

Monthly Variations In Food And Feeding Habits Of *Gobius biocellatus* From Kayadhu River Near Hingoli (M.S) India.

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Abstract:

Food is an important factor in the biology of fishes to the extent of governing their growth, feeding and migratory movements. The basic function of an organism is its growth, development and reproduction and it takes place at the expense of energy which enters the organism in the form of its food. *Gobius biocellatus* is a teleost fish, one of the species of the genus *Gobius* and it is distributed in fresh waters throughout the plains of India (Day, F. 1878). In the present study analysis of the gut content of adult *G.biocellatus* was carried out to study the percentage composition and percentage of prevalence of different food items, the analysis has been made month wise.

Key words: *Gobius biocellatus*, food and feeding habits.

Introduction:

The problem of nutrition of the fish has in recent year received considerable attention by the workers in all countries of the world, due to the fact that the successful development of the fisheries. The investigation on the food and feeding habits of the fish is one of the most important factors in the fishery biology to the extent of governing their distribution growth, migratory habits, spawning behavior and nutritive values.

Nikolsky 1963 states that “during the process of development of fish changes takes place in its food, which are connected with changes in its structure, corresponding to the changes in the composition of the food, ontogenetic changes also takes place in the structure of the feeding and digestive organs. Hence, a correct knowledge of relationship between the fishes and food organisms is essential for the prediction and exploitation of the fish stock”.

In the present study analysis of the gut content of adult *G.biocellatus* was carried out to study the percentage composition of different food items. During the present investigation it was impossible to study the food and feeding habits of Juveniles as they were few in catches.

Materials and methods:

The study of food and feeding habits of *G. biocellatus* involved examination of 487 specimens during the period of twelve months, from January 2003 to December 2003. The material was collected from river Kayadhu near Hingoli. The specimens were brought to the laboratory, measured for total length, weighed accurately and then cut open. Various methods have been adopted by the different workers for the study of percentage composition of different food items present in the gut. This study was based on the method suggested by Hynes (1950) and Pillay (1952) i.e., numerical method. For studying the percentage prevalence of different food items, the usual method as described by Hynes (1950) was followed.

Number of guts containing a particular food component was determined in each month.

Food and feeding habits of adult *G.biocellatus* :

The nature of gut contents in *G.biocellatus* revealed that this species is voracious and omnivorous having more tendencies towards carnivorous habits. The food of *G.biocellatus* consists of mainly phytoplanktons, aquatic plants, zooplanktons, insect larvae and semi digested part of prawns and fishes. This species being predatory feeds on prawns and fishes. Even cannibalism has been observed in *G.biocellatus*. The following are the main food items which occurred in the guts of *G.biocellatus*.

Algae: Spirogyra, Ulothrix.

Remains of aquatic plants: Pieces of root, leaf and grasses(semidigested).

Insect larvae: The larvae of anophales and culex and naids pupae.

Copepods: Cyclops and Napuluis.

Cladocerans: Dephnia, Barmina, Moina.

Prawns & Prawn remains: Palamonid group i.e., - potamysis and macropsis.

Fishes & Fish remains: Fishes like Barbus ticto, Rasobra daniconius, Danio Spinosus, and fish remains like scales, fins & vertebrae of fishes.

Results and Discussion:

Month wise changes in the percentage composition of different food items taken by adult *G.biocellatus* are given in Table No. 01

Table No. 01:

Percentage composition of main food items month wise in *G.biocellatus*.

Year 2003 / Month	Algae	Remains of aquatic plants	Copepods	Cladocerans	Insect larvae	Prawns & prawn remains	Fishes & fish remains
January	10.1	5.98	15.98	8.55	21	11.8	26.67
February	5.55	7.48	3.95	2.25	21.8	23.5	35.47
March	5.13	7.63	9.84	6.35	29	16	26.01
April	7.85	4.19	6.77	11.07	23.6	17.3	29.24
May	8.73	5.93	7.87	17.96	28.4	19.4	11.76
June	7.24	.....	5.92	16.84	34.8	9.13	26.04
July	.....	.....	35.64	19.53	18.9	9.11	16.78
August	.....	.....	27.81	21.19	15.6	7.47	27.98
September	.....	.....	25.93	18.96	19.00	25.4	10.74
October	.....	.....	7.45	15.31	24.4	19.9	32.89
November	.....	.....	29.53	18.95	21.9	18.1	11.15
December	.....	.....	9.93	14.87	22.3	21.9	30.99

Algae:- During the peak spawning season the total absence of algae in the gut content was noted. The intake of algae was found maximum in January and low in March and their percentage composition varied from 5.13% (Mar.) and 10.10% (Jan.).

Remains of aquatic plants:- Aquatic plants were also consumed by the fishes in the form by pieces of roots, stem and leaves. This food item was not seen throughout the year in the gut but it was found from January to May and their percentage composition varied from 4.19 (April) to 7.63 (March).

Prawns & prawn remains:- Prawn formed a considerable part of the food adult *G.biocellatus* throughout year, the maximum being in September (25.37%) indicating that this food item was largely consumed by the fishes. The percentage decreased during peak spawning i.e., June, July & August. The variation in the percentage composition was found to be 9.11(July) to 25.37(Sept.).

Copepods :- Copepods were consumed throughout the year and their percentage composition varied from 3.95(Feb.) to 35.64(July).

Cladocerans:- This food item were consumed throughout the year. The percentage compositions ranged between 2.25(Feb.) to 21.19(Aug.).

Insect larvae:- Insect larvae were consumed throughout the year. The percentage of insect larvae decreased during peak spawning. The percentage composition varied from 15.55 (Aug.) to 34.83 (June).

Fishes & fish remains:- It is consumed throughout the year with high percentage. The percentage composition ranged between 10.74(Sept.) to 35.47(Feb.). As this fish shows more tendency towards the predatory nature as well as cannibalism.

Month wise fluctuations in percentage of prevalence are given in Table No. 02:

After observing the variations in percentage composition of various food items. It would be interesting to study in detail the prevalence of these components. Monthly observation on the prevalence of main food items would give us an idea of the presence of the food items in each month end. The preference given to them by the fish.

Algae:- The percentage of prevalence of algae in the guts of *G.biocellatus* appeared to be fairly high in the younger fishes. The percentage of prevalence varied between 6.66 (April) to 12.5 (Jan.). During the peak spawning period the total absence of algae in the gut content was noted

Remains of Aquatic Plants:- The aquatic plants were found to be consumed only in five months in year January to May and their percentage prevalence ranged between 7.5 (Jan.) to 14.00 (Feb.).

Copepods:- Copepods were present in the guts of *G.biocellatus* throughout the year. The percentage prevalence varying between 16.66 (Nov.) and 42.55 (Mar.).

Cladocerans:- The intake of cladocerans by *G.biocellatus* was record in all the months. Their percentage prevalence varied between 8.00 (Oct.) and 30.00 (Feb.). Low percentage of prevalence was observed during the peak spawning months (Aug-Sept).

Prawans & prawn remains:- They were also recorded throughout the year. Their percentage of prevalence ranged between 3.63 (July) and 70.00 (Feb.)

Insect larvae:- The intake of insect larvae was recorded in all the months. During the peak spawning season the percentage of prevalence of this food item was low where as high during the rest of the year. Their percentage of prevalence varying between 17.14 (Sept.) and 93.75 (Dec.).

Fishes & fish remains:- This food item is consumed by the specimens in all the months. Their percentage of prevalence ranged between 34.28(Sept.) and 96.87(Dec.).

Table No. 02: Month wise changes in percentage of prevalence of main food items consumed by adult *G.biocellatus*.

Year 2003 / Month	Algae	Remains of aquatic plants	Copepods	Cladocearans	Insect Larvae	Prawns & Prawn remain	Fishes & Fish remains
Jan	12.5	7.5	37.5	12.5	62.5	25.00	17.5
Feb	12	14.1	36.00	30.00	58.00	70.00	96.00
Mar	8.5	10.63	42.55	19.14	57.00	23.4	82.97
Apr	6.66	8.88	26.66	22.22	40.00	14.89	74.46
May	7.14	7.14	23.8	11.90	28.57	9.52	45.23
Jun	--	--	13.20	13.20	28.3	9.43	41.5
Jul	--	--	25.45	18.18	18.18	3.63	72.72

Aug	--	--	39.39	12.12	15.15	12.12	51.51
Sep	--	--	34.28	11.42	17.14	25.71	34.28
Oct	--	--	12.00	8.00	32.00	12.00	80.00
Nov	--	--	6.66	20.00	76.00	20.00	45.45
Dec	--	--	15.62	25.00	93.75	28.12	96.87

From the foregoing discussion it can be inferred that *G.biocellatus* is omnivorous fish showing more tendency towards carnivorous habits and the gut content analysis made throughout the year showed significant variation in the percentage composition of various food items in relation to the seasons and growth. *G.biocellatus* consumed insects' larvae prawns and prawn remains and fish remains throughout the year in fairly high percentage.

Mookerjee *et.al.*,(1947) have given a note on the food of *Glossogobius giuris* that this species mainly feeds on animals. According to their studies the ratio of animal and plant food in adult is about 70:30. Bhowmick (1965) in his study on some aspects of biology of *Glossogobius giuris* mentioned that this species is voracious and the feeding habits change with the size of the fishes.. Foods of the important commercial species of Indian major carps have been studied by Alikunhi (1952) and Yusuf kamal (1964).

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