

Original Research Article

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Dietary Composition of Flathead Fish *Cociella crocodila* (Tilesius, 1812), In Hooghly Estuary, India

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ABSTRACT

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The present study was aimed to analyse the dietary composition of *Cociella crocodila* in the Hooghly estuary, West Bengal. The fish sample was collected from the Kakdwip coast. As the fish was carnivorous so after analysis the gut, fishes, Stomatopods, Crustaceans and miscellaneous items were found. Stomatopods were found in the gut content dominantly during all the season followed by Crustaceans and fishes. Also analyse the degree of fullness of stomach of *C. crocodila*.

Introduction

Platycephalids (Order Scorpaeniformes) popularly known as flathead or crocodile fish, are found distributed in Indo Pacific and Atlantic and eastern Mediterranean regions (Imamura, 1996; Lee *et al.*, 2003; Nelson, 2006). These fishes are available more in Hooghly estuarine region and are commercially valuable and popular food fishes in the fish market of Kakdwip. The flathead fishes can be distinguished from other fishes as it has elongated body, head moderately to strongly depressed with large mouth and the longer lower jaw. Though considerable quantities of flathead fish, *Cociella crocodila* (Family Platycephalidae) are landed in the study area, dietary detailed study on the composition of this species were made. The present study was aimed to

understand the food preference pattern of the flat head *C. crocodila* off Hooghly estuary.

Materials and Methods

The Hooghly estuary (Lat. 21°40' and long 87°47' E) fans out below Diamond Harbour from a width of 3.2 Km at Kantaberia to 19.3 Km at the sea face. The Kakdwip region of Hooghly estuary is most diversified area of marine and brackish water fishes. A total of 200 species with recognizable stomach contents formed the basis for the study of food and feeding habits of *C. crocodile*. After measuring the length and weight of the collected samples those were dissected for removing guts for further analysis. The gut contents were weighed and cut open for

recording degree of fullness of stomachs. Stomachs condition were classified based on the quantity of food material present in the gut as gorged, ¾ full, ½ full, ¼ full, little and empty. Stomach content were emptied in a petri-dish and segregated to the study of composition. Quantitative and qualitative analysis was adopted and prey items in the recognisable condition were identified up to their species and generic level. Following the Volume displacement method (Pillai, 1952), volume of each food items were measured with using measuring jar. *C. crocodila* is a carnivorous species.

Results and Discussion

Qualitative and quantitative analysis

The details of qualitative and quantitative analysis of stomach content of *C. crocodila* are presented below:

The most important food items observed in the gut contents was Stomatopods (squilla). The highest quantity of squilla was found in post monsoon (36.65%) and the lowest summer (25.39%).

After fishes Prawns (0.98%) formed the most important food items. highest quantities were found in the month of summer (16.16%) and the lowest quantity found in monsoon (8.0%). Next is the crabs (0.99%) formed the most important food items. highest quantities were

found in the month of summer (16.18%) and the lowest quantity found in monsoon (7.84%).

In remaining food items viz., fish remains semi digested matter, crustacean remains, shells were consumed in lesser quantities compare to the above groups. Semi digested matter formed an important constituents of food items in different proportion in all the months. The quantity of semi digested matter was maximum in monsoon (17.90%) and minimum in post monsoon (9.31%).

Food and feeding habit

A total number of 200 species with recognizable stomach contents formed the basis for the study of food and feeding habits of *Cociella crocodila*.

The qualitative and quantitative of food of *C. crocodila* showed that this species feeds mainly on crustaceans (5.14%) and fish (2.48%). The ‘miscellaneous’ (1.34%) which formed the third group mainly consisted of crustaceans and fish remains. Based on the present study, it could be inferred that *C. crocodila* is carnivorous fish. The flat heads are bottom feeders and mainly feed on crustaceans and teleosts (Colefax, 1937; Chacko, 1949; Coleman and Mobley, 1984). The present study also reveals that *C. crocodila* is a bottom feeder, feeding mainly crustaceans and followed by the teleost.

Table.1 Qualitative and quantitative composition of the gut content of *C. crocodile*

Food Items	Seasons		
	Monsoon	Post monsoon	Summer
Fishes	29.55	28.75	24.61
Stomatopods	36.65	43.69	25.39
Prawn	8	8.67	16.16
Crabs	7.84	9.22	16.18
Miscellaneous	17.9	9.31	17.63

Table.2 Percentage occurrence of *C. crocodile* in various degree of fullness of stomach

Fullness of stomach	Season		
	Monsoon	Post monsoon	Summer
No.of fish sampled	44	54	50
Gorged	2.605	5.98	0.95
Full	14.17	9.22	1.07
3/4 Full	15.04	7.12	3.78
1/2 Full	22.12	14.60	7.75
1/4 Full	15.77	11.11	10.93
Little	1.58	4.33	3.02
Empty	27.78	47.14	71.33

Fig.1 Qualitative and quantitative composition of the gut content of *C. crocodile*

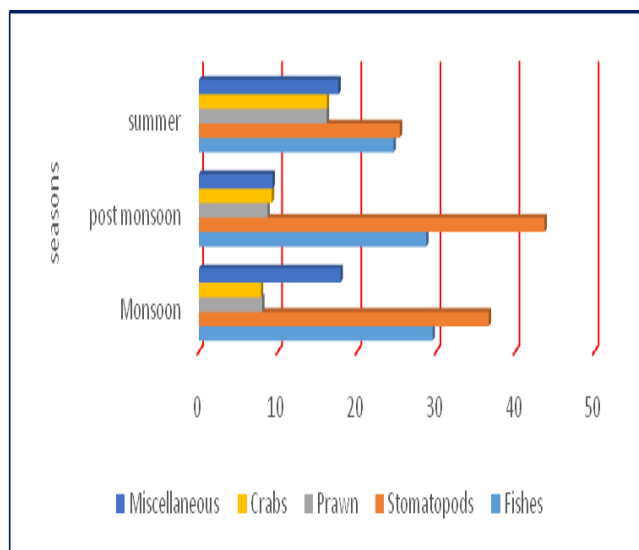
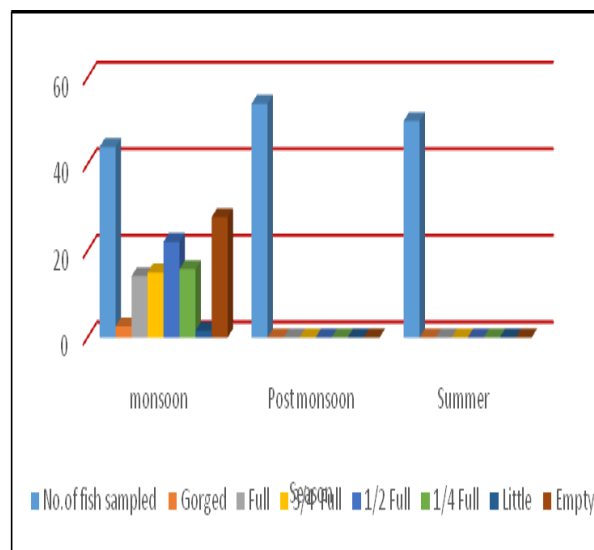


Fig.2 Percentage occurrence of *C. crocodile* in various degree of fullness of stomach



The food item crustaceans (prawns, squilla, and crabs) in the stomachs of *C. crocodila* in different months occurred in very high percentage and highest quantity of Crustaceans occurred during (57.73%) followed by post monsoon (61.58%) and monsoon (52.49%). Squilla dominated among Crustaceans during February (43.69%) and November (36.65%), when the feeding intensity was very high. Prawn (0.98%) was noticed the major food item among crustaceans during the month of summer was high (16.16%) and low (8.67%) in post monsoon.

Highest percentage of crab was recorded in summer (16.18%) and lowest (7.84%) in monsoon. Rao (1964) had recorded as high as 82.6% of gut content of *G. scaber* as crustaceans. *C. crocodila* also preferred crustaceans as evident from the present study. The bottom feeders like *S. sihama* fed on crustacean (Honnegowda, 1984) in Kakdwip region. Coleman and Mobley (1984) noticed variation in the of food item of some platycephalids crustacean, cephalopods, fishes for sand flat heads *P. bassensis*, deep water flat head *P. conatus* and tiger flat head *N. richardsoni*.

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