AgriCos e-Newsletter
ISSN: 2582-7049
AgriCos e-Newsletter
Open Access Multidisciplinary Monthly Online Magazine
Volume: 06 Issue: 03 March 2025 Article No: 23

Responsible Fishing and Sustainability

S. Subanesam*, S. Mariappan and T. Ravikumar
Department of Fishing Technology and Fisheries Engineering Fisheries College and Research Institute Tamil Nadu, Dr.J.Jayalalithaa Fisheries University, Thoothukudi, India

SUMMARY

India's fishing industry has evolved from traditional methods to a technologically advanced sector, incorporating engine-powered vessels and sophisticated equipment. This modernization has significantly increased fish production through an expanded fleet, efficient gear systems, and advanced technologies. However, the rapid growth has led to challenges such as overexploitation, increased bycatch, high energy consumption, and over-capitalization. The current fleet of 199,141 vessels exceeds sustainable capacity, comprising mechanized, motorized, and non-motorized boats. To ensure long-term viability, there is an urgent need to adopt responsible fishing practices, including sustainable gear use and avoiding overfishing, to protect fish populations and maintain marine ecosystem balance.

INTRODUCTION

The fishing industry in India has undergone a remarkable transformation, evolving from a predominantly artisanal sector to a highly mechanized system. This transition has led to an extraordinary 18-fold increase in fish production since 1950. While this growth has undoubtedly contributed to economic development and food security, it has simultaneously raised serious concerns regarding the potential overexploitation of marine resources and the associated environmental impact.

Challenges of Sustainability:

Overcapacity and Overexploitation are a major issue that about 199,141 fishing vessels in India, significantly exceeding the optimal number the fishery system can sustain. Motorized vessels are three times higher, and mechanized vessels are five times higher than the optimum. The excess number of vessels has led to the overexploitation of marine resources. Bycatch includes catching of non-selective fishes and aquatic animals with non-selective fishing methods, especially in trawling, which results in the capture of non-target species and juveniles.The high energy consumption shift to motorized and mechanized vessels has increased dependence on fossil fuels, and certain fishing practices, such as bottom trawling, can cause significant damage to marine ecosystems and lead to environmental impact.

FAO Code of Conduct and Responsible Fishing Approach:

A Code of Conduct for Responsible Fisheries (CCRF) came from the FAO in December 1995. It sets out the principles and international standards of behaviour for responsible practices to ensure long term sustainability of living The FAO's 1995 Code of Conduct for Responsible Fisheries provides guidelines for sustainable fishing practices. It aims to protect fish populations and ensure long-term viability of fish stocks through responsible behavior in fishing activities. aquatic resources, with due respect for the ecosystem, biodiversity and environment. Article 8 of the Code covers key principles including use of conservative management approaches when the effects of fishing practices are uncertain; avoiding overfishing and preventing or eliminating excess fishing capacity; minimization of bycatch and discards; prohibition of destructive fishing methods. India has been keen on adopting CCRF for sustainable exploitation of the resources. As a member country, India’s responsible fishing initiatives for sustainability include the development of efficient fishing vessel designs, responsible fishing gear, measures for bycatch reduction, energy conservation and minimizing the negative impact of fishing gear. Responsible Fishing ensures sustainability of the system by using gears in a responsible way so that overfishing is reduced and fish stock is protected. At the operational level, selective fishing is the deployment of gears which capture target resources without having any adverse impact on the resources and the ecosystem. Such gears ensure selective exploitation of resources according to criteria on size, shape, age or species. Demersal trawls which contribute maximum towards the marine fish production of India are non-selective and a large number of non-target species and juveniles are landed during trawling, in addition to its impact on benthic communities.

In the small-scale mechanized trawler industry, the **off-bottom trawl system (CIFT-OBTS)** is an alternative to demersal trawls. It operates at a slight elevation above the bottom, making it an environmentally friendly tool with a significantly lower bottom impact than demersal trawls. Bycatch issues typically arise when the gear used is non-selective and not made to exclude non-targeted fish. Bycatch Reduction Devices (BRDs) are devices that are used to prevent the bycatch of non-targeted species, including endangered species like turtles. These devices are developed with consideration for the differences in size and behavior patterns of fish, shrimp, and other animals inside the net.

When used by small and medium mechanized trawlers operating in Indian waters, the **Turtle excluder device (TED),** a BRD integrated into trawl nets to aid in the escape of turtles accidentally caught in trawl nets, guarantees 100% turtle escapement while minimizing the exclusion of fish and shrimp**.**

Juvenile Fish Excluder cum Shrimp Sorting Device (JFE-SSD), which lets young shrimp swim through the mesh undamaged while keeping mature shrimp in the bottom part of the net. Additionally, the system keeps mature finfish in its top codend while carefully excluding juveniles of commercial species and tiny fish with poor commercial value. Profitability is increased by sorting the shrimp and finfish between the lower and upper sections of the net since it takes less time to sort and keeps the shrimp from being crushed beneath the weight of the fish, which raises the shrimp's market value. Bycatch is a problem in other gears like as gillnets, purse seines, hooks and lines, but it is not as prevalent as in trawls.

By using the right mesh size and hanging coefficient, and deploying gill nets strategically based on the depth, region of operation, and season, gill net fisheries can reduce bycatch and prevent gear interaction with non-targeted species. Bycatch in purse seine is mostly caused by unintentional pursuit of young shoals. By choosing the right mesh size, fishing area, depth, and season, purse seines may be more selective and produce less bycatch. Dolphins are kept out of the gear by using the Medina panel, a segment of fine mesh that functions as a sort of escape panel, and backdown maneuvers to avoid being caught in purse seines.

By providing escape windows for juveniles and non-target species in the design side, as well as by choosing the right bait type, fishing area, fishing depth, and fishing time, it is possible to reduce juvenile catch in traps and avoid bycatch problems in hook and line fisheries.

CONCLUSION:

India's fishing industry stands at a critical juncture, where the adoption of sustainable practices is paramount for ensuring its long-term viability. The implementation of responsible fishing techniques, coupled with efforts to reduce bycatch, minimize environmental impact, and embrace energy-efficient technologies, represents a comprehensive approach to safeguarding the sustainability of India's marine fisheries. These multifaceted initiatives not only serve to protect the delicate balance of marine ecosystems but also play a crucial role in securing the livelihoods of millions of individuals who depend on the fishing industry for their sustenance and economic well-being. By continuing to innovate and refine these practices, India can set a global example for responsible fisheries management and contribute to the conservation of our planet's precious marine resources.

REFERENCES

Coll, M., Libralato, S., Pitcher, T.J., Solidoro, C. and Tudela, S., 2013. Sustainability implications of honouring the Code of Conduct for Responsible Fisheries. *Global Environmental Change*, *23*(1), pp.157-166.

Edwin, L. and Thomas, S.N., 2020. Responsible fishing and sustainability. *Indian Farming*, *70*(11).

Edwin, L., 2018. Responsible fishing and its strategic implementation for sustainability.

Garcia, S.M. and Staples, D.J., 2000. Sustainability reference systems and indicators for responsible marine capture fisheries: a review of concepts and elements for a set of guidelines. *Marine and Freshwater Research*, *51*(5), pp.385-426.

Mohanraj, G., Nair, K.V., Asokan, P.K. and Ghosh, S., 2009. Status of marine fisheries in Gujarat with strategies for sustainable and responsible fisheries. *Asian Fisheries Science*, *22*(1), pp.285-296.