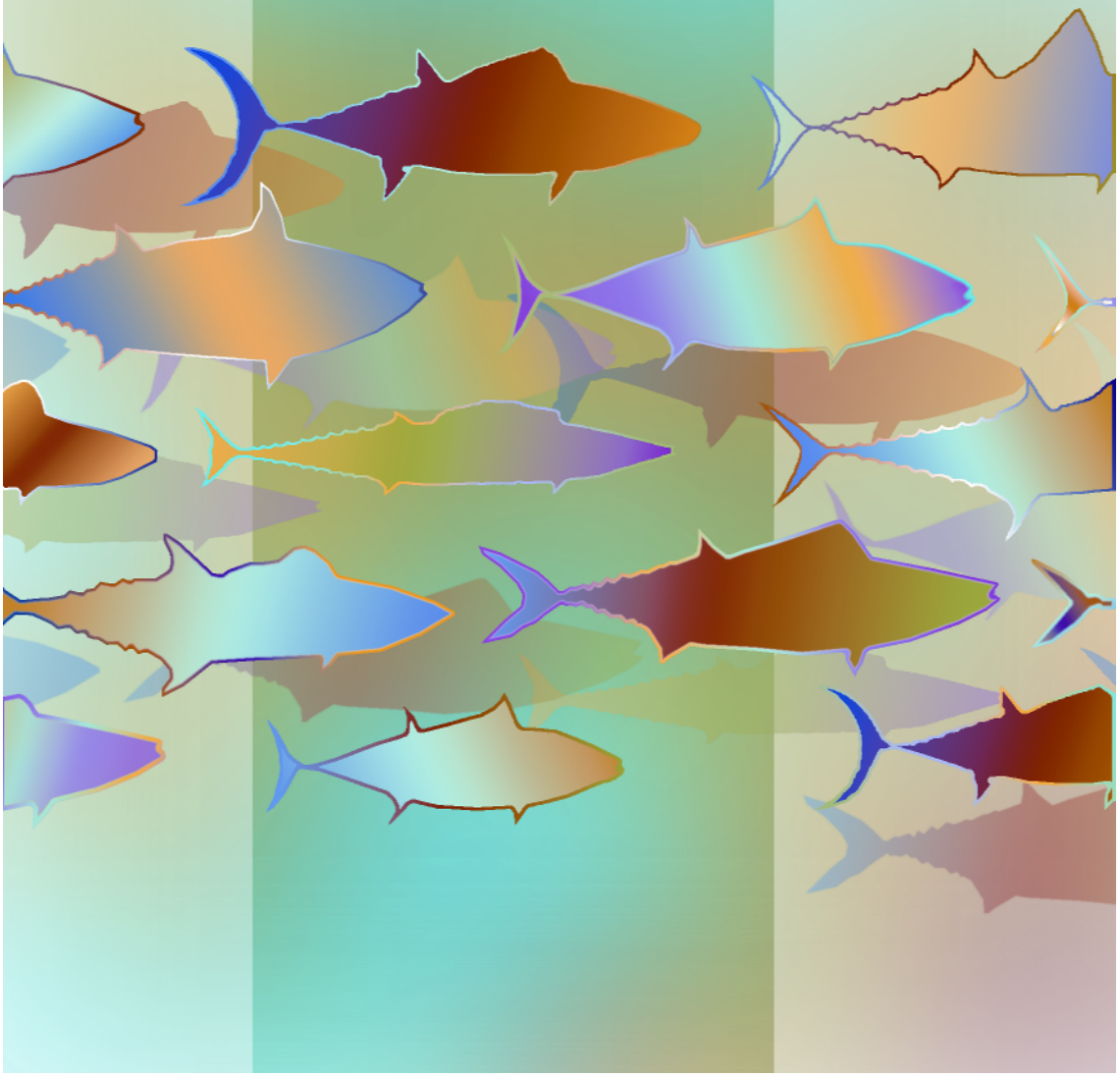
Status of Exploited Marine Fishery Resources of India



STATUS OF EXPLOITED MARINE FISHERY RESOURCES OF INDIA

Editors
M. Mohan Joseph
and
A.A. Jayaprakash

CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
(Indian Council of Agricultural Research)
Post Box No. 1603, Tatapuram P.O.
Kochi – 682 014, India

33

Potential Yield from Indian EEZ

M. Srinath and K. Balan

1. Potential yield

The Working Group constituted in the year 2000 by the Government of India for revalidating the potential of marine fishery resources of the country's Exclusive Economic Zone estimated the potential yield as 3.93 million tonnes obtainable annually from the EEZ including 2.05 lakh tonnes of bivalves and gastropods and 1.01 lakh tonnes of deep-sea finfish and crustacean resources not indicated in the earlier revalidation done in the year 1991. The Working Group has observed that the bulk of additional harvestable yield is expected from the demersal resources from the shelf area such as large species of perches, deepsea and oceanic squids and the tunas and allied species from the EEZ. These resources could be effectively tapped employing fishing techniques such as traps and

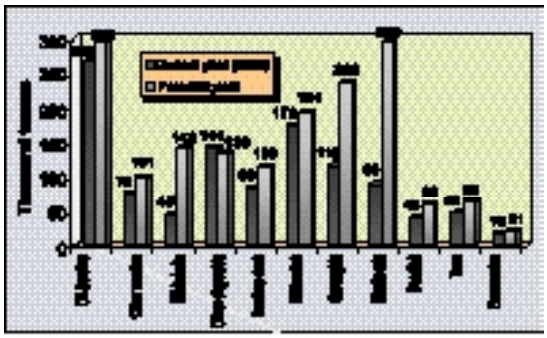


Fig.1. Estimates of current and potential yield of major pelagic resources

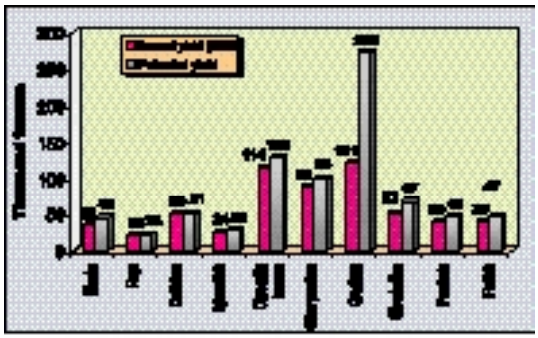


Fig.2. Estimates of current and potential yield of major demersal resources

hooks and lines for perch resources abounding in the rocky and uneven stretches of the shelf and slope, jigging for variety of squids available on the shelf and oceanic regions. For tapping the oceanic tuna and allied resources in the EEZ and contiguous high seas the Working Group suggested employing tuna purse seining and tuna long line techniques.

The estimated potential yields, current production and the historical maximum landings of the commercially important species/groups of different resource assemblages are given in the Tables 1-4 and depicted in Figs. 1-4. It is observed that most of the resources have either exceeded the potential yields or are currently very near to reaching their potential yields. This indicates that there is little scope of obtaining enhanced production from the traditional exploited resources from the currently exploited grounds. For the resources that are below their historical peaks or potential yields it might be possible to regain those levels by reducing the fishing effort, or improving the yield per recruit. This can be achieved by increasing significantly the age at first capture, prohibiting the exploitation of juveniles, increasing mesh sizes and closure of fishery in certain identified hot spots.

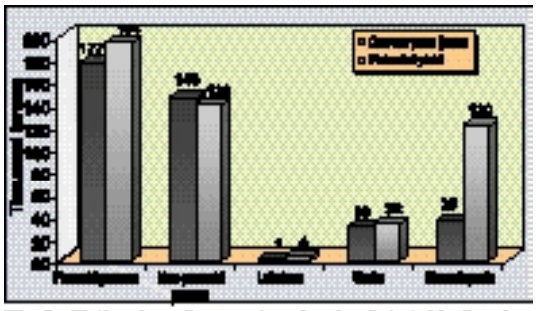


Fig.3. Estimates of current and potential yield of major

Table 1. Estimates of potential yield, current yield and maximum landings of commercially important pelagic resources

Resources	Potential yield (000 tonnes) (2000)	Current yield (000 tonnes) (2001)	Maximum landings (000 tonnes)*
Oil sardine	295	268	367 (2000)
Other sardines	101	76	128 (1995)
Whitebaits	142	45	101 (1988)
Other clupeids	136	144	195 (1998)
Bombay-duck	116	86	138 (1981)
Ribbonfishes	194	176	183 (2001)
Carangids	238	118	197 (1995)
Indian mackerel	295	90	291 (1989)
Seerfishes	62	43	55 (1998)
Tunas	65	48	52 (1990)
Barracudas	21	19	22 (1998)

* Figures in parentheses denote the year of maximum

Table 2. Estimates of potential yield, current yield and maximum landings of commercially important demersal resources

Resources	Potential yield (000 tonnes) (2000)	Current yield (000 tonnes) (2001)	Maximum landings (000 tonnes)*
Elasmobranchs	71		
Sharks	45	35	48 (2000)
Skates	4	2	4 (1983)
Rays	23	20	27 (1997)
Eels	9	8	13 (1977)
Catfishes	51	50	68 (1982)
Lizardfishes	28	24	34 (1995)
Perches	227	203	–
Rock cods	16	26	26 (2001)
Red snapper	11	4	6 (1999)
Pig face bream	9	13	14 (1997)
Threadfin breams	128	114	117 (2000)
Other perches	63	46	57 (2000)
Goatfishes	20	10	33 (1991)
Threadfins	9	7	11 (1995)
Croakers	273	121	200 (1998)
Silverbellies	67	52	92 (1983)
Big-jawed jumper	17	5	25 (1985)
Pomfrets	46	39	54(1983)
Silver pomfret	30	25	42 (1983)
Chinese pomfret	1	1	1 (2001)
Black pomfret	15	13	20 (1995)
Flatfishes	47	39	63 (1992)

* Figures in parentheses denote the year of maximum

Table 3. Estimates of potential yield, current yield and maximum landings of commercially important crustacean resources

Resources shrimps	Potential yield (000 tonnes) (2000)	Current yield (000 tonnes) (2001)	Maximum landings (000 tonnes)*
Penaeid shrimps	194	177	225 (1994)
Non-penaeid prawns	139	145	174 (1998)
Crabs	32	30	48 (2000)
Lobsters	4	1.4	4.1 (1985)
Stomatopods	120	35	100 (1987)

* Figures in parentheses denote the year of maximum

Table 4. Estimates of potential yield, current yield and maximum landings of commercially important molluscan resources

Resources	Potential yield (000 tonnes) (2000)	Current yield (000 tonnes) (2001)	Maximum landings (000 tonnes)*
Bivalves	202	Marginal	3 (1990)
Gastropods	23	Marginal	3 (1996)
Cephalopods	101	101	117 (1995)

* Figures in parentheses denote the year of maximum

2. Management implications

Issues in marine fisheries management in India are: (1) declining trend in catch and catch rates of commercially exploited stocks, (2) excess fleet size in terms of numbers, (3) over capitalization and unwarranted 'capacity over load' and (4) ecosystem degradation affecting the productivity and the carrying capacity

The Working Group on revalidation noting with concern substantial reduction in the traditional commercially exploited resources and increased effort in the intensively exploited fishing grounds made certain recommendations for rationalizing the fishing effort to obtain sustainable yields and suggested options to exploit the full potential yield that could be harvested from the Indian EEZ.

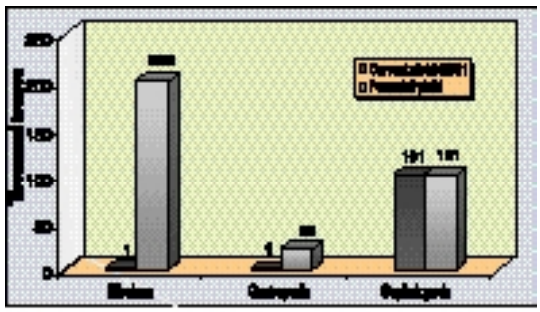


Fig.4. Estimates of current and potential yield of major molluscan resources

There is urgent need to formulate national and state level regulations in marine fisheries in conformity with the objectives of the Code of Conduct for Responsible Fisheries and other relevant global conventions and regulations, within the ambit of the prevailing socio-political and economic objectives. Diversification of fishing effort to exploit the ground fish resources of the rocky continental shelf edge; finfishes, crustaceans and cephalopods from the upper continental shelf; squids in the shelf and oceanic region requires serious attention. Further, it is essential to develop a national capability for distant water fishing including purse-seining and long lining for tunas in the Indian EEZ and contiguous seas. Strict enforcement, and compliance to mesh size regulations and gear regulations for all categories of fishing should made mandatory. Participatory approach involving the stake holders in the matters relating to fisheries resource management and conservation needs to be encouraged, and motorisation programme has to be made total for the traditional sector.

Recognising the necessity for ensuring sustainable yields from the exploited resources, certain states have enacted fishery regulation acts enabling effort reduction and ecosystem rejuvenation by closure of fishery for a specified period of time. Along the west coast there is ban on trawling in the maritime states with varying duration of closure during the monsoon months, where as, along the east coast the closure is during the summer months. The effect, extent and scope of the ban across different fisheries continue to be a debatable issue without conclusive evidence on the merits and demerits. However, there is a consensus about the fact that the intensive exploitation of the coastal waters does adversely affect the eco-system resulting in poorer productivity from the different trophic levels.

The fishery regulation through effort reduction that is in vogue in different maritime states is chiefly aimed at the trawl fishery. In recent years, there has been significant increase in activity in the motorized sector, especially the ring-seine fishery and the mini-trawl fishery along the Kerala coast, causing concern for sustenance of some of the exploited stocks. There has also been dimensional changes in the gear employed by them giving wider coverage and efficient catchability. Similarly, the increase in the time spent for fishing in the mechanized sector by undertaking voyage fishing and use of sophisticated electronic devices for fish finding and communications has resulted in increased fishing pressure and fishing efficiency.

Thus, it has now become imperative to take measures to reduce fishing pressure through effort rationalisation across all the sectors be it mechanized or motorized. The Revalidation Committee has outlined some of the strategies for effort reduction and curbing over capitalization.

It is necessary to restrict the duration of fishing in the case of voyage fishing by regulating absence from the shore. Further, there is need to impose dimensional restrictions on the gears employed. Introduction of rotational system of fishing by different sectors in a given season merits consideration. This can be done by allotment of fixed number of days for fishing for each sector. Choice of preferred days can be done by auction or fixing fees for each day preferred based on the expected value of the returns. A predetermined share of the money realized should be deposited in the artisanal fishermen welfare fund and the fishermen welfare board and this fund should exclusively be used for fisheries development only. Promotion of community based fisheries management involving different sections of fishermen society to ensure responsible fisheries for obtaining sustainable yields from the stocks and guaranteeing economic returns should be given priority.

Marine fisheries of India beset with problems of over capitalization, over capacity and reduced catch rates is at cross roads seeking proper direction and guidance. In the context of globalisation, challenges of global competition in trade and economics there is urgent need for policy interventions both at the respective state level and the national level to meet the increasing internal and external demand of protein for the millions and to ensure better livelihood for the beleaguered fisherfolk.