Manchar Lake, District Jamshoro during March to July 2014. The fishes were collected by different nets upon collection of the fish; the data on various parameters like weight and length of the body were noticed on battery operated scale in grams and cm respectively. The samples of fishes were determined for sex opening the body cavity. The elementary tube was dissected out from the

experimental fish and preserves formalin (5%) for further examinations. Gizzards of the experimental fishes were reckoned as empty, quarter, half and full as per their appearance. Insiders of gut carefully examined. The ingredients were eaten by fish were identified by different keys up to generic levels and counted by using (Sedgwick- rafter) and counting chamber under the microscope.

3. CONTENTS OF GIZZARDS

Contents of gizzards were determined with the help of anterior portion of the gizzards. The analysis of electivity was used as given by Ivlev (1961).

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

Where r_1 = contents items in relation, determined from a percentage of numbers in relation to P_1 = proportion of items in water. The observed values of E +1 to -1, positive (ve^+) values showed attention to some food items, while negative (ve^-) values represents avoidance of certain food items. Month-wise fish samples were collected from Manchar Lake District Jamshoro Sindh. Live fish samples were transported in polythene bags to the laboratory of Freshwater Biology. After recording the data on length, weight and condition of sex, the gut of experimental fish was removed and preserved in 5% formalin. Preserved guts were uncoiled, washed and unnecessary tissues were removed. The contents of stomach and intestine were flushed out separately. The guts were weighed on electronic balance. Several workers like (Hynes, 1950;

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Pillay, 1952; Natajan and Jhingran, 1961; Lashari et al 2010; Hashim et al 2014) studied gut contents by using volumetric frequency of occurrence of different food items; the index of preponderance was estimated by following formula.

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

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 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 and fish weight (gastro somatic index). Collected samples were divided into three length groups 5.0 -20.0 cm, 20.1- 30.0 and 30.1- 40.0 cm.

4. RESULTS

Food and feeding habit of *Heteropneustes fossilis* analyzed in terms of quantity and quality of particles of food taken by fish in relation to body weight and stomach weight. 110 fishes were used their length varied between 5.1-35.0 cm analyzed for five months

from March to July 2014. The results of food and feeding experiment resulted that the *Heteropneustes fossilis* was found to be carnivorous and mainly feed upon crustaceans (60%). The second preferred food was animal debris (30%) while worms were found to be 3rd preferred food (10%) as recorded in the gut of the experimental fish (Table-1). It was also observed that the feeding spectrum of catfishes is extremely broad they refer small crustaceans or bottom living invertebrates; In general catfishes of Pakistan are carnivorous. These are carnivorous in feeding habit most dominant food were crustaceans, animal debris, worms, plant debris and scales. Analysis of 110 guts of *H. fossilis* at different length groups revealed that crustaceans (60%) are the main food items at various sizes followed by animal matter and worms at the ratio of (6:3:1) respectively. The gut contents of size group 5.1-15.0 cm showed that crustaceans were still the major food items with an average percentage of 64.6%, in length group 15.1-25.0 contains 58.8% and length group of 25.1-35.0 consists of 57.1% with mean percentage 60% of crustaceans (Table-1) followed by second preferred food item animal matter (30%) and third preference was found to be worms with mean percentage (10%). (Table-2) showed miscellaneous food items were plant matter and scales were found to be in negligence quantity (0.5%).

Table 1 Percentage of food items at different length groups in the gut of *Heteropneustes fossilis* from Manchar Lake, District Jamshoro

Length groups	Crustaceans	Plant debris	Animal debris	worms	Scales
5.1-10.0	64.2 %	1.3 %	26.5%	8.0%	Nil
10.1-15.0	65.0%	0.5%	27.0%	7.5%	Nil
15.1-20.0	58.2%	0.1%	31.5%	10.2%	Nil
20.1-25.0	59.4%	0.3%	32.3%	7.0%	1.0%
25.1-30.0	57.0%	0.5%	31.2%	10.3%	1.0%

Table 2 Occurrence of different feed items in different months in the gut of *Heteropneustes fossilis* from Manchar Lake, District Jamshoro

Food categories	Months			
	March	April	May	June
Crustaceans	80%	60%	60%	60%
Plant debris	Nil	10%	10%	5%
Animal debris	10%	20%	20%	30%
Scales	Nil	Nil	Nil	5%
worms	10%	10%	10%	Nil
Total	100%	100%	100%	100%

5. DISCUSSIONS

During the present investigations the month wise fluctuations of occurrence of different food items in the gut of *H. fossilis*, during investigations from Sindh Pakistan was analyzed. The analysis of the diet in terms of volume and occurrence gave a better indication of the relative nutritive importance of different organisms in the diet. It was found that early and post larval *H.*

fossilis are planktivorous and subsist mainly on crustaceans besides plant matter and worms. In adult first preference is crustaceans followed by animal matter and in lowest quantity worms were observed the diversity in the intake of different food items indicates that fish does not preferred a particular diet. A similar conclusion was drawn by catfish. It is mostly the available of food in the environment that matters. Thus

it can be inferred that though the catfish is carnivorous with a preference of insects it can also subsist on crustaceans, animal matter and worms. There was no significant change of food or feeding habit in the fishes collected from Manchar Lake. During the present investigations, the catfish was observed to have an empty stomach and stomach with $\frac{1}{4}$ to $\frac{1}{2}$ full foods in throughout months. Relatively high rate of feeding intensity during (March-June) may be due to extra energy required for development of ovaries and testis (Pathak, 1975) condition in stomach fullness in relation to the regular feeding habit which lower the metabolic rate (Javaid (1971) and water level condition along with the density of available food were studied. However, the mentioned references were the results of studies in different ecosystems and cannot be correlated with the agro climatic conditions (Narejo, 2006).

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