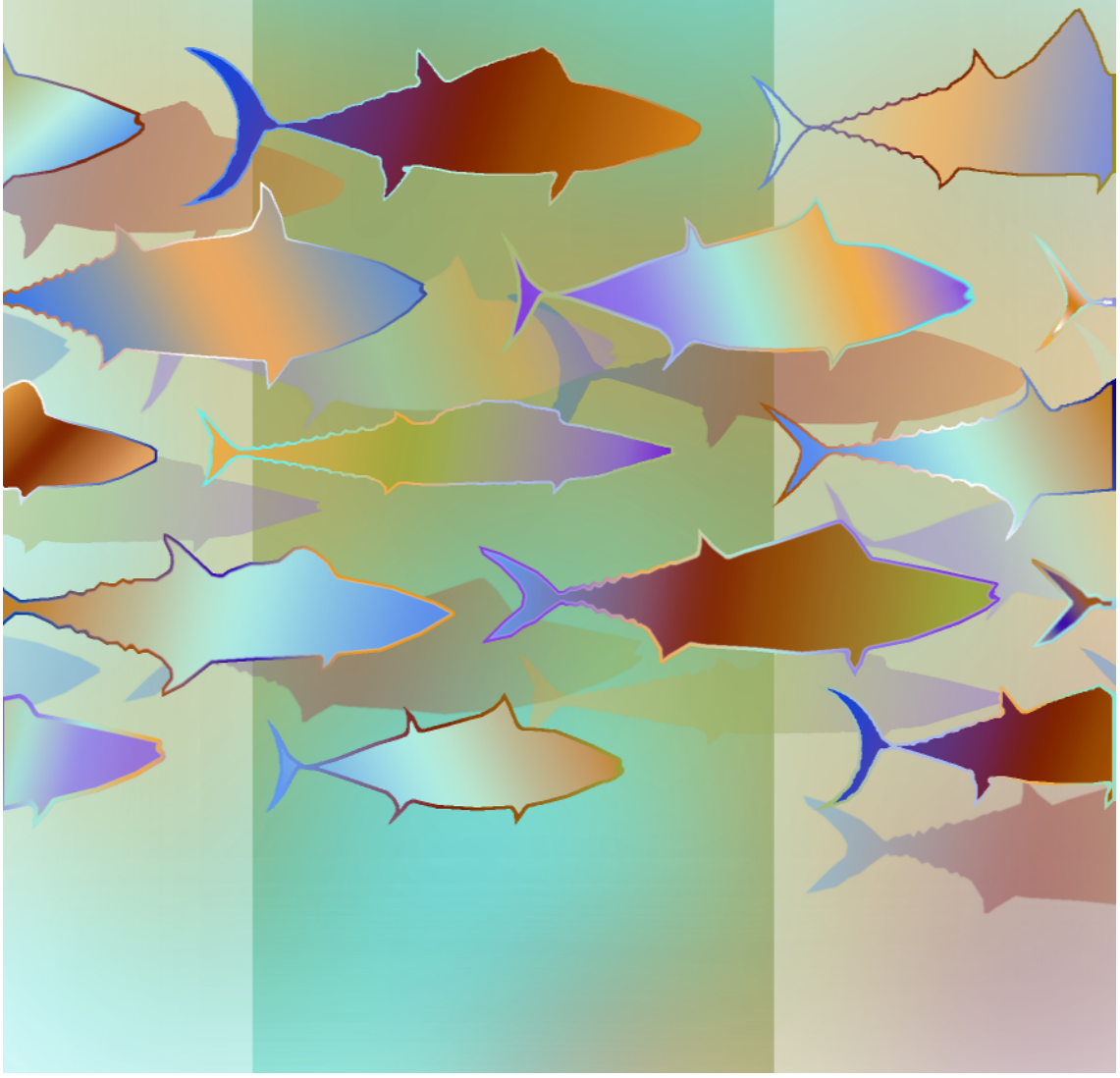
Status of Exploited Marine Fishery Resources of India



STATUS OF EXPLOITED MARINE FISHERY RESOURCES OF INDIA

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Threadfin Breams

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1. Introduction

The threadfin breams, also called pink perch (Kilimeen in Malayalam, Rani in Marathi, Madhumal meenu in Gujarati, Gulivindalu in Telugu) constitute an important demersal finfish resource in the Indian EEZ. These fishes are abundant beyond 50 m but show higher concentration at 100 -200 m depth as revealed by the exploratory surveys and experimental fishing. The fishing has been restricted to inshore waters up to about 50 m depth for a long time. But, after the introduction of stay-over fishing in late nineties, extending the operations to about 150 m depth and continuing the same, landings of threadfin breams have phenomenally increased from about 20,000 tonnes in the early eighties to about 116,000 tonnes by 2000. The increased availability of these fishes has also led to the establishment of surimi plants exclusively on the basis of these species. This increased production along the west coast particularly the northwest region of India however, is mainly due to enhanced effort input.

Considerable research work on taxonomy, biology and population dynamics has been carried out and status of the stocks of major species has been assessed. The present article reviews the available knowledge on these resources and the present status of the stock on the basis of the most recent data.

2. Production trends

Threadfin breams, because of the nature of their distribution, are almost exclusively exploited by trawlers. The production over the past 20 years has been showing increase with occasional decline. (Fig. 1) The trend in the landing however suggests an increase only. The average annual landing of threadfin breams during

1981-82 was 19,647 t; 65,219 t in 1991-92; and 95374 t in 1999-2000. Starting from about 22,600 tonnes in 1980 the landings showed considerable increase (except minor decline in 1981, 1987, 1988) over the years and reached a maximum of 116,680 tonnes in 2000 and accounting for 4.2% of the total marine fish landing. The increase was mainly due to the increase of threadfin breams catch from the states of Kerala, Karnataka and Gujarat. All other states showed decline in catch during this period.

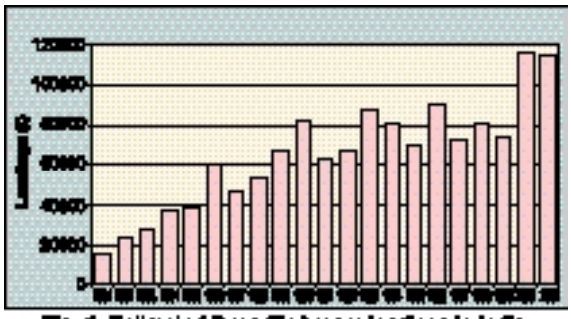

Fig. 1. Estimated threadfin bream landings in India

In the year 2000, Gujarat contributed the maximum (45,642 t) to the all India nemipterid catch followed by Kerala (37,437 t), Karnataka and Goa (19,100 t), Maharashtra (9,273 t), Tamil Nadu (3,284 t), Andhra Pradesh (1,201 t), Orissa (674 t) and West Bengal (69 t).

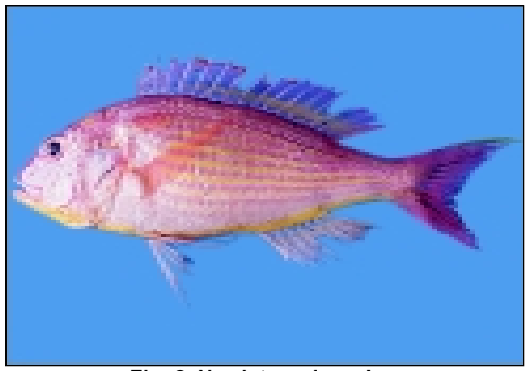

Fig. 2. Nemipterus japonicus

Fig. 3. Nemipterus mesoprion

Species and distribution

Six species are known from the seas around India. They are Nemipterus japonicus (Japanese threadfin bream) (Fig. 2), N.mesoprion (Red-filament threadfin bream) (Fig.3), N.delagoae (Delagoan threadfin bream), N.metopias N.nematophorus (Threadfin bream) and N.tolu (Notched threadfin bream). Out of these the first two species only contribute to the bulk of the landings (Fig. 4). While the former species is dominant along the east coast, the latter is most dominant along the west coast.

Threadfin breams are known to be influenced by upwelling and are known to move to inshore waters during monsoon period along the west coast of

India and used to contribute significantly to the trawl fisheries during this period. However, the ban on fishing during monsoon period along the west coast states resulted in reduced exploitation of these resources. The seasonal variations in the landings revealed two, more or less well defined peaks along west coast; in Gujarat the second half of the year is more productive and the first half in Maharashtra. Along east coast in Andhra Pradesh and Tamil Nadu, the second half of the year is most productive (Figs. 5a,b).

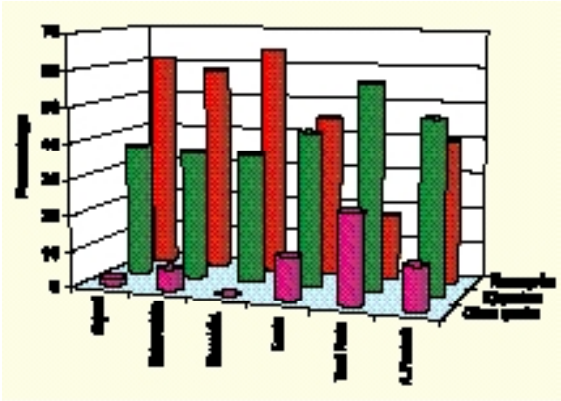

Fig. 4. Contribution of major species to the total threadfin bream landings (1985-2001)

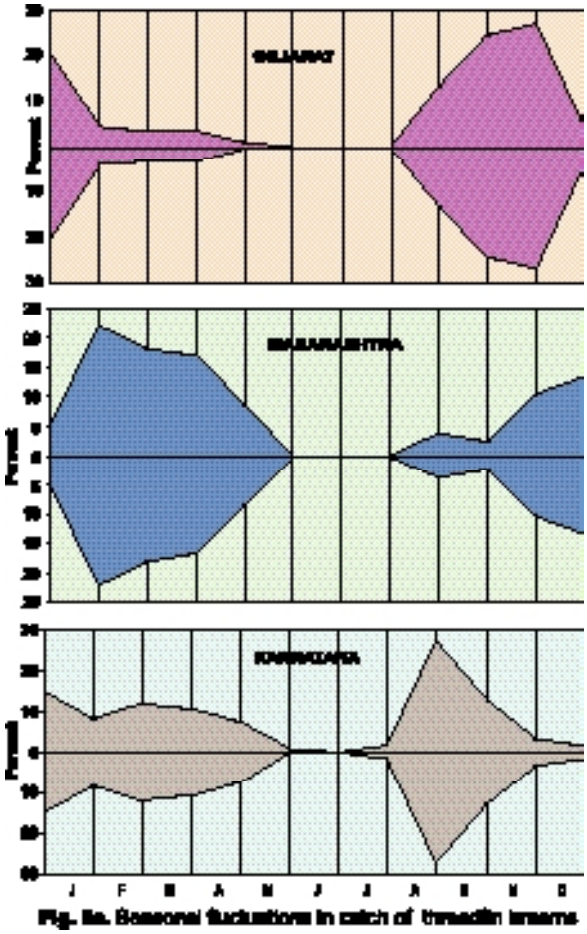

Fig. 5a. Seasonal fluctuations in catch of threadfin breams

3. Biology

The length range in the catch during different years along the east and west coasts of the country (Figs. 6 a, b) reveals that though young fishes are taken in considerable quantities the average length is more or less the same in different years.

Spawning

Indian threadfin breams are fractional spawners with protracted spawning periods. Spawning in N.japonicus takes place during October-April with a peak during October-December along Gujarat.

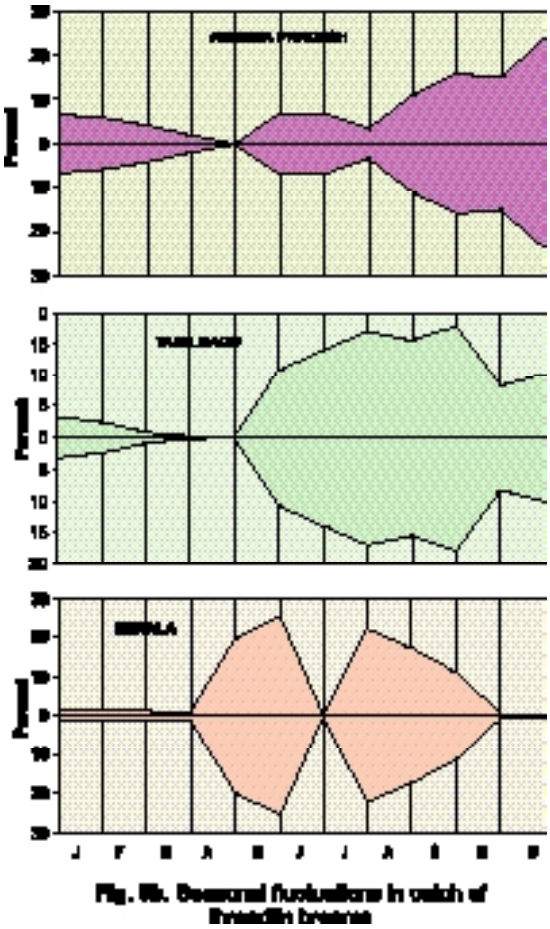

Fig. 9b. Seasonal fluctuations in catch of threadfin breams

Off Maharashtra coast, the peak spawning occurs during June- August, though mature adults of N.japonicus are available round the year. The spawning takes place during November-May with peak during November-February along Karnataka coast. In the sea off Kerala, N.japonicus and N.mesoprion spawn during monsoon and post-monsoon periods with peaks during monsoon in the former and during postmonsoon in the latter species. Off Andhra Pradesh, N.japonicus spawns in two peaks during August-April. Along Tamil Nadu coast, the spawning season is June - March, with peak during December-March.

Food

The threadfin breams are carnivorous, subsisting mainly on crustaceans (small prawns, stomatopods and crabs) and teleosts.

4. Management

Adequate database has been developed for carrying out studies on population dynamics from all along the Indian coast. A comprehensive study made earlier showed that the stocks were more or less in a healthy condition though the cod end mesh size of the trawl net under use is injurious to these stocks in the long run. The study of the more recent data reveals that the fishing mortality rates in the two

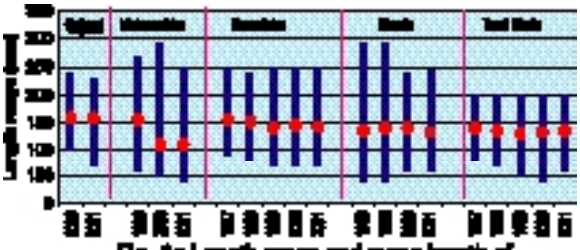

Fig. 9c. Length range and mean length of N.mesoprion in the trawl landings in different states during the period 1987-2001

major species are within reasonably permissible levels. This is also evident from the more or less increasing landings and constant average lengths during different years. However, the studies also reveal that increase in cod end mesh sizes would improve the landings in the long run. It needs to be emphasised here that generation of data on exploited stocks needs to be a continuous process and database needs to be updated and strengthened so that policy decisions on increasing/sustaining the yields could be suitably taken at appropriate times.

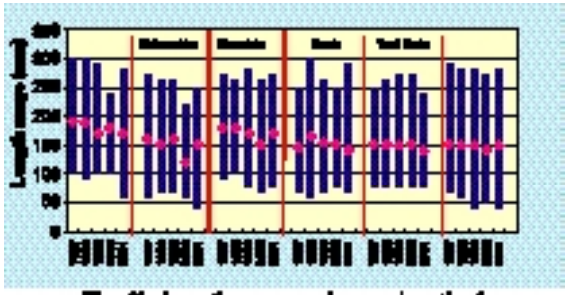

Fig. 4b. Length range and mean length of *N.japonicus* in the trawl landings in different states during the period 1997-2001

A review of threadfin bream fishery along the west coast of India with reference to trawling ban in monsoon revealed that the species contributing to the bulk of the catch during monsoon along the southwest coast of India is N.mesoprion whereas it is N.japonicus during the pre- and postmonsoon seasons. Hence trawling during monsoon will result in increased landings of N.mesoprion, and once the bottom condition comes to normalcy, the species moves to its normal habitat of 100-200 m depth zone. It is therefore believed that, trawling in this region during southwest monsoon period will not adversely affect the stock of this species. It will also not affect the stock of N.japonicus because, during monsoon, this species is not the major species in the fishing grounds.

It was also observed in several studies in India and outside that the larger fishes of threadfin breams are more abundant in relatively deeper waters. Infact, there are instances of a positive correlation between depth of the sea and the average length of threadfin bream species. Hence exploitation of this resource with non-selective gears in the inshore waters should be discouraged.

As already mentioned, the major region of abundance of threadfin breams is 100 –200 m depth zone. Trawling in this region, particularly along the west coast of India, would fetch increased landings of these fishes and provide the raw materials for the surimi plants. It is also possible to establish such plants along southwest coast to improve the export market of this product. However, such exploitation needs to be done cautiously by deploying a fixed number of boats and monitoring the landings of these boats. The potential yield of threadfin breams in the Indian EEZ is estimated as 1,28,000 t, which is based on the data available so far. The present landings at about 1,16,000 t are within permissible level. The estimate of potential yield may change when more recent data are taken into account. Further, when the exploitation is more intense on the resource, it will have impact on the biomass. It therefore warrants continuous monitoring of exploitation, biological characteristics and species composition effectively to arrive at revised and updated estimates of potential yield.

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