

FISHERY POTENTIAL OF THE THANA - BASSEIN CREEK SYSTEM

E. ASHA JYOTHI AND VIJAYALAKSHMI R. NAIR*

Bhavan's College, Andheri, Bombay - 400 058

ABSTRACT

Quantitative variation in fish catch at Thana creek was from 2 - 93.5 kg/h (av. 24.8 kg/h). The catch rate at Bassein creek fluctuated between 1 and 34 kg/h (av. 8.2 kg/h). Seasonal effect on the fishery showed maximum catch for premonsoon and monsoon periods respectively for Thana and Bassein creeks. The catch composition showed dominance of catfish and sciaenids at Thana creek while engraulids predominated the collections from Bassein creek. The overall fishery potential showed that yield from Thana creek was three times more than the Bassein creek. The importance of this baseline data for future monitoring and ecological assessment of the creek system is discussed.

INTRODUCTION

The build up of pollutants at some of the creek regions around the coast of Bombay has caused much concern on the impact of unfavourable water quality on the biological productivity and fishery potential (Nair and Govindan, 1986; Varshney *et al.*, 1985). Thane - Bassein creek system, a vital estuarine zone adjoining the Bombay harbour receives a wide range of waste due to heavy industrialisation around the creek system (Lodh, 1990). The biological characteristics of the Harbour-Thana-Bassein system covering a distance of over 87 kms had been well documented (Mathew, 1989; Lodh, 1990) while nothing is known on the fishery of this system. It is well known that Maharashtra contributes substantially (19%) to the total marine fish landings from India amounting to 1.7 million tonnes (MPEDA, 1987). The Thana district alone shares about 23.6% of the total fish landings from Maharashtra. Hence, regular experimental trawling was taken up to evaluate the fishery potential of Thana-Bassein creek system and the results are presented in this communication.

MATERIAL AND METHODS

Bottom trawling was done using a mechanised trawler at the Thana creek and Bassein creek (Fig. 1). Due to unfavourable topography the trawling at Bassein creek had to be shifted towards the mouth. The

depth at the stations varied between 6-10 m. A high opening bottom trawl net of 20.7 m (636 meshes of 50 mm when stretched) was used. The opening of the net was approximately 10 m. Trawling was done at monthly intervals from March 1986 to February 1987. The total weight of the catch was determined after discarding the unwanted material. The entire catch was then segregated into major groups, weighed and later identified.

RESULTS AND DISCUSSION

Thane Creek :

Catch rate varied from 2 kg/h in November to 93.5 kg/h in May (av. 24.8 kg/h). Relatively high values were observed in February and September. In general, catch rate was very low during November to January (Table I). Seasonal averages for premonsoon (February-May), monsoon (June-September) and postmonsoon (October-January) were respectively 48.5, 20.6 and 6.1 kg/h. The mean catch potential for the creek system was 0.68 tonne/km².

The catch composition showed the dominance of catfish during January, March-May and October (Fig. 2). The species of catfish represented were *Arius tenuispinis* and *A. coelatus*. *A. tenuispinis* predominated the catfish community except during January

* National Institute of Oceanography, Regional Centre, Versova, Bombay - 400 061.

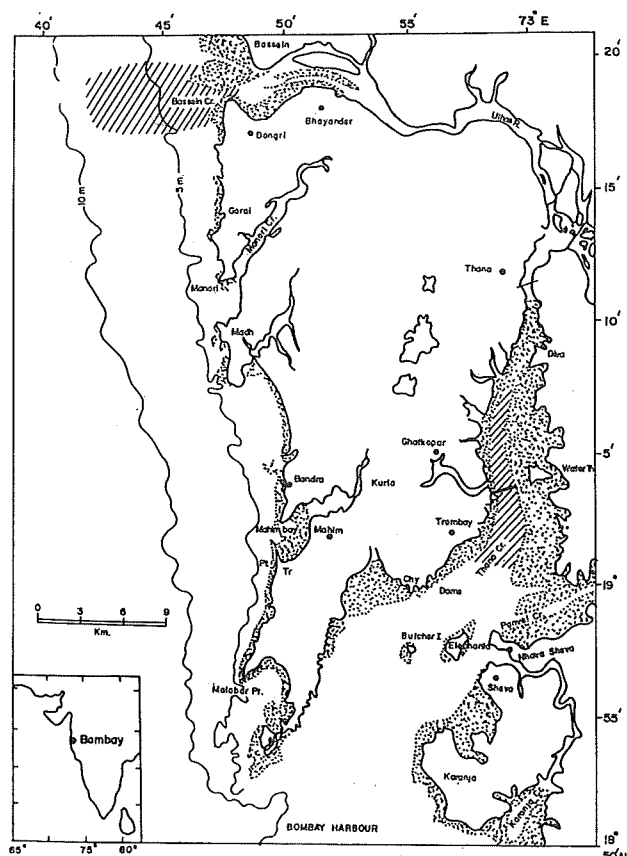


Fig. 1. Location of trawling shown as hatched area

and May when *A. coelatus* became dominant. Sciaenids formed a major share of the catch during February, June to August and December. The species *Johnius glaucus* and *Otolithoides biauritus* constituted the sciaenids. *O. biauritus* was found only during June. Mulletts were recorded exclusively in March and April and was represented by the single species of *Valamugil seheli*. Engraulids

were caught in high number in September (80%) while clupeids formed the major catch (95%) in November.

Crustaceans were represented by crabs and prawns. Crabs were found in most of the collections and maximum (20%) was recorded in May. Prawns were caught only in 50% of the collections with maximum incidence (10%) in June. The species obtained were *Parapenaeopsis hardwickii*, *Exopalaemon stylifera*, *Macrobrachium rude*, *Metapenaeus brevicornis*, *Penaeus indicus* and *Exhippolysmata ensirostris*. *P. hardwickii* was found in the catches during March, May/June and September/October but the population density was very low. *E. stylifera*, *P. indicus* and *E. ensirostris*, though found once respectively during March, June and December, were obtained in relatively greater numbers. Miscellaneous group in the area (Fig. 2) included *Trichurus*, pomfret, *Nibea*, *Scomberus*, *Scatophagus* and soles.

Bassein creek :

The range in catch varied from 1 kg/h in June/November to 34 kg/h in August (av. 8.2 kg/h). Moderate values were obtained in May and September (Table 1). Maximum average catch was recorded for the monsoon period (11.2 kg/h) than the premonsoon (6.2 kg/h) and postmonsoon (5.2 kg/h) periods. The area sustained an average production rate of 0.22 tonne/km².

Table I : Variation in trawl catch at Thana and Bassein creeks during 1986-87

Months	Thana creek		Bassein creek	
	Catch/h (kg)	Catch/km ² (tonne)	Catch/h (kg)	Catch/km ² (tonne)
Mar'86	27.0	0.73	4	0.10
Apr.	28.0	0.75	7	0.19
May	93.5	2.53	12	0.32
June	15.0	0.40	1	0.02
July	17.5	0.47	-	-
Aug.	7.0	0.19	34	0.92
Sept.	41.5	1.12	10	0.27
Oct.	10.0	0.27	8	0.22
Nov.	2.0	0.05	1	0.02
Dec.	6.5	0.17	7	0.19
Jan'87	6.0	0.16	5	0.14
Feb.	48.5	1.31	2	0.05

Engraulids were the dominant group in the collection contributing a major share during January, April and October-November (Fig. 2). They were absent only in May. Engraulids were represented by the single species *Coilia dussumieri*. Catfish was dominant from May-June and were contributed mostly by *A.coelatus* while *A.tenuispinis* was relatively less abundant. *Harpodon nehereus* was predominant during August-September. Sciaenids (*J.glaucus*) were not common except in March when they contributed 60% of the total catch. Clupeids were rare in the area but were found in unusual abundance in December (80%). Sharks were also sparsely represented in the catch but showed high incidence (40%) in February.

Crabs were unusually rare in the collections. Prawns formed a sizeable share of the fish catch from Bassein creek and were present throughout the year except March. In February, prawns predominated contributing 50% of the total catch. The species formed in the area were *P.hardwickii*, *M.brevicornis*, *E.stylifera*, *Nematopalaemon tenuipes*, *M.rude*, *Parapenaeopsis sculptilis* and *E.ensirostris*. *P.hardwickii* were recorded during April, June, October and January with relatively higher population density during April and June. *M.brevicornis*, though found in the catches during April, November/December, the maximum incidence was in December. *E.stylifera* was in abundance during June, while the catches of April, November, January/February showed less contribution. *N.tenuipes* was found only in April. *M. rude* was present in the catches during April and January. *P.sculptilis* was obtained in the collection made between October and February. However, their relative abundance was restricted to October. *E. ensirostris* was also represented only during October and February. The miscellaneous group (Fig.2) included ribbon fish, pomfret, *Nibea* and *Scomberus*.

The water quality of the Thana creek (Jyothi, unpublished data) indicated slightly lower range of DO (1.4 - 6.4 mg/l) and

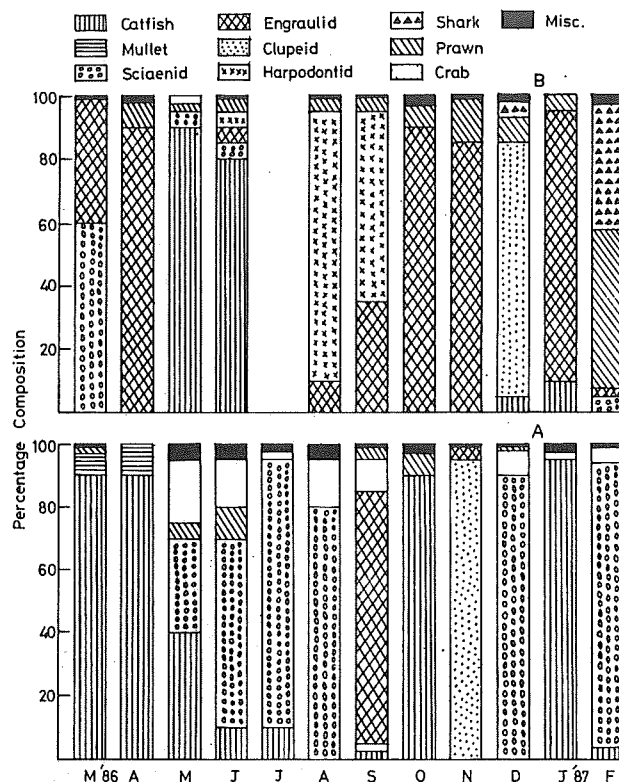


Fig. 2. Percentage composition of different groups obtained from Thana creek (A) and Basseincreek (B) during 1986 - 1987.

higher concentration of nutrients ($PO_4\text{-P}$ 5.3 - 15.2, $NO_2\text{-N}$ 4.9 - 31.9 and $NO_3\text{-N}$ 7.9 - 66.9 $\mu\text{g at./l}$) than that of Bassein Creek (DO 5.1 - 9.1 mg/l and $PO_4\text{-P}$ 1.0 - 2.8, $NO_2\text{-N}$ 0.1 - 1.4 & $NO_3\text{-N}$ 7.0 - 28.6 $\mu\text{g at./l}$). The BOD Values were relatively higher at Thana creek (1.3 - 4.9 mg/l) than that recorded at Bassein creek (0.9 - 4.2 mg/l). However, this has not affected the biological productivity of the Thana creek and was reported to be much more productive than the Bassein system (Lodh, 1990). The same trend was observed in the fish catch which was about 3 times higher at Thana creek than Bassein creek. The composition of fish catch showed differences between the two locations. Catfish and sciaenids predominated the fauna of Thana creek. Engraulids formed the dominant group at Bassein creek. *Harpodon nehereus* was limited to the Bassein area. The contribution of prawn was also much higher at Bassein creek than Thana creek.

The present data being the first report it is not possible to judge the effect of pollution, if any, on the fishery of the Thana-

Bassein system. The catch rate observed at Dharamtar creek, another creek system adjoining the Bombay harbour, was at an average rate of 7 kg/h (NIO, 1987) which is comparable to that of Bassein creek but much lower compared to the Thana system. It would appear that catch rate of Thana creek was fairly high suggesting that pollution has not reached an alarming stage. The present data can be used as baseline information for future monitoring and ecological assessment of the system.

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