

NOTE

Fishery of goatfish at Visakhapatnam with some information on the biology of *Upeneus vittatus* (Forsskal)

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ABSTRACT

The goatfish fishery at Visakhapatnam by small mechanised trawlers during 1994-'96 is presented. During the period the goat fishes formed 4.5 % of the total fish catch landed by the small mechanised trawlers. The fishery was sustained by *Upeneus vittatus* (65.1 %), *U. sulphureus* (26.5 %) and *U. moluccensis* (8.3 %). *Upeneus vittatus* feeds mainly on prawn, crab and *Squilla* spp. The females were observed in the maturity stages I - IV and the matured females were recorded in February, March, May and August. The length-weight relationship of *U. vittatus* is also described.

The goat fishes are widely distributed in the tropical and subtropical Indo-Pacific and Western Atlantic regions. There constitute subsistence fishery in the country. There are nineteen species of goatfishes recorded from the seas around India.

Kuthalingam (1955) studied the food habits of *Upeneus indicus* and *Upeneus cinnabarinus* from the Madras coast. The taxonomy, osteology, biology and fishery of goatfishes from the Indian coasts have been studied in detail by Thomas (1969). Kumaran and Randall (1984) described 18 species of goatfishes from western Indian Ocean. The present account gives the fishery of goatfishes from Visakhapatnam (17° 40'N, 83°18'E) with notes on the biology of the dominant species, *Upeneus vittatus* (Forsskal).

Visakhapatnam fisheries harbour is a well equipped all weather fishing port for different types of mechanised fishing vessels. There are about 280 small trawlers in active operation. The average monthwise effort, catch and catch rate of goatfish landed by these trawlers at the Visakhapatnam fisheries harbour during the period 1994 - '96 are given in Table 1.

During 1995-'96 there was an overall decrease in the effort input, total fish catch and goatfish landings when compared to 1994-'95. The average monthly effort input varied from 2,937 units in 1994 - '95 to 2,295 units in 1995 - '96. The all fish catch decreased from 3,682.4 t in 1994 - '95 to 2,796.8 t in 1995 - '96. The goatfish catch declined from 1,793.5 t in 1994-'95 to 1,114.41 in 1995-'96. and formed 4.9 % of the total fish catch in

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TABLE 1. Monthly average catch, CPUE and percentage composition of goatfishes along with all fish catch and effort of small mechanised trawlers at Visakhapatnam Fisheries Harbour during 1994 - '96

Months	Effort (standard units)	Total catch of all fish (kg)	Catch of goat fishes (kg)	% catch of goat fishes	CPUE of goat fishes
April	1,350	1,43,860	9,289	6.5	6.9
May	1,752	3,07,724	14,240	4.6	8.1
June	2,054	1,91,742	10,917	5.7	5.3
July	2,471	2,89,559	15,515	5.4	6.3
August	3,141	3,67,914	12,630	3.4	4.0
September	3,596	4,83,492	18,524	3.8	5.2
October	2,031	2,57,296	10,237	4.0	5.0
November	1,423	2,07,499	6,380	3.1	4.5
December	4,636	5,10,587	24,497	4.8	5.3
January	3,553	4,18,438	16,378	3.9	4.6
February	3,073	3,86,420	16,866	4.4	5.5
March	2,320	3,23,028	19,002	5.9	8.2
Total	31,400	38,87,559	1,74,475	4.5	5.6

1994-'95 whereas in 1995-'96 they recorded 4.0 %.

Species composition : The goatfish fishery comprised of three species viz. *Upeneus vittatus* (Fig.1), *U. sulphureus* and *U. moluccensis*. Among them *U. vittatus* constituted on an average 66.7 %, *U. sulphureus* and *U. moluccensis* formed 24.0 and 9.3 % respectively (Table 2). Length measurements were made in the field for the dominant species, *Upeneus vittatus*. The commercial catches were represented by 95-206 mm of *U. vittatus* with two dominant modes at 135 and 145 mm in total length.

Biology of *Upeneus vittatus* : Samples of *U. vittatus* were examined for feeding and maturity conditions. The size varied between 108 and 206 mm in total length.

Food and feeding : 281 stomachs of

U. vittatus were examined to study the food and feeding habits. The intensity of feeding was determined based on the distension of stomachs. The percentage frequency of feeding was found to be 0.7, 1.8, 0.7, 4.6, 10.6, 46.2 and 35.2 in gorged, full, 3/4 full, 1/2 full, 1/4 full, little and empty stomachs respectively. The total volume of the food contents in the stomachs varied from 0.1-3.0 ml.

Upeneus vittatus feeds on prawn, crab, *Squilla*, fish, brittle star, mollusc and isopod. Among these prawn, crab and *Squilla* formed the major food items which constituted 31.0, 28.2 and 20.5 % respectively.

Maturity: The females constituted 60.0 % and they were observed in the maturity stages I-IV. Females in stages I and II were observed throughout the year whereas mature females were recorded in February, March, May and August.

Fig. 1.

	C,-tttdi	' mi.<i i a ni set]				Monthly tcital catch	
		Catch	4	4	4		
April						9,289	
May		5.7				14,240	
June		4,199	38.5			10,917	
July		4,1)82	32,1		•	15,515	
August		2,944	23,3	1,082	8,4	12,830	
September		304	1.6	514	2,8	18,524	
October	9,148	1,089	10,6			10,237	
November	4,409	69 1	1,308	21.4	603	9.5	6,380
December	10,390		7,587	31.0	8,220	25,4	24,497
January			5,944	36,3	1,729	10.6	16,378
			6,298	37,3	4,000	23,7	16,888
March		<i>i ac^)</i>	15,8	2,148	1 1,3		
Tola!			24.0	1.6,278	9,3		

Length-weight relationship: 281 specimens of *Upeneus vittatus* ranging in size from 108 mm (17.0 g) to 206 mm (122.0 g) were used in the present study. The length-weight relationship obtained for this species is expressed by the formula: $\text{Log } W = - 4.6289 + 2.9040 \log L$ ($r=0.9695$).

Acknowledgment

The authors are deeply indebted to Dr. V. Sriramachandra Murty, Head, Demersal Fisheries Division of CMFRI, for critically going through the manuscript.

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