सत्यमेव जयते

Training Programme for Fishermen under PMMSY
Department of Fisheries, New Delhi- 110001, India

Government of India
Ministry of Fisheries, Animal Husbandry and Dairying

NATIONAL CURRICULUM FOR CAPACITY BUILDING IN DEEPSEA FISHING IN INDIA

PMMSY

एन एफ डी बी
NFDB

CIFNET

CIFNET Central Institute of Fisheries Nautical and Engineering Training

Table of Contents

Preface

The Department of Fisheries under the Ministry of Fisheries, Animal Husbandry and Dairying, Government of India, constituted a National Committee on Capacity Building in Deep Sea Fishing in India on 22 December 2025 under the chairmanship of the Joint Secretary (Marine Fisheries), Department of Fisheries, New Delhi. The Committee comprised the Heads of various national fishing institutes and the Director General of Shipping as members. The first meeting of the Committee was convened by the Joint Secretary (Marine Fisheries) on 31 December 2025. Based on the actionable points that emerged from the meeting, CIFNET was entrusted with developing a structured Training Module for Deep Sea Fishing, encompassing both theoretical instruction and practical training. CIFNET was also tasked with updating its existing training modules to incorporate additional, specialized components required for deep-sea fishing operations. In this regard, CIFNET conducted two consultative meetings on 06 January 2026 and 20 January 2026, with the participation of experts from FSI, NIFPHATT, BOBP-IGO, ICAR-CIFT, MPEDA-NETFISH, and other stakeholders. Various modules to be incorporated into the curriculum were deliberated in detail. Based on the suggestions and inputs received, CIFNET formulated the draft National Curriculum for Capacity Building in Deep Sea Fishing in India.

The draft curriculum was presented by the Director, CIFNET, during the second meeting of the National Committee, held on 05 February 2026 under the chairmanship of the Joint Secretary (Marine Fisheries), with participation from all members, including ICAR-CMFRI, NABARD and NCDC. Subsequently, the revised draft curriculum, incorporating the suggestions received during the meeting, was circulated among the Committee members for further input. Based on the feedback received, the final National Curriculum for Capacity Building in Deep Sea Fishing in India has been prepared and is presented herewith.

We gratefully acknowledge the guidance and support of the Ministry and the valuable contributions of experts from the participating fisheries institutions in the finalization of the National Curriculum for Deep Sea Fishing in India.

DIRECTOR
CIFNET

Training Parameters

Name of the training programme	**Training on Deep sea fishing, with a focus on tuna long lining and onboard tuna handling.**
Duration of the training programme	08 days (Theory/Shore Practical- 3 days; Onboard practical- 5 days)
Intake per batch	10 to 12 fishermen, aligned with the complement crew size of the training vessels (Government of India vessels / commercial fishing vessels being hired)
Target Audience	Fishermen engaged in Marine Fishing, identified by the Department of Fisheries of respective coastal states and UTs
Nomination for training	Respective Fisheries departments of Coastal states and UTs
Coverage Area	All the Coastal States and UTs
Country	India
Monitoring Agency	Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying , Government of India, New Delhi
Eligibility	Traditional fishermen involved in sea fishing with a minimum 5th-grade pass
Training Faculty	CIFNET instructors, technicians/experts from other national institutions, and Expert Fishermen. For specialized topics, international expert instructors will be invited to conduct sessions
Pre-Requisite Licensor Training	NA
Minimum Age	18 Years
Sponsorship	PMMSY scheme through NFDB
Training partners	CIFNET, FSI, NIFPHATT, ICAR-CIFT, ICAR-CMFRI

Training Faculty

Besides the faculty members from CIFNET and other National institutes under training partners including retired scientists, professors and skippers, experts from international organizations/agencies may be engaged on contract basis so as to improve the quality of training by incorporating the latest technologies in tuna fishing ground identification, fishing methods and on-board tuna handling.

The technical experts from international organizations/ agencies like Japan International Cooperation Agency (JICA), the Southeast Asian Fisheries Development Center (SEAFDEC), Indian Ocean Tuna Commission (IOTC) etc. brought through international cooperation. This will enable the fishermen to acquire the latest developments in tuna exploitation and conservation of tuna stock in the Indian Ocean area.

Program Overview

This section summarizes the end objectives of the training program.

Training Objectives

1. **Enhance Fishermen's Skills**: Equip fishermen with advanced knowledge and practical skills in deep-sea fishing techniques, including tuna longlining, handling, and onboard operations.
2. **Promote Sustainable Fishing Practices**: Educate participants on sustainable fishing methods, regulatory frameworks, and conservation measures to ensure the long-term viability of marine resources.

3. **Improve Tuna Handling and Quality Standards**: Train fishermen in proper handling techniques for sashimi-grade tuna to meet export quality standards, hygiene requirements, and international certification protocols.
4. **Strengthen Safety and Emergency Preparedness**: Provide comprehensive training on safety-at-sea principles, life-saving appliances, and emergency medical response to ensure the well-being of fishermen during deep-sea operations.
5. **Foster Collaboration and Market Integration**: Develop partnerships between fishermen, traders, exporters, researchers, and management organizations to enhance the value chain and improve the marketability of Indian tuna products.

Training Outcomes

At the end of the programme, the fishermen should have acquired the listed knowledge and skills to:

1) Ability to identify and describe major tuna species and their resource availability.
2) Capability to recognize and distinguish tuna species and common by-catch associated with monofilament longline gear.
3) Understanding of different line fishing methods used in tuna fisheries and their comparative suitability.
4) Familiarity with the deck layout of a tuna longliner and the functions of onboard deck equipment.
5) Practical skills in monofilament longline fishing through participation in onboard fishing operations.
6) Proficiency in fabricating and rigging monofilament branch lines for longline fishing.
7) Knowledge of proper handling practices for sashimi-grade tuna, including humane killing, bleeding, degutting, preservation, and preparation of tuna loins and steaks.

8) Understanding of the types and spatial distribution of tuna resources, including neritic and oceanic tunas.
9) Ability to apply and comply with quality, hygiene, and food safety standards required for export markets.
10) Familiarity with safety-at-sea principles and operation of navigation and communication equipment onboard fishing vessels.

Training Modules -Summary

Module	Contents of Syllabus	Hrs
I	**Theory (2 days)**	
1	**Introduction to Deepsea fishery resources**– Tuna and Tuna-like fishes and their distribution in Indian EEZ, tuna behavior to thermocline and MLD	1 Hr
2	**Tuna fishing methods** - Hand Line, Pole & Line, Troll line, and Long line fishing methods	1 Hr
3	**Fishing Ground identification and shoal detection using traditional and advanced methods**	1 Hr
4	**Structure and Design of Tuna Fishing Gears** Monofilament tuna long line fishing gear: main line, Branch line, Snap clip, swivel, Snood wire, hook, Buoys, floats, flag pole Pole & Line Fishing Gear-Pole, Line, Barbless Hook. Troll Line – Main line, Artificial bait Hand line.	1 Hr
5	**Machinery/fishing equipment onboard a tuna longliner** Deck layout of a Longliner Deck equipment fitted onboard fishing vessel: Main	2 Hrs

	line spool/Line hauler, Line setter, Branch line tub Refrigerated Sea Water (RSW) storage facility/ Refrigeration system	
6	**Long line Fishing Operation**- procedures in line operation. Shooting, patrolling, hauling.	1 Hr
7	**Navigation, Communication, and Vessel Monitoring Systems**, AIS, Transponder, and other Navigational Equipment for safe navigation (GPS, VHF, RT, SART, EPIRB, DAT), Navigation Simulation.	2 Hrs
8	**Safety at Sea and Life-Saving Appliances**	1 Hr
9	**Medical First Aid**	2 Hrs
10	**Handling of Tuna for Sashimi Grade Quality** Tools for Handling Tuna **Processing of tuna**–*Ikejime* method, brain spiking, bleeding, spinal cord destruction, degutting and degilling, filleting, chilling on board (RSW & CSW), freezing method, and quality aspects of tuna (color, texture, appearance of skin, etc.)	1 Hr
11	**Export compliance**, certification requirements, and marketing aspects of tuna	1 Hr
12	**Fisheries Policy and Regulatory Framework-Deep Sea** fishing policy in India, Territorial waters, Contiguous zone, EEZ and high sea concept, Rules for sustainable harnessing of fisheries in the EEZ 2025	1 Hr
II	**Practical (1 day)**	
13	Fabrication of Monofilament branch line and assembling of long line gear.	3 Hrs
14	Hands-on practical training in the preparation of Sashimi-grade Tuna Understanding of Tools for Handling Tuna	3 Hrs

	Ikejime method-killing, brain spiking, bleeding, spinal cord destruction, degutting and degilling, filleting, chilling on board (RSW & CSW), freezing method, and quality aspects of tuna (color, texture, appearance of skin, etc.)	
	Exposure visit Visit to the fishing harbour to demonstrate tuna handling, post-harvest losses, etc. Visit to the factoring to show the tuna handling, processing, grading, packing, etc. Visit to the vessel to show the fishing arrangements	3 Hrs
III	**Onboard Practical (5 days)**	
15	Demonstration of monofilament long line, onboard equipments used in long line operation. Selection of baits and fixing of baits in hooks, Fishing ground detection, Operation of long line- Shooting, immersion time/patrolling, hauling, handling of catch onboard	4th day - 8th day Onboard sailing (5 days)

Module Details– Theory (3 Days)

Theory Module 1: Introduction to Deep-sea Fishery Resources

Duration: 01:00 Hr
Theory–Key Learning Outcomes
• Overview of tuna and tuna-like species • Distribution of tuna resources in the Indian EEZ and high seas • Neritic and oceanic tuna resources and seasonal availability

- Identification of key species in India
- Targeting tuna: Understanding depth, temperature, currents, tuna behavior to the thermocline and MLD
- Signs of tuna: Birds, flying fish, current lines, floating objects
- Day vs night fishing logic
- Importance of harvesting live, stress –free fish

Classroom Aids

Training Kit–PPT Presentations, Whiteboard, Marker, Digital Interactive board, Video Films

Theory Module 2: Tuna Fishing Methods

Duration: 01:00 Hr

Theory–Key Learning Outcomes

- Hand line fishing
- Pole-and-line fishing
- Troll line fishing
- Longline fishing: principles and operational overview
- Comparative suitability of fishing methods

Classroom Aids

PPT Presentations, Whiteboard, Marker, Projector, Laptop, Interactive board, videos of fishing operation

Tools and Equipment

Showing original fishing gears – hand line, pole and line, branch line, main line, and hooks of long line, models of fishing.

Theory Module 3: Fishing Ground identification and shoal detection using traditional and advanced methods

Duration: 02:00 Hrs
Theory–Key Learning Outcomes
• Habitat distribution of Yellow-fin Tuna in Indian EEZ • Signs of Tuna presence • Prediction of Potential Fishing Zone (PFZ) • Forecasting of Yellowfin tuna Fishing Ground - INCOIS
Classroom Aids
Training Kit–PPT Presentations, Whiteboard, Marker, Digital Interactive board, Video Films

Theory Module 4: Structure and Design of Tuna Fishing Gears

Duration: 01:00 Hr	
Theory–Key Learning Outcomes	**Practical Learning Outcomes**
1) Monofilament Tuna Long Line Fishing Gear • Main line • Branch line components: snap clip, swivel, snood wire, Hook types (Circular hooks vs J hooks) • Buoys, floats, and a flagpole **2) Pole-and-Line Fishing Gear**	• Practical demonstration of main line, branch line, and barbed hooks. • Practical on the fabrication of the branch line, attachment of the hook, etc. • Demonstration of real buoys, floats, and flagpoles used in ling line gear.

• Pole, line, barbless hook **3) Troll Line Gear** • Main line and artificial bait **4) Hand Line Gear** • Components and rigging	• Demonstration of an actual pole, line, and barbless hook. • Demonstration of actual artificial baits with double and triple hooks. • Demonstration of actual hand line and rigging details.

Theory Module 5: Machinery and Fishing Equipment Onboard Tuna Long-line fishing vessel

Duration: 02:00 Hrs

Theory–Key Learning Outcomes

- Deck layout of long line fishing vessel and other line fishing vessels
- Main line spool (Winch)/line hauler
- Line setter
- Branch line tubs
- Refrigerated seawater (RSW), Chilled Seawater (CSW) systems, and onboard refrigeration
- Slurry ice preparation
- Ice to fish ratio
- Layering methods in fish hold
- Hydraulic winch operation for shooting and hauling of monofilament line.
- The specifications of a hydraulic winch (best suitable - gun metal – non-corrosion resistant)

Classroom Aids
PPT Presentations, Whiteboard, Marker, Projector, Laptop, Video Films

Theory Module 6: Long line, hand line, and troll line Fishing Operations

Duration: 01:00 Hr
Theory–Key Learning Outcomes
• Pre-operation preparation • Shooting procedures • Bait selection & bait handling • Bycatch mitigation measures • Immersion time and patrolling • Hauling operations • Catch handling during line operations • Onboard hygiene and sanitation • Cleaning & sanitation of deck, knives,holdsetc. • Personal hygiene • Use of potable water • Record keeping, log book, catch reporting
Classroom Aids
PPT Presentations, Whiteboard, Marker, Projector, Laptop, Video Films

Theory Module 7: Navigation, Communication, and Vessel Monitoring Systems

Duration: 02:00 Hrs
Theory–Key Learning Outcomes
• Onboard communication systems • AIS, ISRO's indigenous satellite based transponder and vessel monitoring systems • Navigation equipment: GPS, VHF, RT, SART, EPIRB, DAT, SSB Radio, Satellite phone, etc. • Nabhmitra app
Classroom Aids
Actual electronic equipment of GPS, SART, EPIRB, PPT Presentations, Whiteboard, Marker, Projector, Laptop, Video Films

Theory Module 8: Safety at Sea and Life-Saving Appliances

Duration: 01:00 Hr
Theory – Key Learning Outcomes
• Personal and vessel safety activities to be followed • Life-saving appliances on board fishing vessels • Emergency procedures at sea
Classroom Aids
Actual life jackets, life buoy, smoke signals, PPT Presentations, Whiteboard, Marker, Projector, Laptop, Video Film

Theory Module 9: Medical First Aid

Duration: 02:00 Hrs
Theory–Key Learning Outcomes
• Basic first aid on board fishing vessels • Treatment of common onboard injuries • Emergency medical response at sea
Classroom Aids
Actual Demonstration of medical first aid, posters, and presentations.

Theory Module 10: Handling of Tuna for Sashimi Grade Quality

Duration: 01:00 Hr
Theory–Key Learning Outcomes
• Tools used for handling tuna • *Ikejime* method • Brain spiking • Bleeding and spinal cord destruction • Degutting and degilling • Filleting basics • Onboard chilling methods (RSW and CSW) • Freezing methods • Quality indicators: colour, texture, and skin appearance

- Avoid gaffing through the body
- Minimize stress & bruising
- Importance of immediate stunning
- Electric stunner
- Points to avoid: avoid stepping on fish, no sun exposure, no throwing or stacking, etc
- Scoop test –grading on quality A, A+, etc.

Classroom Aids

PPT Presentations, Video Films, Whiteboard, Marker, Projector, Laptop

Theory Module 11: Export Compliance and Marketing of Tuna

Duration: 01:00 Hr

Theory–Key Learning Outcomes

- Export quality standards and hygiene requirements, HACCP
- Certification and traceability requirements - MPEDA & EIC requirements: catch certificate, health certificate
- Catch documentation schemes
- Vessel registration and compliance
- Overview of tuna marketing and value chains
- Traceability importance
- Sustainability labels: MSC, FOS, etc

Classroom Aids
PPT Presentations, Whiteboard, Marker, Projector, Laptop

Theory Module 12: Fisheries Policy and Regulatory Framework

Duration: 01:00 Hr

Theory–Key Learning Outcomes

- Deep-sea fishing policy of India
- Maritime zones: territorial waters, contiguous zone, EEZ, and high seas
- Rules for sustainable harvesting of fisheries resources in the EEZ (2025)
- IUU fishing
- Onboard observer
- Vessel monitoring system
- Catch reporting
- International laws, UNCLOS, UN fish stock assessment,
- SDGs
- ABNJ agreement
- FSMA
- ReALCRaft
- Establishment of monitoring, control, surveillance, and enforcement mechanisms (MCS&E)
- Compliance of IOTC, SIOFA, and CCAMLR, etc

Classroom Aids
PPT Presentations, Whiteboard, Marker, Projector, Laptop, Video Films

Module Details – PRACTICAL (CLASSROOM)

Practical Module 1: Fabrication and Assembly of Monofilament Longline, Handline, and Troll line Gear

Duration: 03:00 Hrs
Practical–Key Learning Outcomes
• Fabrication of monofilament branch lines, hand lines, and troll lines • Assembling long line gear components • Knotting, crimping, and rigging practices

Practical Module 2: Practical Training in Sashimi-Grade Tuna Handling

Duration: 03:00 Hrs
Practical–Key Learning Outcomes
• Identification and use of handling tools • *Ikejime* method: killing and brain spiking • Bleeding, spinal cord destruction, degutting, and degilling • Filleting techniques • Onboard chilling (RSW and CSW)

- Freezing methods and quality assessment
- Slurry ice preparation
- Hanging of tuna for chilling
- Washing with clean seawater
- Layering of tuna in the fish hold

Exposure visit

- Visit to the fishing harbours to demonstrate tuna handling, post-harvest losses, and related topics.
- Visit to a factoring facility to show tuna handling, freezing, grading, packing, etc.

Module Details – ONBOARD PRACTICAL (5 days)

Practical Module 3: Onboard Practical Training: Monofilament Longline Fishing Operations

Duration: 5 days

Onboard Practical–Key Learning Outcomes

- Demonstration of monofilament longline gear – Horizontal and vertical
- Familiarization with onboard equipment
- Selection of bait and baiting of hooks
- Shooting operations
- Immersion time and scouting

- Hauling operations, Hauling through a winch
- Handling and preservation of catch onboard

Feedback and Assessment

A feedback questionnaire covering various aspects of the training will be distributed to trainees on the last day to understand their perceptions and suggestions regarding its conduct. Assessments of the knowledge gained in deep-sea fishing to check the competencies acquired will be conducted through viva voce by a committee consisting of Trainers and the Joint Director/Assistant Director of the fisheries department of the respective coastal states/UTs. Upon successful assessment, a certificate will be issued.

Post-Training Support and Future Strategy

1. One-time training will not suffice to achieve the desired outcome. Handholding is necessary to provide the support the interested beneficiaries need. A mechanism may be developed to arrange post-training follow-up.
2. The ways to establish strong partnerships and trust among fishers, traders, exporters, researchers, and management and development organisations need to be prioritised.
3. The value of tuna produced by neighbouring countries such as Sri Lanka, Maldives and Thailand is much higher than that produced in India. Arranging a visit to Sri Lanka, Maldives, Thailand and such countries for prospective deep-sea fishers will be a rewarding part of the training course.

4. Strengthen CIFNET's instructional expertise by enrolling faculty in global capacity-building programs focused on cutting-edge deep-sea fishing methodologies and international technical partnerships.
5. Beneficiaries interested in a capacity-building course will have different skill sets and interests, and their requirements will vary. The curriculum may be made flexible to cater to their skill set and needs. It is important to identify the beneficiaries and understand their requirements. Considering this, specialized training may be planned in addition to the routine training course.

x------x

सत्यमेव जयते

Government of India
Ministry of Fisheries, Animal Husbandry and Dairying
Department of Fisheries, New Delhi- 110001, India

NATIONAL CURRICULUM FOR CAPACITY BUILDING IN DEEPSEA FISHING IN INDIA

CIFNET

CIFNET Central Institute of Fisheries Nautical and Engineering