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## Spawning Seasonality of Major Fishery Groups Along Tamil Nadu-Andhra Pradesh Coast

G. Mohanraj, E. Vivekanandan, V. Thangaraj Subramanian, R. Sarvesan,  
M. M. Meiyappan and P. Nammalwar

Madras Research Centre of Central Marine Fisheries Research Institute,  
Chennai-600 006, Tamil Nadu, India

### Abstract

Available information on the spawning season of finfishes, crustaceans and cephalopods along the Tamil Nadu-Andhra Pradesh coast indicate prolonged spawning of most of the groups. Maximum number of species (41) spawn during January. Considering the spawning intensity and catch rate of trawlers, it is suggested that trawl operation may be banned in April and during November-December along the Tamil Nadu-Andhra Pradesh coast.

Key words: Spawning season, fishery

### Introduction

For sustaining the marine fisheries production, it has been realized that there is an obvious need to regulate the fishing effort in the inshore traditional fishing grounds. Considering the fisheries situation existing in India, temporal restriction of fishing effort, *i.e.*, closure of fishing for a specific duration is an option which could be implemented. At present, the maritime state governments in the west coast independently decide on the seasonal closure of operation of mechanized vessels on a year-to-year basis prior to or during south-west monsoon. Along the east coast, there is no effective temporal restrictions of fishing effort (Devaraj and Vivekanandan, 1999), but the concerned governments as well as the fishermen are conscious that the fishing effort should be regulated/restricted. However, the opinion is diverse on the question when and how long the fishing should be closed in a year. The fishing by the mechanized vessels along the west coast is closed during the south-west monsoon on the belief that most fish groups spawn during the monsoon (Devaraj *et al.*, 1997) and hence, the spawning populations can be spared from exploitation. Scattered information is available on the spawning season of commercially important fishes, crustaceans and cephalopods.

In order to suggest the appropriate period and duration of closure of fishing along the Tamil Nadu-Andhra Pradesh coast, a review of available literature was undertaken on the spawning season of major fish stocks and relevant information on the month-wise catch and catch rate along the Tamil Nadu coast was collected and presented here.

### Material and Methods

The available information on the spawning season of a number of finfishes, crustaceans and cephalopods along the Tamil Nadu-Andhra Pradesh coast was collected. Data on the effort and catch of trawlers based at Chennai Fisheries Harbour were collected for 18 days in a month during 1996-98 and weighted for monthly values.

### Results and Discussion

#### *Spawning season of marine fishes*

Spawning season has been reported for a number of marine fishes, prawns and cephalopods of Indian waters (Luther and Appannasastry, 1993). The studies on the spawning season are based on the gonadal condition of the fishes and availability of juveniles during different months (Qasim, 1973). The available information for a number of species occurring along the north Tamil Nadu and South Andhra Pradesh coasts is provided in Fig. 1. From the spawning pattern, the fish groups could be classified into the following three categories.

#### *i) Groups with prolonged spawning season*

Seerfish, *Scomberomorus commerson*, for instance has been recorded to spawn for 10 months in a year from June to March off Chennai. The silverbelly *Leiognathus jonesi* and the cuttlefish *Sepia aculeata* spawn throughout the year off Chennai.

#### *ii) Groups with two spawning spells in a year*

The Indian mackerel *Rastrelliger kanagurta* for instance, spawns during January-March and June-July off Chennai. The white prawn *Penaeus indicus* spawns during February-May and October-November along the Tamil Nadu coast.



iii) Groups with single short spawning season

The coastal tuna *Euthynnus affinis*, for example, spawns in a single spell for three months in a year, during September-November off Chennai. The ray *Aetobatus narinari* spawns only during November off Chennai. The prawn *Parapenaeopsis stylifera* spawn for three months during November-January.

Nevertheless, spawning occurs for a number of species during every month in a year along the south-east coast comprising Tamil Nadu, Pondicherry and Andhra Pradesh, where the fishery and conditions are almost similar (Fig. 2). It could be discerned from Fig. 2 that maximum number of species (41) spawn in January along the Tamil Nadu coast on the south-east coast of India. The number of species that spawn decreases with the progress of the calendar year and only 23 species spawn in October. However, during the north-east monsoon period i.e. November and December 32 and 34 species, respectively spawn.

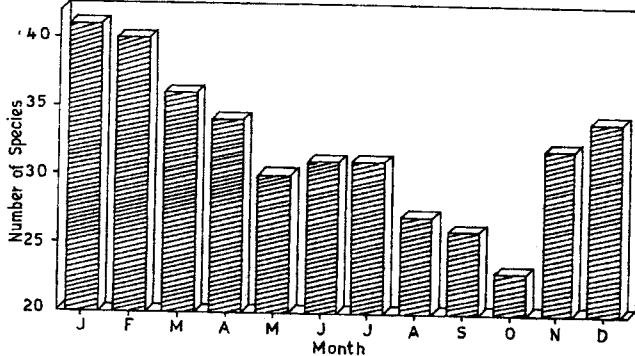


Fig. 2. Seasonality of numerical abundance of species spawning along north Tamil Nadu-south Andhra Pradesh coast

**Ban on fishing**

The proposal for a seasonal ban on trawling should consider several other factors in addition to the spawning season (Silvestre and Pauly, 1997). Ban on trawling during the months of high yields will not be acceptable to the fishermen as it would impose severe economic strain on them. Hence, catch and catch rate during different months should be considered before declaring off season for the trawlers. The quarter-wise marine fish landings from all the gears along the north Tamil Nadu and South Andhra Pradesh coast are represented in Fig. 3. It is evident that the catches during the third quarter (July-September) was maximum and contributed 29.5% to the annual landings. The catches during the other periods were almost equal. For understanding the month-wise effort, catch and catch rate, the data on the trawlers based at Chennai Fisheries Harbour for the years 1996, 1997 and 1998 have been analysed and presented in Fig. 4. Clearly, the trawl effort and catch were low during April-June and in November. The catch rate was lowest during May.

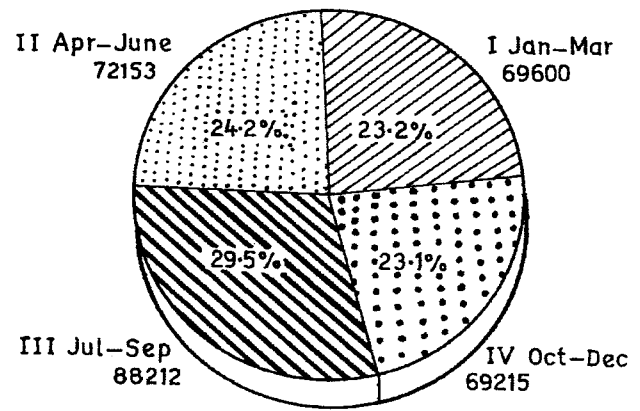


Fig. 3. Quarter-wise break-up of average annual landings (t) of north Tamil Nadu-south Andhra Pradesh coast during 1985-1993

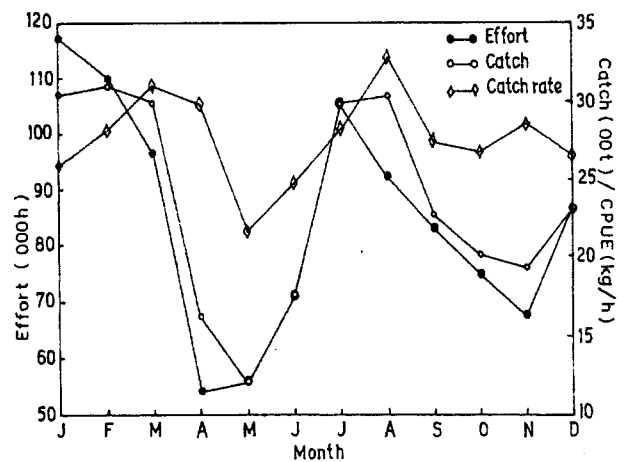


Fig. 4. Average monthly catch and effort of trawlers at Chennai during 1996-98

Considering that, i) at least 30 commercially important species spawn during April and during November-December, ii) the landings during the fourth quarter (October-December) are the lowest along the Tamil Nadu coast, iii) the effort, catch and catch rate of the trawlers are the lowest in May, and iv) cyclone that cause damage to the life and properties of the fishermen during the north-east monsoon (October-December), the restrictions suggested for the operation of trawlers along the Tamil Nadu coast are: (i) ban on trawling for 30 days in April, and ii) ban on trawling for 40 days from 1<sup>st</sup> November to 10<sup>th</sup> December.

It is also suggested that the social, biological and economic impacts of the ban be closely followed every year and necessary modifications made, if necessary. It is expected that seasonal restrictions of trawl effort will be helpful in managing the fishery towards sustainable development.

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