



Studies on Food and Feeding Habits of Carp, *Labeo calbasu* from Keenjhar Lake District Thatta, Sindh, Pakistan

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Abstract: To enumerate the food and feeding habits of carp *Labeo calbasu*, 120 specimens were collected from Keenjhar Lake District Thatta, Sindh Pakistan. According to the present observations that the *L. calbasu* mainly feeds on organic detritus (71.98% by volume) followed by the sand and mud particles (8.56%) and latter contributed mostly on blue green algae, diatoms and zooplankton are described as incidental food. The shell pieces and other miscellaneous items could not be considered as food as is evident from their poor representation and are engulfed accidentally along with mud particles. It was also inferred from current study that the food and feeding habits of *L. calbasu* indicated as bottom feeder and mainly subsisting on decayed organic food.

Keywords: Feeding habits, *Labeo calbasu*, Keenjhar Lake, Qualitative and Quantitative analysis

1. **INTRODUCTION**

For feeding habits growth, propagation and selection of food particles is prerequisite for rearing of any fish species in any type of culture system (Pillay 1952). *Labeo calbasu* is only species of *Labeo* that is indigenous to all types of waters (Kumar and Siddique 1989) and hitherto no attempt has so far been made to study the food and feeding habits of this species, though information on similar aspects of related species are available (Das and Moitra 1956; Bhatangar; Karamchandani 1970; Vinci and Sugunan 1981). Food biology study in fish plays vital role for the stocking purpose. Different researchers from the different point of view have put forward their attention on habits of food and feeding of fish from different methodologies. Rounsefell and Everhart (1953) have used different procedures for collection and identification of food items used for food and feeding habits in fishes. The fish *Labeo calbasu* (Hamilton –Buchanan) locally known as Dahi, is a medium sized, bottom feeder. It is a commercially important minor carp, which can attain a length of 71 cm and a weight of 5.5 kg (Rahman, 1989). *L. calbasu* supports an important commercial fishery in rivers and reservoirs of Pakistan, India, Bangladesh and Myanmar. Now work is published on food and feeding habits on *Labeo calbasu* so present work is key to initiate the research on this aspect.

MATERIALS AND METHODS

The feeding activities of *Labeo calbasu*, gut contents of 120 specimens collected from Keenjhar Lake District Thatta. Upon collecting the lengths and weights of fishes were recorded to nearest millimeter and 0.1g respectively. The fishes were dissected by a sharp scissors. Then the entire alimentary canals of the fishes were taken out immediately preserved in 5% formalin in labeled vials and stored for examination. The guts were classified as full, ¾ full, ½ full, ¼ full and empty according to the degree of distention of the guts. The contents of the gut were carefully examined in 70% ethyl alcohol on a petridish, Samples from fore, mid and hind guts were taken for the analysis. The food items then were examined by the help of counting chamber (Sedge wick Rafter) under a compound microscope, whenever possible food items were identified up to genetic level. To analysis the food contents of the gut the accordance and (Das, *et al.*, (1955).

2. **RESULTS**

Following are the feed items which are consumed by carp, *Labeo calbasu*.

a) Decayed Organic Food. This group formed the main item of the gut contents (71.98% by volume) the item was encountered in the large quantities in March. April

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and October and moderately in January, February, May, November and December and in negligible quantities in June, July, August and September also shown in (Table 1). The sand and mud particles(8.56% by

Table 1. Index of preponderance of *L.calbasu* from Keenjhar Lake, District Thatta Sindh, Pakistan.

Gut contents	Percent age occurrence (01)	Percent age volume(V1)	V1 01	V1 01 × 100 / Σ V1 01
Organic detritus	32.17	70.15	2256.7255	80.72
Bacillariophyceae	23.52	10.57	248.6064	8.89
Chlorophyceae	16.54	5.04	83.3616	2.98
Myxophyceae	4.40	0.73	3.2120	0.11
Zooplankton	5.31	0.98	5.2038	0.19
Miscellaneous	1.07	0.87	0.9309	0.03
Mud	16.99	11.66	198.1084	7.08
	100.00	100.00	2796.1436	100.00

volume) formed and important item in May, June and November. Bacillariophyceae (Diatoms). Constituting

7.56% by volume, it is the second preferred food item of *L.calbasu* occurring regularly in the guts throughout the year. The frequency its occurrence was found to be more during May (25.84%) to November (17.70%) except in the month of June, when it was merely 9.08%. From December, this group showed decline and was scarce in the month of March (5.55%). This item (4.97% by volume) was represented by portions of aquatic plants like Hydrilla, Najas, Vallisneria and portions of leaves and roots of unidentified plants. Plants matter was encountered in large quantities in July and August and was totally absent in October. For the rest of the year this item was moderately taken by the fish. Chlorophyceae Constituting 4.75% by volume of total food ingested by the fish, this item did not appear to be a preferred food thought it occurred throughout the year and attained maximum percentage in July and August. Myxophyceae, Forming 1.51 % of total volume, Blue green algae were present throughout the year except in January, May and October. Miscellaneous items .Miscellaneous food comprised zooplankton (Protozoan’s, Rotifers, Cladocerans, Dipteran larvae and Crustaceans appendages) and fish eggs, and formed 0.67% of the total food volume. It was present in negligible quantities all through the year except in the June when its volumetric percentage was observed to be 2.5. (Table 2).

Table 2. Monthly preference in the gut of *L. calbasu* (in percentage volume) from Keenjhar Lake District Thatta, Sindh, Pakistan.

Month	Organic detritus	Bacillariophyceae	Mud	Chlorophyceae	Myxophyceae	Rotifer	Crustacean	Miscellaneous items
April	87.83	6.76	3.33	1.76	0.60	–	–	–
May	66.00	8.64	13.60	4.28	1.48	1.40	0.60	4.00
June	65.86	7.68	17.50	6.95	0.11	0.70	0.70	0.11
July	83.24	2.16	8.80	3.88	1.04	0.28	0.60	-
Aug	75.20	6.40	14.35	2.30	1.15	0.15	0.25	0.20
Sep	72.00	8.00	13.77	4.23	0.38	1.31	0.31	–
Oct	73.82	12.09	7.01	5.09	–	1.09	–	–
Nov	69.13	11.20	11.18	9.60	0.94	0.67	0.33	–
Dec	68.71	14.86	8.57	5.36	1.07	1.43	–	–
Jan	50.77	28.07	13.08	8.08	–	–	–	–
Feb	61.67	21.54	8.66	6.80	1.33	–	–	–
March	59.30	17.40	8.50	5.50	0.30	0.50	0.50	8.00

3.

DISCUSSIONS

The present studies on the food and feeding habits of *L. calbasu* indicated the fish is a bottom feeder mainly subsisting on decayed organic food. This is in line with observations of Das and Moitra 1955; Das and Moitra 1963; Alikunhi (1952). Earlier few authors have classified it as herbivores as they could not find any mollusk, though few crustaceans were observed (Pathak, 1975; Sobhana and Nair (1981). In the present study also mollusks were totally absent and crustacean appendages were encountered. Qualitative analysis of the gut contents revealed that it is an herbivore and detritus feeder and therefore point's methods of Swynnerton and Worthington (1940) as adopted by Sobhana and Nair (1981) was found suitable to estimate volume and percentage of different items of food. The present studies have also revealed that there is no any significant difference in the food of *L. calbasu* of different lengths and environments. The diet composition of juveniles and adults also remain same except that the percentage of volume and occurrence of different items were different. There is fairly good agreement between the present observations and those earlier workers. In Loni Reservoir (Pathak, 1975) in the case of Nagarjunasagar, organic detritus and diatoms formed the major components of food. But during this study, whereas in Loni, it becomes negligible from June to September. Natarajan (1971) reported that *L. calbasu* of the length range 250-440 mm had a preference for bottom rotifers, copepods, cladocerans, cypris larvae, flagellates and diatoms. No such trends could be discerned in the present study.

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