

Future of Marine Fisheries Depending on Inshore Waters Exploitation

Sherlyn Gilbert*

Department of Marine Sciences, University of Georgia, USA

Abstract

Since Independence, attention has been on increasing fish production from the seas and the different Five-Year Plans took adequate care to develop the marine fisheries by mechanization of indigenous craft, introduction of mechanized vessels, improvement of fishing implements, establishment of infrastructure facilities for processing and storage and to establish a strong R&D facility. All these developments helped in increasing marine fish production considerably which increased from few million tonnes in 1950 to few million tonnes. Kerala contributes maximum to the marine fish production in the country, forming total landings followed by Gujarat, Tamil Nadu, Maharashtra, Karnataka, Andhra Pradesh and others.

Keywords: Adequate care; Epi-fauna; Fish production, Oil sardine, Seasonal abundance, Coastal shelf

Introduction

The yield attained one million tonne mark in 1970 and fluctuated between million tonne for nearly a decade from then, bringing the fish production to a virtual stagnation and fears of overexploitation among the industry [1]. With the introduction of purse seiners along west coast, and large trawlers along both the coasts and intensification of fishing effort by extending the area of fishing to relatively deeper waters up to 50-60 m, by starting exploitation during monsoon period along west coast, by switching over to voyage fishing instead of daily returning to the base, diversification of effort to exploit several resources and by establishing fishing harbours at different places along the coast in the subsequent period, the production started increasing every year. Several species of pelagic and demersal finfish and shellfish are exploited and oil sardine, Indian mackerel, Bombay duck, perches, croakers, the group of horse mackerels, scads and travels, and shrimps are the major resources, each one contributing over 100,000 tonnes [2]. Thus the past witnessed a phenomenal growth of the marine fisheries sector with emphasis on development and increased exploitation. With the development of a strong export market during the period, for shrimps, the entire development has been biased towards increasing shrimp production [3]. On the research front, adequate data have been collected on all the major resources and by eighties, the variations in seasonal abundance and the biological characteristics of majority of the exploited species were well-understood [4].

Methodology

Stock assessment studies have also been initiated on certain species. The exploratory surveys in depths extending along Indian coast brought to light the distribution of certain stocks in depths. The demand for fish to meet the requirements of domestic as well as overseas markets lead to intense fishing in the coastal shelf and the different agencies and the industry began to suspect that additional effort in the current fishing grounds would not help increase production [5]. In case of cephalic the stock assessment studies show that the level of exploitation is optimum along both the coasts loc *Loligo duvaucei*. In case of *Sepia aculeata* and *S. pharaonis* the effort is optimum along east coast whereas along west coast there is scope for increasing production by increasing the effort in the existing trawling grounds. Several species of valves and gastropods are exploited for human consumption or for ornamental purposes from seas, estuaries and backwaters along [6]. Though the technology of hatchery production of seed and sea ranching has been developed, not much is known on the resource characteristics and population

parameters of bivalves and gasup pods in the country excepting a few cases. Most of the species of crustacean shell-fish are exploited beyond optimum levels [7]. *Penaeus semisulcatus* and *P. indicus*, as revealed by stock assessment studies, are heavily exploited along east coast and there is need to reduce the fishing effort. In *P. monodon*, also from the east coast, though there is scope to increase effort to harvest the MSY, it has been recommended that the present effort may be maintained because further increase in the effort from the same area is likely to result in reduced returns per unit effort [8]. In *Meta-penaeus monoceros* there is not much scope to increase yield by increasing effort; there is need to reduce effort to ensure optimum exploitation of *M. dobsoni*. Similar is the case with the lobster *Panulirus poly-phagus* along Maharashtra coast.

Discussion

In *Acetes indicus* along Maharashtra coast, the stock assessment study shows that increased yield can be obtained by increasing the dol net effort [9]. In case of many trawl-caught species, it has also been observed that the present cod end mesh sizes are smaller than those which yield maximum sustainable yield in the long run. Therefore, increase in cod end mesh size has been recommended in several instances. The future It is clear from the above that it is only a matter of sound management of the resources and there is no scope any increase in production from the depth grounds by increasing the effort [10]. Moreover, the stock assessment studies show different management options for different species in the same fishery. For example, in a particular trawl fishery, the present effort may be greater than the one that yields MSY of some species, less than that yielding maximum sustainable yield in some other species, and may be the same which gives maximum sustainable yield in still other species; similar situation may be seen with regard to cod end mesh size of trawl net also. In such situations, it becomes difficult to recommend measures of effort or mesh regulations [11]. Though some attempts of mixed fisheries

*Corresponding author: Sherlyn Gilbert, Department of Marine Sciences, University of Georgia, USA, E-mail: gilbertsherlyn@uga.edu

Received: 23-Oct-2023, Manuscript No. JMSRD-23-121601; **Editor assigned:** 26-Oct-2023, Pre-QC No. JMSRD-23-121601 (PQ); **Reviewed:** 09-Nov-2023, QC No. JMSRD-23-121601; **Revised:** 15-Nov-2023, Manuscript No. JMSRD-23-121601 (R); **Published:** 22-Nov-2023, DOI: 10.4172/2155-9910.1000424

Citation: Gilbert S (2023) Future of Marine Fisheries Depending on Inshore Waters Exploitation. J Marine Sci Res Dev 13: 424.

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assessments are made in India, considerable research effort into the assessment of multi-species or mixed fisheries is essential to be able to formulate effective management policies. This area of research needs encouragement and priority consideration by adequately funding the programmes and by arranging training to the scientists involved in the programme [12]. Though the situation in the currently fished regions is not encouraging in the sense that there is no scope for increasing production, the regions beyond depth in the Exclusive Economic Zone offer considerable scope for the same. The potential yield from this region has been estimated as few million tonnes. As this region is virtually unexploited the much needed increase in fish production can be obtained from this area. Of the total estimated potential in this zone, constituted by pelagic resources including oceanic tuna, demersal resources and the rest by others including a variety of low-value fishes, crabs, etc [13]. Among the pelagic resources, carangids, coastal and oceanic tunas, ribbon fish mackerel and pelagic sharks constitute the bulk of the resource available for exploitation, forming total estimated potential of pelagic resources. For carangids, the northwest coast has the highest potential constituting 46% of the total, followed by southwest coast, southeast coast and northeast coast. Along northwest coast, about tonnes can be exploited by trawlers and the remaining by other gears. In the other regions, major harvest of this resource can be made by other gears only. For the coastal tuna, of the total potential of tonnes, harvested from off southwest coast and almost the entire remaining quantity from around Andaman and Lakshadweep islands [14]. Out of a total tonnes of ribbon fish, estimated to be available for exploitation beyond depth zone in the Exclusive Economic Zone, harvested from off north-west coast followed from southwest coast and the remaining from the east coast. Of the tonnes potential yield of mackerel, about 80% can be taken from off the northeast coast and the niftier quantity is available for exploitation by trawlers. West coast contributes to the bulk of pelagic sharks. Among demersal finfish resources, the threadfin breams, groupers, snappers, catfish and bull's eye offer immense scope for exploitation beyond depth followed by croakers, lizard fish and others. It is thus clear that the region beyond depth in the Exclusive Economic Zone offers immense scope to harvest several resources. It is also clear this region off Indian west coast, particularly off northwest coast, is most productive for most resources and emphasis on deploying effort in this depth zone should be Maximum in this area [15]. In case of tunas, however, the oceanic areas around Lakshadweep and Andaman offer immense scope for increasing production. For mackerel the northeast coast offers immense scope for exploitation by trawls. It has been recently estimated that a potential of million tonnes particularly of *Bentosema pteroiium* is available in the Arabian Sea. While further researches on the distribution pattern in space and time and biological characteristics of species contributing to such a large potential which is almost the same as world fish production are needed, this resource seems to offer immense scope for exploitation and utilization for fish meal production or for making fish protein co-cenuate.

Conclusion

The exploitation of marine fisheries resources, which used to be only

on a sustenance basis using artisanal gear during pre-Independence period, started increasing since Independence. During the past four and a half decades, the marine fisheries have got transformed into a big industry. Marine fishing has been intense in the zone in recent years and there is enough evidence to show that several resources have reached or crossed the levels of maximum sustainable yield.

Acknowledgement

None

Conflict of Interest

None

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