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Fishing ban in Tamil Nadu- reprieve for fishes to breed or enforced summer vacation for fishermen?

S. Ajmal Khan*, K. Kadharsha & P.S. Lyla

Centre of Advanced Study in Marine Biology, Annamalai University, Parangipettai-608 502, Tamil Nadu, India

[E-mail: seyedajmal@gmail.com]

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The fishing ban enforced in Tamil Nadu for 45 days during April-May every year to conserve the fishery resources . Seventeen of the 95 species (17.89%) of fin and shellfishes examined showed breeding activity during this period. Thirty-one species (32.63%) were found to breed prior to the fishing ban and 47 species (49.47%) after the fishing ban. 48.93% of fin and shellfishes breeds during the northeast monsoon period along the coast of Tamil Nadu. Therefore fishing ban can be imposed during the northeast monsoon period in Tamil Nadu, as higher percentage of fishes here breed during this period and other states along the east coast are also experiencing more rains during this period.

[Keywords: Fishing ban, Tamil Nadu, Monsoon, Southwest, Northeast]

Introduction

The total fisher folk population in the country is 4.00 million and there are about 1, 94,490 fishing crafts operated in the country for harvesting marine fishery resources[1]. Out of this about 72,500 are mechanized crafts, 71,300 are motorized and the rest are non-mechanized. In mechanized sector there are about 35,200 trawlers. Fishing by all these crafts is concentrated in the depth zone up to 100 m^2.

As the economic consequence of marine fisheries sector is immense and as it supports the livelihood of innumerable people, the fishery resources have to be conserved for sustainable exploitation. However the fishery resources in the inshore waters are being overexploited. Therefore with the view of sustaining the benefits from the marine fisheries sector and with due concern for ecological integrity and biodiversity, ban on fishing by mechanized fishing boats and trawlers in the territorial waters of the State is being imposed every year for a period of 45 days in the east coast from 15th April to 29th May (inclusive of both the days) from the year 2000 onwards. Similar ban is observed in the west coast of India for 45 days (June-July) during the southwest monsoon period. Traditional crafts are exempted from the above fishing ban. Government of India is also imposing fishing ban in the Exclusive Economic Zone of India (EEZ) of the east and west coasts every year. Such closed seasons are uniform for neighbouring states in each coast. However based on geographic or climatic conditions, there can be deviations. The fishing ban is believed to coincide with the breeding season of most fishes. It prevents the capture of larvae and juveniles and brings down the mortality rate of breeding stock.

According to the Marine Fishing Act, 1981 such a ban is imposed in Tamil Nadu also to conserve the fishery wealth in the coast. However there is criticism regarding the period of ban. In the west coast while the ban coincides with the southwest monsoon period when most of the fishes breed, in the east coast of India it is not during the monsoon season but during peak summer. More over the climatic conditions along the maritime states of east coast are not uniform. While Tamil Nadu gets more rains during the northeast monsoon (October-December), the other states get bountiful rain during the southwest monsoon season. Present study examines the peak period of breeding of fishes occurring in Parangipettai waters situated along the southeast coast of India and that way

examines whether the fishing ban here coincides with their peak breeding period.

Materials and Methods

Primary data available in the form of Ph.D. and M.Phil. theses in our centre were used for the present study. Reproduction has been studied in 95 species[3-71] of fin and shellfishes occurring in Parangipettai and nearby waters (Table 1). These included 75 species of finfishes, 8 species of crustaceans and 12 species of molluscs. The finfishes included 16 species of clupeids (Clupeidae), 1 species of sand whiting (Silaginidae), 3 species of flying fishes (Excocetidae), 5 species of carangids (Carangidae), 2 species tunas, 1 species of mackerel (Scombridae), 5 species of mullets (Mugilidae), 3 species of catfishes(2 species Ariidae, and 1 species of Plotosidae), 2 species of lizard fishes (Synodondidae), 3 species of perches (1 species of Nemipteridae and 2 species of Ambassidae), 5 species of croakers(3 species of Sciaenidae and 2 species of Haemulidae), 4 species of silver bellies (Leiognathidae), 4 species of flat fishes (1 species of Psettodidae, 1 species of Pseudorhomphidae and 2 species of Cynoglossidae), 2 species of silver biddies (Gerreidae), 1 species of pearl spot(Cichlidae), 1 species squirrel fish (Holocentridae) besides 17 species of elasmobranchs, The crustaceans included 1 species of shrimp, 3 species of brachyuran crabs and 4 species of stomatopods. The molluscs included 1 species of cephalopod, 6 species of gastropods and 5 species of bivalves.

Table 1 – Breeding season of fin and shellfishes in Parangipettai waters

Groups	Species	Spawning season	Peak spawning season
Fin fishes			
Clupeoids			
Sardines	*Sardinella longiceps*	Jul - Sep	Jul, Aug
	S. fimbriata	Jun - Sep	Jul - Sep
	S. gibbosa	Mar - Jun	May
	S. albella	Feb, Mar	Feb, Mar
	S. dayi	Feb - Apr	Mar, Apr
	Dussumieria acuta	Feb - Aug	Jun, Jul
	Escualosa thoracata	Feb - May	Mar, Apr
Wolf herrings	*Chirocentrus dorab*	Oct - Dec	Nov, Dec
Shads	*Nematalosa nasus*	Sep - Oct	Oct
	Anodontostoma chacunda	Sep - Oct	Oct
	Ilisha melastoma	Oct - Dec	Nov, Dec
Engraulids	*Setipinna taty*	Nov - Jul	Jan - Apr
	Thryssa dussumieri	Jun - Jul	Jul
	T. mystax	Feb - Sep	Jun - Aug
	T. malabrica	Feb - Aug	Jun, Jul
	Thryssa vitrirostris	Apr - Jun	May
Sand whiting	*Sillago sihama*	Nov - Feb	Dec, Jan
Flying fishes	*Hirundichthys coromandelensis*	May - Jul	Jun, Jul
	H. speculiger	May - Jul	Jun, Jul
	Cheilopogon atrisignis	May - Jul	Jun, Jul
Carangids	*Carangoides malabaricus*	Jul - Sep	Aug
	Alepes kalla	Jun - Aug	Jul, Aug
	Selaroides leptolepis	Mar - May	Apr
Scads	*Decapterus russelli*	Jan - Nov	Feb - Apr
	D. dayi	Jan - Apr	Mar
Mackerel	*Rastrelliger kanagurta*	Mar - May	Apr, May
Tunas	*Katsuwonus pelamis*	Aug	Aug
	Auxis thazard	Jul	Jul
Mullets	*Liza dussumieri*	Dec - Aug	Jan - Mar
	L. macrolepis	Jan - Jul	Feb - Apr
	Osteomugil cunnesius	Jan - May	Feb, Mar
	O. speigleri	Jan - May	Feb, Mar
	Mugil cephalus	Sep - Nov	Oct, Nov
Elasmobranchs			
Sharks	*Rhizoprionodon acutus*	Nov - May	Jan - Mar
	Carcharhinus limbatus	Jan - May	Mar, Apr
	C. sorrah	Jan - May	Mar, Apr

	Sphyrna blochii	May - Jun	Jun
	S. levini	Jul - Sep	Aug, Sep
Skates	*Rhinobatus granulatus*	Feb - Aug	Feb - Apr
	R. obtusus	Jan - Apr	Feb, Mar
Rays	*Narcine brunnea*	Jan - Apr	Mar, Apr
	Narke dipterygia	Dec - Feb	Jan
	Dasyatis imbricatus	Dec - May	Jan - Apr
	D. jenkinsii	Mar - May	Apr, May
	D. sugei	Jan - May	Feb - Apr
	D. sephen	Oct - Apr	Mar, Apr
	N. timlei	Aug - Feb	Oct - Jan
	Aetomylus nichofii	Aug - Apr	Dec - Mar
	A. narinari	Apr - May	Apr, May
	Gymnura poecilura	Throughout year	Feb - Jun
Cat fishes	*Trachysurus tenuispinis*	Feb- Aug	Mar, Apr
	Trachysurus maculatus	Feb - Sep	Jun - Aug
	Plotosus canius	Jun - Dec	Oct
Lizard fishes	*Saurida tumbil*	Oct - Feb	Nov - Jan
	S. undosquamis	Nov - Mar	Dec, Jan
Perches			
Threafin breams	*Nemipterus japonicus*	Aug - Nov	Sep, Oct
Perchlets	*Ambassis commersoni*	Jun - Mar	Aug - Dec
	A. gymnocephalus	Jun - Mar	Sep - Nov
Croakers			
Sciaenids	*Kathala axillaris*	Feb - Jul	May, Jun
	Otolithes ruber	Feb - Jul	May, Jun
	Dendrophysa russelli	Oct - Jan	Nov, Dec
Haemulids	*Pomadassys maculatum*	Feb - May	Mar, Apr
	Pomadassys kakkan	May - Nov	Jul - Oct
Silverbellies	*Leiognathus bindus*	Jan - Apr	Feb - Apr
	Leiognathus splendens	Throughout year	Jun to Dec
	Secutor insidiator	Jul - Nov	Aug to Oct
	Gazza minuta	Aug - Jan	Nov, Dec
Flat fishes			
Halibuts	*Psettodes erumei*	May - Sep	Jul, Aug
Flounders	*Pseudorhombus arsius*	Apr - Jul	May, Jun
Soles	*Cynoglossus arel*	Jun - Mar	Oct - Jan
	C. lida	Feb - Nov	Sep, Oct
Sliverbiddies	*Gerres filamentosus*	Oct - Feb	Nov - Jan
	G. abbreviatus	Oct - Feb	Nov, Dec
Pearlspots	*Etroplus suratensis*	Aug - Oct	Sep
Squirrel fishes	*Holocentrus rubrum*	Sep - Nov	Oct
Shellfishes			
Crustaceans			
Shrimps	*Penaeus indicus*	Jun - Nov	Sep, Oct
Crabs	*Portunus pelagicus*	Jul - Nov	Sep, Oct
	P. sanguinolentus	Aug - Dec	Nov
	Scylla tranquebarica	Mar - Jul	May
Stomatopods	*Harpiosquilla raphidea*	Jan - Mar	Mar
	Oratosquilla quinquedenata	Jan - Nov	Mar, Aug
	Miyakea nepa	Throughout year	Mar, Jun
	Harpiosquilla melanoura	Nov - Jun	Mar, Apr
Molluscs			
Cephalopods	*Sepioteuthis lessoniana*	Jan - Mar	Feb, Mar
Bivalves	*Anadara rhombea*	Feb - Sep	May - Jul
	Meretrix meretrix	Feb - May	Mar, Apr
	M. casta	Apr - Sep	Jun - Aug
	Gafrarium tumidium	Nov, Dec	Dec
	Donax cuneatus	Feb - Sep	Jul, Aug
Gastropods	*Rapana rapiformis*	Dec - Apr	Feb, Mar
	Hemifusus pungilinus	Mar - Apr	Apr
	Trochus niloticus	Jun - Oct	Aug
	Lambis lambis	Jan - May	Mar
	Thais biserialis	Jan - Jun	Apr
	T. bufo	Jan - Jun	Mar - May

Results and Discussion

Among the 75 species of finfishes, 2 species were found to breed continuously, 50 species for an extended period and 23 species seasonally. Among the 8 species of crustaceans, 1 species was found to breed continuously, 5 species for an extended period and 2 species seasonally. Among the 12 species of molluscs, no species was found to breed continuously. However 9 species were found to breed for an extended period and 3species seasonally. Overall among the 95 species, only 3 species were found to breed continuously. As much as 64 species were found to breed for an extended period and 28 species seasonally.

In the total number of finfishes (75) studied, 25 species (33.33%) were found to breed prior to the fishing ban, only 10 species (13.33%) during the fishing ban and as many as 40 species (53.34%) after the fishing ban. In crustaceans (8), 2 species (25 %) were found to breed prior to the fishing ban, only 3 species (37.5%) during the fishing ban and 3 species (37.5%) after the fishing ban. In molluscs (12), 4 species (33.33 %) were found to breed prior to the fishing ban, 4 species (33.33%) during the fishing ban and 4 species (33.33%) after the fishing ban. Of the 95 species of fin and shellfishes observed in this study, 31 species (32.63%) were found to breed prior to the fishing ban, only 17 species (17.89%) during the fishing ban and 47 species (49.47%) after the fishing ban (Fig.1).

The present study covered fairly well most of the fish and shellfish groups which contribute their mite to the marine fisheries of India notwithstanding Tamil Nadu. Data available on the reproduction of fin and shellfishes belonging to the above groups show that the fishing ban in Tamil Nadu is not timed in accordance with the scientific observations as only 17.89% of the species (17 out of 95 species) covered were found to breed during this period. If fishing ban is advanced from January-March period for duration of 45 days as 32.63% of the fish species (31 out of 95 species) breed during this season. However it also happens to be the peak fishing period in Tamil Nadu. As many as 47 species breeds after the fishing ban (49.47%). Among those 47 species, 20 species (42.55%) breeds during the southwest monsoon season, 23 species breeds during the northeast monsoon (48.93%) and 4 species (8.52%) breeds in both southwest as well as northeast monsoon seasons (Fig.2). Thus, the fishing ban could be imposed during the northeast monsoon period (October-December) as in the west coast of India where it is during the southwest monsoon period (June-September). However during the northeast monsoon, breeding frequency among the commercially important fishery resources was on the higher side (48.93%).

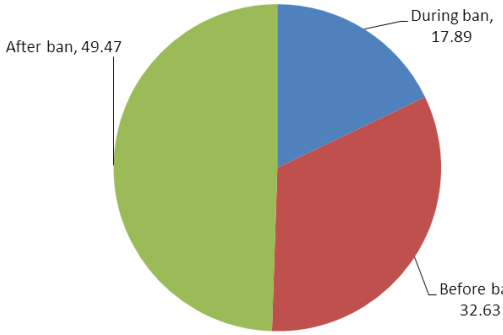

Fig. 1 – Percentage of fishes spawning before, during and after fishing ban

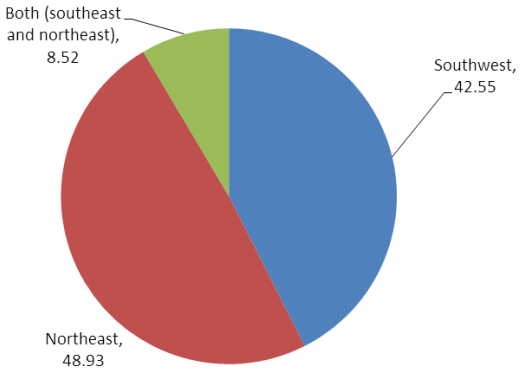

Fig. 2 – Percentage of fishes breeding during monsoons

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