

Development of Marine Fisheries in India- Role of the Fishery Survey of India



The Fishery Survey of India (FSI) surveys and assesses marine fishery resources in India's Exclusive Economic Zone (EEZ) to ensure optimum utilization and sustainable development of these resources. The FSI is a part of the Department of Animal Husbandry, Dairying and Fisheries in the Ministry of Agriculture.

R & D in fisheries in India perhaps began in 1946 with the establishment of the Deepsea Fishing Station. It was meant to augment food supply through development of deepsea fishing during the post-second World War. Beginning with just one vessel (a mine sweeper converted to a trawler, **S.T. Meena**) and a few staff, the FSI by 1982 had 28 vessels of varying size operating from 12 bases.

With the declaration of the 200 nautical mile EEZ during 1976, the Government of India started acquiring large vessels to survey demersal, mid-water, pelagic and oceanic resources in the EEZ. In 1983, the FSI was reorganized and upgraded as a national institute with a new set of mandates. Headquartered in Mumbai, the FSI has six zonal bases at Mumbai, Mormugao, Kochi, Chennai, Visakhapatnam and Port Blair. It was recognized as a science & technology institute in 1988.

The institute's sanctioned staff strength of 812 includes scientists, engineers, technicians and administrative staff.

The FSI seeks to meet the data needs of the Indian marine fishing industry for optimizing fishery production, also for regulating resources conservation and environmental protection.

Since its inception, the institute's vessels have engaged in demersal (bottom) trawling, mid-water trawling, purse seining, tuna longlining and squid jigging. The present survey fleet focuses on deepsea and oceanic resources and consists of 13 ocean-going vessels of 30.5 - 40.5 OAL equipped with state-of-the-art equipment for navigation, fish finding and resources survey.

The FSI is a recognised Marine Data Centre under the National Ocean Information System

coordinated by the Department of Ocean Development. It holds 50 000 electronic records; about 2 500 are added annually. Scientists take part in survey cruises to collect data relating to fishery resources distribution and abundance in space and time. They also collect biological information and data on oceanographic parameters.

The data collected are processed and published in the form of charts, atlases, bulletins, etc. from time to time, catering to a spectrum of data users.

Apart from publications, the FSI disseminates findings through workshops, seminars, open houses and exhibitions in different maritime states to benefit fishermen, fishing boat operators, etc.

Dr V S Somvanshi became Director-General of the Fishery Survey of India in August 1995, after 15 years of service with the FSI. He has vast experience in marine fisheries research, particularly in fishery resources surveys and assessment and fish biology. He has edited two books, published more than 100 scientific papers, and visited several countries in Europe, Asia and Africa in the course of professional assignments.



Between 1997 and 2002, he served as Vice-Chairman of the Scientific Committee of the Indian Ocean Tuna Commission. He has been a principal investigator on several national and international projects, has served on many R& D committees, and is a Ph.D research guide at several universities.

Publications

Data products	Issues
Fishery Charts	4
Fishery Atlases	2
Bulletins	28
Occasional Papers	11
Special Publications	5
Chartered Vessels Series	8
Proceedings	6
Resources Information Series (Hindi, English, Marathi, Tamil, Telugu, Malayalam, Konkani, Kannada, Oriya)	77
Extension Series	1



Some facts relating to the surveys:

- Demersal resources have been surveyed in all coastal sectors. Stocks are under advanced levels of exploitation. The institute has located a number of new fishery resources and fishing grounds of deepsea lobsters off the south west coast, spear lobster (*Linuparus sommosus*) and deep sea lobsters (*Puerulus sewelli*) in Andaman waters.
- FSI has been investigating demersal stocks in the outer continental shelf. Intensive trawl surveys are being used to cover all the sectors.
- FSI has done a preliminary survey of neritic pelagic stocks in some sections of the Indian coast by means of mid-water trawling and purse-seining
- Trawl surveys are in progress for obtaining a complete picture of several stocks of deepsea crustaceans and finfishes in different sectors of the continental slope.
- FSI is doing tuna longline surveys to generate scientific

FSI's Survey Fleet

Name of Base and Vessel	Vessel Type	OAL (m)	GRT (t)	BHP	Built in	
					Year	Country
Mumbai						
Yellow Fin	Tuna longliner	36.0	290	800	1989	Japan
Matsya Vrushti	Monofilament longliner	37.5	465	1100	2005	China
Matsya Nireekshani	Stern trawler	40.5	329.26	2030	1978	Holland
Mormugao						
Matsya Vishwa	Stern trawler	36.5	327.18	825	1983	India
Sagarika	Stern trawler	28.8	189	650	1994	Japan
Cochin						
Matsya Varshini	Trawler-cum-Purse-seiner	36.5	268.80	1160	1980	Denmark
Matsya Sugundhi	Longliner-cum-Squid jigger	31.5	245.80	650	1980	Japan
Lavanika	Stern trawler	24.0	151	500	1995	1995
Chennai						
Matsya Drushti	Monofilament longliner	37.5	465	1100	2005	China
Samudrika	Stern trawler	28.8	189	650	1994	India
Visakha patnam						
Matsya Shikari	Stern trawler	39.5	352	740	1979	Holland
Matsya Darshini	Stern trawler	36.5	268.80	1160	1980	Denmark
Port Blair						
Blue Marlin	Tuna longliner	36.0	290	800	1989	Japan

FSI's Charter of Work

1. Survey and assessment of fish stocks and charting of fishing grounds in the Indian EEZ and adjoining high seas.
2. Monitoring of fishery resources for fisheries regulation, management and conservation.
3. Assessment of suitability of deepsea fishing gear with special reference to the concepts of maximum sustainable yield, preservation of the environment and the marine ecology.
4. Marine fisheries forecasting including application of remote sensing in fisheries management.
5. Maintaining data on deepsea fishery resources and dissemination of information to different user groups.
6. Human resources development through training of fishing operatives and assistance to sister institutes in meeting their faculty requirements.

knowledge and a sound data base on distribution, availability, seasonality and migratory trends of larger pelagic stocks in the Indian EEZ and adjoining high seas.

- Through two recently acquired monofilament longliners, Matsya Vrushti and Matsya Drushti, FSI is in the process of popularizing the monofilament longlining technique.
- FSI is currently surveying demersal resources in the deeper waters and continental slope and doing longline surveys for larger pelagic stocks in the EEZ around the A&N islands.
- FSI has initiated studies on krill resources in the Indian Ocean sector of the southern ocean.
- To promote technologies and fishing gear which will not further degrade the marine ecosystem, FSI undertakes fishing with eco-friendly and diversified fishing methods like squid jigging, trap fishing, etc.
- FSI is building up a species inventory of marine fishery resources in the Indian EEZ so as to take measures for monitoring and conservation of marine bio-diversity.
- The FSI has arrived at a figure of 3.92 million tonnes of fishery potential in the Indian EEZ by using different analytical and production models suitable for tropical fisheries. Variabilities of stock densities and biomass of important stocks are being assessed on a yearly basis.
- FSI has been associated with ISRO institutes in developing techniques and in validating the application of remote sensing in marine fisheries.

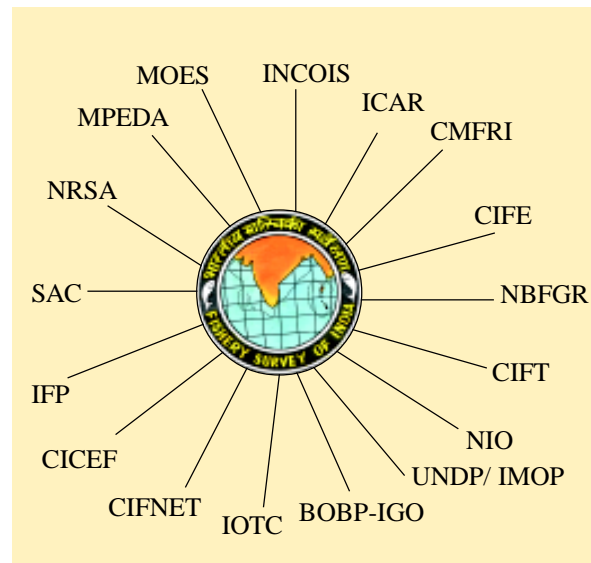
Human Resource Development

The FSI provides practical on-board training to deepsea fishing operatives and fishermen of maritime states in different fishing methods. It also gives on-board sea-service training to CIFNET trainees so that they become eligible to

appear for certificate of competency examinations.

Training is imparted to individual scientists in fish stock assessment, taxonomy, fishing gear, fishery oceanography, etc. FSI is recognized by Mumbai University as a research centre for undertaking studies leading to M Sc (by research) and Ph D degrees. FSI bases have also won recognition from universities in the respective regions.

FSI's Institutional Linkages



Tasks ahead

Short term vision

- Monitoring of demersal resources within 200m depth zone.
- Survey of deepsea demersals beyond 200m depth.
- Survey of coastal pelagic resources.
- Survey of oceanic tuna resources.
- Survey of skipjack and yellowfin tuna by pole and line fishing in Lakshadweep and Andaman & Nicobar Group of Islands.
- Introduction of monofilament longlining for exploration and exploitation of tuna resources.
- Fish stock identification and biodiversity studies using fish genetics.
- Application of remote sensing in forecasting of marine fisheries.
- Investigation of fishery resources in the high seas in the Indian Ocean and Southern Ocean.

Long-term vision

- Completion of exploratory surveys for all types of fishery resources in the Indian EEZ.
- Commercial fishing technologies and innovations.
- Monitoring surveys for fish stock health in the Indian EEZ and fishery strategies.
- Data bank maintenance and networking.
- Large marine ecosystems approach for conservation, management of resources and preservation of environment.
- Habitat management – assessment of risks to habitat.
- Environmental impact of fishing on protected species.
- Sustainable fishery and enhanced food security.

The FSI has vital linkages with several national agencies and institutions associated with ocean studies and fisheries development

The FSI is the nodal institute of the Government of India for matters related to Indian Ocean Tuna Commission (IOTC). Recently, for the first time in India, FSI successfully conducted a tuna tagging programme in the Lakshadweep Islands. FSI is also represented in the Technical Advisory Committee of the BOBP-IGO.

The Government of India's Centrally Sponsored Scheme (CSS) on development of marine fisheries, infrastructure and post-harvest operations, is being implemented through FSI: existing trawlers are converted for monofilament longlining. Likewise, under the CSS on strengthening of databases and information networking for the fisheries sector, FSI conducted a marine fisheries census in Lakshadweep and Andaman and Nicobar Islands and also conducted eight training sessions-cum-workshops on "Strengthening of data collection and fish taxonomy". The FSI also acts as an interface between the Ministry and fishery departments of coastal states for catch assessment surveys in marine fisheries.

The FSI maintains a database of Indian-owned fishing vessels permitted by the Government of India to engage in deepsea fishing in the Indian EEZ. The FSI has played an important role in implementing inter-institutional and international projects.

The FSI is a premier organization in surveying and assessing fish stocks in India. It has helped to popularize various modern fishing techniques, train operatives, apply remote sensing in marine fisheries, promote the Code of Conduct for Responsible Fisheries and eco-friendly fishing techniques. For more details, please visit the website <http://fsi.bom.nic.in>

Projects implemented by FSI

1. ICAR-funded project on "*Investigation on biology of perches in Quilon Bank, Wadge Bank and Gulf of Mannar*".
2. GEF/IMO/UNDP-funded project on "*Glo-ballast water port baseline survey*".
3. ICAR-funded project "*To study the present status of the polynemid fishery along the Maharashtra-Gujarat coasts and to suggest a suitable gear for their sustainable exploitation*".
4. Project funded by Ministry of Environment & Forests, New Delhi, on "*Investigation in Marine Fish Biodiversity in the Indian EEZ*".
5. Project funded by Space Application Centre (SAC), Ahmedabad, on "*Application of Remote Sensing and GIS for Marine Fisheries Resources Management*".
6. Project funded by SAC, Ahmedabad on "*Species-specific fishery forecast*".
7. Project funded by INCOIS on "*Development of Integrated Fishery Forecast Model off the Visakhapatnam Coast*".
8. Project funded by IOTC on "*Small -scale tuna tagging in Lakshadweep Islands*".



The newly acquired fishing vessels of FSI (top & bottom)

