



ORIGINAL ARTICLE

Study of Different Biological Aspects of Omnivorous Fish: *Puntius kolus* (Skyles)

Vineet Kumar

Department of Zoology, Dr. V.P.S. College, Firozabad, India

Email: sbk753500@gmail.com

Received: 15th Jan. 2017, Revised: 2nd Feb. 2017, Accepted: 10th Feb. 2017

ABSTRACT

The fish, *Puntius kolus* shows a monthly seasonal and annual variation according to its Body weight. The fishes of this species have been collected from the local fish market. The collection of fish is done in the Keetham Lake and its tributaries for the purposes of their bio-ecological studies.

Key words: Bioecology, *Puntius Kolus*, Agra

INTRODUCTION

Fishes placed a very important position in the human life as in the economic point of view. They are the rich source of vitamins, which are essential for growth and development. In order to develop the fishery on second line, it becomes essential to find the proper solution regarding the facing problems in this industry.

MATERIALS AND METHODS

The fishes have been collected from the local fish market. Fishes are also collected from the River Yamuna and its tributaries and in the Keetham Lake. The different biological aspects have been studied by the sampling of fishes at regular intervals. The sampling has been done with the help of the Random Sampling Methods. We studied the separate groups for the study of various readings which have been as have been shown in the tables.

Puntius kolus was kept in the formalin for the study of the food and feeding habits. So as to cease further assimilation and entire canal have been measured by the displacement method with the help of measuring cylinder at which graduation up to 0.1 ml. The weight of the food was measured in all the conditions by the qualitative study. The food was examined in fresh or preserved fish condition at 70% Alcohol. The quantity analysis has been done by the volumes occurrence and fullness method (Lal, 1968).

Table 1: Percentage of different food items (by volumes) in the stomach contents during different months (Males and females) of *Puntius kolus* (Sykes)

Month	Percentage of different food items																								
	Decayed organic matter		Insect and Insect larvae		Crustaceans and crustaceans larvae		Eggs of Invertebrates		Fish fry		Molluscs		Algae		Higher Aquatic Plants		Plants debris		Sand and mud		No. of fish with food		No. of studies		
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M
Jan	14.6	19.4	10.5	16.3	15.5	2.1	4.8	6.8	2.9	3.1	-	-	14.2	14.4	4.8	8.5	24.2	22.1	8.5	7.3	21	15	26	21	
Feb.	17.4	19.1	12.0	10.0	15.1	16.5	1.6	2.6	2.8	3.8	-	-	12.4	20.0	14.5	13.0	18.2	10.4	6.0	4.6	13	10	17	14	
Mar.	14.1	16.2	26.4	15.4	8.4	6.1	12.0	4.3	3.2	6.7	-	-	14.3	24.5	3.0	9.0	10.3	8.1	2.3	9.7	10	19	16	24	
Apr.	20.1	34.1	9.8	2.3	11.6	19.6	11.8	15.5	1.7	6.4	-	-	23.4	14.4	-	-	15.3	12.0	6.3	5.7	16	11	22	18	
May.	6.0	20.3	4.7	-	18.5	12.1	20.3	18.5	1.2	4.1	-	-	8.9	28.4	-	4.9	26.1	10.0	14.3	1.7	12	12	15	17	
Jun.	25.1	25.0	-	-	3.2	15.5	17.0	-	4.3	10.3	-	-	14.4	26.3	6.0	8.3	17.7	7.0	12.3	7.6	10	19	19	15	
July.	12.5	16.4	5.6	8.0	27.8	24.1	10.0	3.0	6.5	11.0	-	3.0	19.0	23.5	4.2	1.8	11.6	6.0	2.8	3.2	7	13	12	21	
Aug.	10.3	10.7	5.5	16.3	20.0	17.5	12.6	-	4.0	4.5	18.0	10.5	10.5	30.0	-	--	16.8	9.5	2.3	1.0	3	3	7	9	
Sept.	13.6	15.2	14.1	12.0	14.0	-	4.6	7.3	3.1	15.5	-	5.3	25.6	26.0	2.0	-	18.2	15.4	4.8	3.3	5	6	8	14	
Oct.	13.8	25.9	16.0	8.6	1.2	-	7.0	1.9	9.0	9.5	5.5	-	30.0	19.0	-	7.4	13.4	18.1	4.1	9.6	7	5	11	7	
Nov.	20.6	17.5	2.0	-	-	3.2	1.3	25.5	15.0	15.0	-	-	18.0	32.4	15.0	9.0	24.5	20.5	3.6	8.3	17	9	21	12	
Dec.	14.3	20.0	11.0	17.8	8.7	-	11.6	4.9	9.2	9.2	-	-	23.6	28.7	5.0	5.0	13.2	18.5	3.4	4.3	4	9	5	10	

Table 2: Annual percentage of (by volume) each food items of *Puntiuskolus* (Sykes)

Sex	Decayed Organic Matter	Insects and insect larva	Crustaceans and Crustacean larvae	Eggs of invertebrates	Fish fry	Molluscs	Algae	Higher aquatic plant	Plant debris	Sand and mud
Male	15.20	9.80	12.00	9.55	5.24	1.96	17.86	4.54	17.96	5.89
Female	19.98	8.89	9.73	4.89	7.15	1.57	23.47	5.58	13.13	5.53

Annual Gradation of Food Items (by Volume Method):**For Males:**

Plant debris > Algae > Decayed organic matter > Crustaceans and crustacean larvae > insects and insect larvae > Egg of invertebrates > Sand and mud > Fish fry > Higher aquatic plant > Molluscs

For Females:

For females – Algae > Decayed organic matter > Plant debris > Crustaceans and crustacean larvae > insects and insect larvae > Fish fry > higher aquatic plants > Sand and mud > Eggs of invertebrates > Molluscs.

Table 3: Percentage of occurrence of different food items in the stomach contents during different months (Males and females) of *Puntius kolus* (Sykes)

Month	Percentage of different food items																							
	Decayed org. matter		Insects and Insect larvae		Crustaceans and crustacean larvae		Eggs of invertebrates		Fish fry		Molluscs		Algae		Higher Aquatic Plants		Plant debris		Sand and mud		No. of fish with food		No. of fish studied	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Jan.	15.4	28.6	11.5	23.8	30.8	4.8	7.7	9.5	7.7	9.5	-	-	34.6	23.8	11.5	14.3	42.3	38.9	11.5	14.3	21	15	26	21
Feb.	11.8	28.6	17.6	21.4	17.6	21.4	5.8	14.3	11.8	7.2	-	-	17.6	35.7	23.5	21.4	29.4	21.4	5.81	14.3	13	10	17	14
Mar.	18.8	29.2	93.8	25.0	12.5	16.7	25.0	12.5	6.25	12.5	-	-	43.6	45.8	12.5	20.8	56.3	16.7	25.0	12.5	10	19	16	24
Apr.	27.3	44.4	13.6	5.6	13.6	27.8	13.6	27.8	9.1	11.1	-	-	31.9	22.2	-	-	27.3	27.8	13.6	22.2	16	11	22	18
May.	26.7	29.4	13.4	-	33.4	11.8	46.7	23.5	6.7	11.8	-	-	20.0	58.8	-	11.8	53.4	11.8	26.7	11.8	12	12	15	17
Jun.	31.6	40.0	-	-	5.3	20.0	21.1	-	5.3	26.7	-	-	10.5	46.7	5.3	20.0	15.8	20.0	10.5	13.3	10	9	19	15
July.	25.0	14.3	33.4	4.8	58.4	28.6	41.7	4.8	16.7	14.3	-	4.8	50.0	38.1	16.7	4.8	33.4	19.1	3.4	4.11	7	13	12	21
Aug.	28.6	11.1	14.3	22.2	28.6	22.2	28.5	-	14.3	22.2	42.9	22.2	14.3	33.3	-	-	28.6	11.1	28.6	11.1	3	3	7	9
Sept.	25.0	14.3	25.0	7.1	37.5	-	12.5	7.1	25.0	14.3	-	14.3	62.5	28.6	12.5	-	50.0	14.3	25.0	7.1	5	6	8	14
Oct.	27.3	42.9	27.3	14.3	9.1	-	18.2	14.3	18.2	14.3	9.1	-	50.0	28.6	-	14.3	18.2	28.6	9.1	28.6	7	5	11	7
Nov.	14.3	33.3	4.8	-	-	16.7	4.8	16.7	9.2	8.3	-	-	14.3	66.7	9.5	16.7	28.6	41.7	9.5	16.7	17	9	21	12
Dec.	40.0	30.0	60.0	20.0	20.0	-	40.0	10.0	60.0	20.0	-	-	120.0	40.0	20.0	20.0	60.0	30.0	40.0	10.0	4	8	5	10

Table 4: Annual percentage of (by occurrence) each food items of *Puntius kolus* (Sykes.)

Sex	Decayed Organic Matter	Insects and insect larvae	Crustaceans and Crustacean larvae	Eggs of invertebrates	Fish fry	Molluscs	Algae	Higher aquatic plant	Plant debris	Sand and mud
Male	24.31	26.22	22.23	22.14	15.87	4.33	39.12	9.92	36.94	17.8
Female	28.84	12.03	14.16	11.70	14.35	3.44	39.02	12.00	23.45	13.60

Annual Gradation of Food Items (by Volume Method):**For Male:**

Algae > Plant debris > Insects and insect larvae > Decayed organic matter > Crustacean and crustacean larvae > Egg of invertebrates > Sand > Sand and mud > Fish fry > Higher aquatic plants > molluscs.

For Female:

Algae > Decayed organic matter > Plant debris > Fish fry > Crustaceans and crustacean larvae > Sand and mud > insects and insect larvae > Higher aquatic plants > Eggs of invertebrates > Molluscs.

RESULT

Puntius kolus is omnivorous and bottom feeding fish. But, among the terrestrial species the dragon and may flies are quite common in crustaceans larva Daphnia, Cyclops and this included Microcystic, Spirogyra, Ulothrixas, Oscillatoria. The percentage of different food items in the stomach was studied in the different months. Seasonal and annual calculations are given in the tables.

Puntius kolus studied on omnivorous nature of this fish by Pillay (1958). The study of sexual dimorphism being an important aspect and have a importance by the various workers Teste (1940), Kestevan (1947) Clark (1934) Methew (1987) Sarejins (1957) has worked on the length and weigh relationship further, Pillay (1958).

Allen (1951) gave the curslier relationship and the results have been obtained as the greater than the cubic of weight and percentage of each sex in different size.

ACKNOWLEDGEMENT

The authors are very grateful to the fisher folk of the various lake Keetam, River Yamuna and fish market for their cooperation in the field, data and species collection.

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