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Studies on Food and Feeding Behaviour of *Tilapia sp.* and their Gastrosomatic Index from Bansagar Colony Pond, Rewa (M.P.), India

R.K. Singh	Department of Zoology, Govt. Science College Rewa -486001 (M.P.), India
S.N. Shukla	Department of Zoology, Govt. Science College Rewa -486001 (M.P.), India
Vima Patel	Department of Zoology, Govt. Science College Rewa -486001 (M.P.), India

ABSTRACT

- The aim of this study was to establish the food and feeding behaviour and Gastro-somatic index of Tilapia sp. inBansagarCcolonypond from March 2009 to Feb. 2010. On the basis of qualitative and quantitative analysis of gut contents of Tilapia sp.has been categorised as herbivourous. Gastro-somatic index were found to be lower during spawning month and higher during non-spawning month.The month-wise collection and experiments were made to show the seasonal variation in food choice, and feeding habit of the fish.

KEYWORDS Food and feeding behaviour, Tilapia sp., Bansagar colony pond and GSI.

INTRODUCTION-

The common name Tilapia is based on the name of the cichlid genus Tilapia which itself is a latinisation of Thiape, the tswana word for fish. The genus name and form was first introduced by Scottish zoologist Andrew Smith (1840).Tilapia sp. is reported to be an herbivorous. According to Hora and Pillay (1962) the frey feed mainly diatoms and other unicellular planktonic and dipthyte algae.

Jhingran (1983) stated that the natural foods of fishes are classified under three groups (i) Main food (ii) Occasional food and (iii) Emergency food.Feeding intensity refers to the degree of feeding as indicated by the relative fullness of stomach. It varies along with the seasonal variation, availability of preferred food items, maturity stage of the fish and spawning season of the species. The feeding intensity of mature fish decreases during the spawning period, as compared to the non-spawning period. The feeding intensity of a fish can be determined by gastrosomatic index. Recent work on food and feeding habits of fish has done by several workers viz., Parihar and Saksena (2010), Arthi et al. (2011), Saikia et al. (2012), Dutta et al. (2013) and Mushahida-Al-Noor et al. (2013).

Material and Methods-

In order to study the food and feeding habits of common carp, sample were collected from the commercial catcher during fishing in the year March 2009 to Feb. 2010 at Bansagar colony pond. All the fish specimens were weighed separately and then gutted for the collection of gut contents and preserved in 5% formalin. The collected guts were weighed and their content emptied in the watch glass. The same were analysed qualitatively as well as quantitatively by eye estimation and volumetrically (Pillay, 1952) and occurrence method (Hynes, 1950), for evaluating the relative importance of all food items. The various items were examined and sorted out using a binocular microscope and thus identified. The percentage occurrence of different items of food in different months was determined by summing the total number of occurrence of all items from which the percentage occurrence of each item was calculated. To find out the feeding rhythm of Tilapia sp., Gastro-somatic index (GSI) was calculated using the method given by Biswas (1983).

Result and Discussion-

During the study period monthly gut analysis of Tilapia sp . was carried out at Bansagar colony pond and data were collected and monthly percent composition of different food items are shown in Fig. 1. On the basis of observation, following fluctuation of food component were recorded.

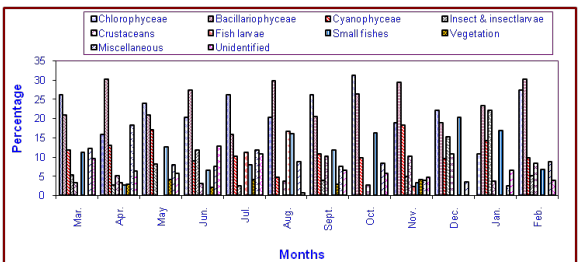

Fig.1 Monthly percentage of different food components in the gut of *Tilapia* sp. at Bansagar Colony Pond from March 2009 to Feb. 2010.

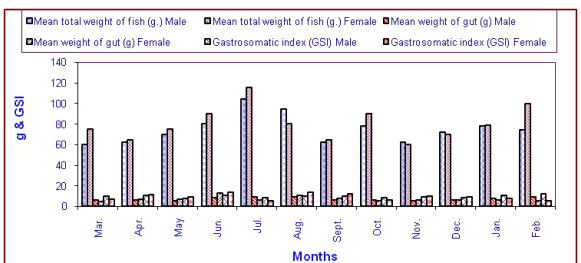

Fig. 2 Mean monthly and seasonal variation of Gastrosomatic Index (GSI) of *Tilapia* sp. at Bansagar Colony Pond from March 2009 to Feb. 2010.

Chlorophyceae –

The group chlorophyceae formed a major food component of Tilapia during study period. The maximum 10.79% in the month of October and minimum in the month of January were recorded at Bansagar colony pond.

Bacillariophyceae-

The member of bacillariophyceae contributes a major part of

food of Tilapia sp. during the observation. It stood first in the ranking of annual food budget of Tilapia sp. at Bansagar colony pond. During the study period maximum 30.18% in February and minimum 15.72% in the month of July were contributed by Bacillariophyceae.

On the basis of present observation it is clear that Tilapia sp. prefer the members of Bacillariophyceae as food in comparison to other food items.

Cyanophyceae -
Cyanophyceae stood in third place as food item ofTilapia sp. in both the water bodies during the investigation period. Their maximum 18.29% and minimum 4.62% were recorded in the month of November and August respectively.

The annual mean value of food items of cyanophyceae at Bansagar colony pond showed higher occurrence when the temperature was towards higher side.

Insects and Crustaceans –
During the gut contents analysis, insects, their larvae and crustaceas were also found in the gut of Tilapia sp. but their occurrence were not regular and percentage as food components was low.

Fish larvae and small fishes –
Diatoms and chlorophyceae seemed to forme the major items of food of Tilapia sp. During the investigation it was also recorded that inspite of vegetable foods, scales of fish and small fish larvae were also found in the gut of Tilapia sp. at Bansagar colony pond. The maximum 16.51% fish larvae were recorded as food in the gut of Tilapia sp. in the month of August.

Other food items –
In the present study, inspite of major food items leaves of aquatic plants, weeds and detritus were also recorded. The occurrence of weeds and parts of aquatic plants was not regular and contribution about 1% to 2% of food items. The misllaneous and unidentified group of food items included semi digested and these parts of food items were not easily identified.

Tilapia sp. is reported to be a herbivore by Vass and Hofstede (1952). The food and feeding habits of fishes vary from month to month. This variation is due to the changes in the composition of food organisms occurring at different seasons of the year (Bhuiyanet al., 1999). Basic food of this species was phytoplankton. Animal matter and others food items were also recorded during the study period, but their percentage was not enough. Getachew (1988) reported that Tilapia sp. feeds mainly on bottom detritus, full of diatoms throughout the feeding period. Jobling (1955) reported that the herbivorous nature of Tilapia and it feeds on micro and macro vegetation.

The observation on the feeding intensity based on gastrosomatic index (GSI) revealed that there was monthly fluctuation in the feeding intensity showing sharp rise and fall. However, in both male and females, the feeding intensity was almost similar with few exceptions. The feeding intensity was low during the spawning months (March, May, August and October) but improved considerably in the non-spawning months (Fig. 2). Rao et al. (1998) reported that generally during spawning season feeding rate would be at the minimum. Low feeding rate during spawning has also been reported by Hatikakoty and Biswas (2003). In the present study GSI value also show fluctuations during the breeding months which are in accordance with above finding.

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