

ICAR

CMFRI

Annual Report

वार्षिक प्रतिवेदन

2025



Indian Council of Agricultural Research
Central Marine Fisheries Research Institute



Annual Report 2025



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CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
(ICAR-CMFRI)

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Mandate

1

Monitor and assess the marine fisheries resources of the Indian Exclusive Economic Zone (EEZ) including the impact of climate and anthropogenic activity and develop sustainable marine fishery management plans

2

Basic and strategic research in mariculture to enhance production

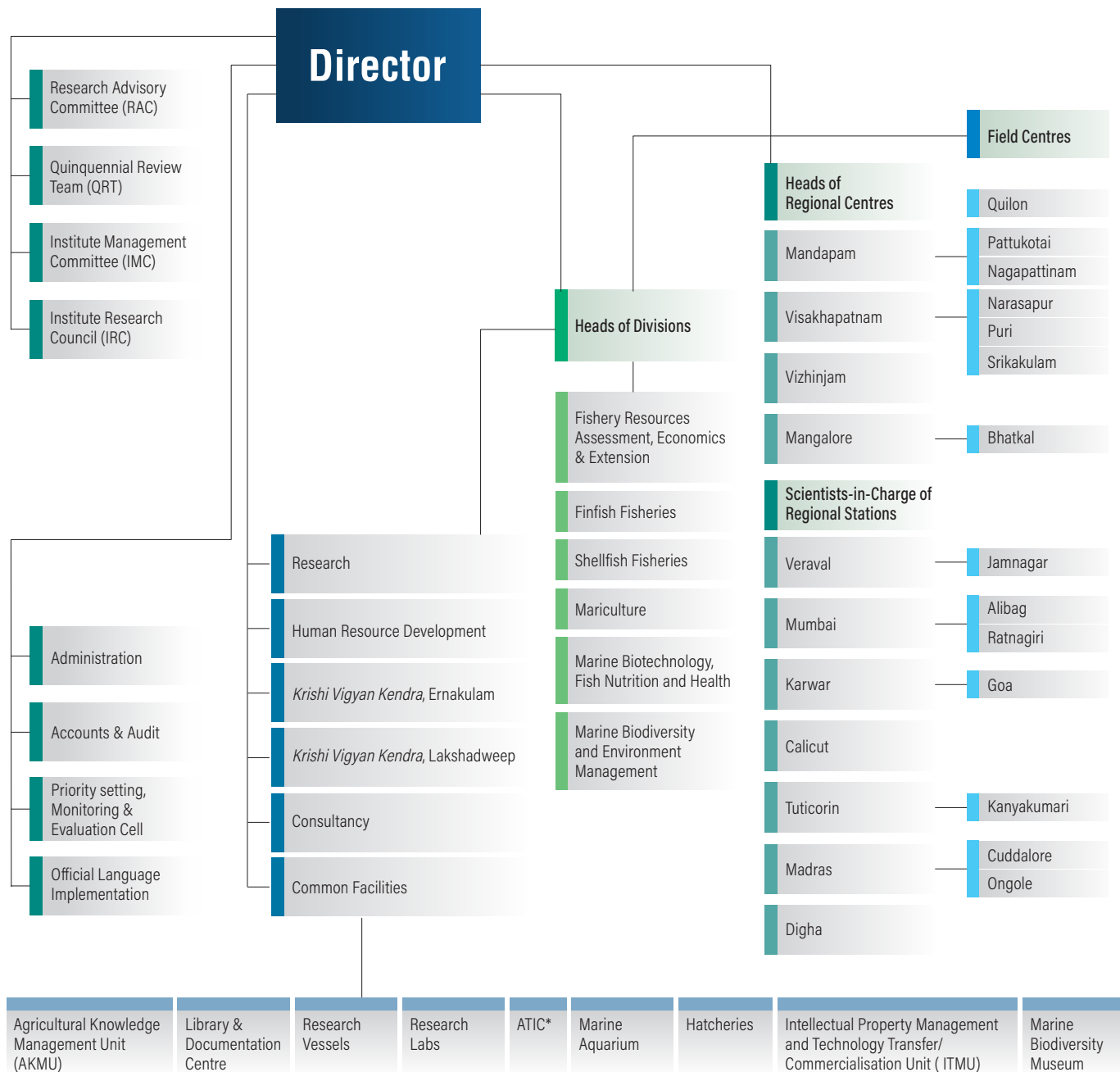
3

Act as a repository of geospatial information on marine fishery resources and habitats

4

Consultancy services and human resource development through training, education and extension

Organogram



Preface



The year 2025 marked a significant phase in the continued advancement of ICAR-Central Marine Fisheries Research Institute as a national leader in marine fisheries research, innovation, and policy support. The Institute's contributions reflect a seamless integration of scientific rigour, technological advancement, and stakeholder engagement, aligned with India's vision of a resilient and sustainable Blue Economy. Through its headquarters in Kochi and a network of regional centres, research stations, and Krishi Vigyan Kendras, the Institute addressed key domains including fisheries assessment, mariculture, biodiversity, climate change, ecosystem health, genetics and genomics, and socio-economic development, thereby strengthening evidence-based governance and sectoral resilience.

Marine fisheries monitoring, supported by a robust sampling framework, estimated India's marine fish landings at 3.57 million tonnes in 2025, representing a 3% increase over the previous year. The sector contributed ₹69,254 crore at the landing centre level and ₹97,702 crore at the retail level, with a Gross Value Added of ₹48,585 crore. Marketing efficiency improved to 70.88%, reflecting strengthened value chains and improved price realisation. Sectoral trends in the landings indicated an increase in mechanised fisheries, while motorised and non-mechanised sectors showed a relative decline. Regional variations were evident, with significant growth in some states and declines in others, largely influenced by climatic events. Emerging mesopelagic resources (200–1000 m depth) demonstrated promising potential, particularly due to their high mineral and DHA/EPA content, offering prospects for nutraceutical and feed applications. These assessments, combined with economic analyses, provided critical insights for informed resource management and policy support.

Digital transformation played a key role in modernising fisheries data systems. The Marine Fisheries Census 2025 marked a major milestone with the transition to a fully digital, geo-referenced, near real-time

data collection system across all maritime States and Union Territories. Tools such as the FishEye mobile application and the MARLIN@CMFRI platform further strengthened species identification, data accessibility, and decision support.

Mariculture research recorded notable progress, with captive breeding and seed production protocols refined and scaled up for multiple food fishes, ornamental species, bivalves, and gastropods. Innovations in Integrated Multi-Trophic Aquaculture, seaweed-lobster integration, and polyculture systems enhanced resource efficiency and environmental sustainability. Seaweed cultivation technologies and sea ranching initiatives under national programmes contributed to stock enhancement and livelihood diversification.

Environmental assessments highlighted increasing stressors, including marine heatwaves, declining dissolved oxygen levels, and coral bleaching. Marine litter studies revealed significant accumulation in some locations, along with microplastic contamination in sediments and biota, emphasising the need for strengthened coastal management and pollution mitigation. Climate change research indicated shifts in ecosystem dynamics, while studies on mangrove carbon

sequestration (132.97–181.00 kt C/year) identified pathways to develop climate-resilient fisheries and blue carbon strategies.

Research in fish nutrition and health advanced through work on nutrigenomics, functional feeds, and probiotics, including promising applications from mangrove-derived microbes. Disease surveillance identified emerging threats such as Epizootic Ulcerative Syndrome and viral co-infections. Genetics and genomics research generated valuable molecular resources supporting stock assessment, conservation, and selective breeding, while toxicogenomic and cell culture studies expanded biotechnological applications.

Extension and outreach initiatives reached a wide range of stakeholders through Krishi Vigyan Kendras and field programmes, promoting technology adoption and climate-resilient practices. Interventions under TSP and SCSP significantly enhanced livelihoods through aquaculture, biofloc, and seaweed farming systems, demonstrating the impact of targeted support.

Scientific outputs and outcomes during the year included 140 peer-

reviewed publications, three patents, 11 technology commercialisations/licensing through MoUs earning revenue, and 10 ICAR-certified technologies, reflecting a vibrant research ecosystem.

The Library and Documentation Centre enhanced knowledge access with over 5.4 million downloads, while the Marine Biodiversity Museum strengthened outreach, attracting 12,466 visitors and promoting awareness of marine ecosystems and conservation.

Awards and honours received during the year reflect both individual excellence and the Institute's growing national recognition. The Institute's commitment to Official Language implementation was recognised through the Kshetriya Rajbhasha Puraskar and TOLIC Rolling Trophies. The KVK Lakshadweep received national and regional awards for the best KVK from NAAS, New Delhi, reaffirming its commitment to farmer outreach.

Swachh Bharat initiatives further strengthened sanitation and environmental awareness, while Women's Cell activities promoted inclusivity, welfare, and gender equity through targeted programmes.

This Annual Report presents the Institute's major achievements in 2025, reinforcing its leadership in marine fisheries research, sustainability, innovation, product development, and socio-economic assessments. I place on record my sincere appreciation to all scientists and staff for their dedicated efforts, and to the Annual Report Committee for their meticulous work in compiling this report.

The Institute remains committed to advancing science-driven solutions that balance conservation with livelihood security. The achievements of 2025 provide a strong foundation for future growth, reinforcing its role as a catalyst for sustainable transformation in India's marine fisheries sector.

On behalf of the ICAR-CMFRI family, I express my sincere gratitude to Dr Mangi Lal Jat, Secretary DARE & DG ICAR; Dr J. K. Jena, DDG (Fisheries Science); Dr Shubhadeep Ghosh, ADG (Marine Fisheries), and the entire Fisheries Science Division of ICAR, New Delhi, for their timely interventions and support, which were instrumental in shaping the Institute's research priorities, strengthening programme implementation, and facilitating effective coordination at the national level.

Dr Grinson George

Director, ICAR-CMFRI

Highlights

Fisheries Resource Assessment and Monitoring

- Marine fish landings reached 3.57 million t in 2025 (+3%), valued at ₹69,254 crore (landing) and ₹97,702 crore (retail), highlighting strong sectoral contribution.
- Tamil Nadu remained the top contributor, while major increases occurred in Karnataka, Maharashtra, and West Bengal. Gujarat, Odisha, and the Andaman & Nicobar Islands recorded declines.
- Mechanised fisheries increased by 11%, while motorised and non-mechanised sectors declined, indicating a structural transition.
- Non-conventional fisheries were assessed using length-based indicators and molecular barcoding, highlighting potential species diversification.
- Mesopelagic explorations (200-1000 m depth) recorded 40

species with high mineral and DHA/EPA content, indicating good scope in the feed industry and nutraceutical applications.

Digital Technologies

- A web-based repository covering ~200 marine species was developed to enhance information access and data dissemination.
- MARLIN@CMFRI database was expanded to over one lakh images across ~500 species, strengthening AI-based species identification.

Mariculture and Stock Enhancement

- Captive breeding and seed production protocols were standardised/upscaled for 9 food fish, 20 ornamental species, 3 bivalves, and 2 gastropods, with nursery survival improved up to 96.5% in key species.
- A silo-based upweller system was developed and validated

for large-scale bivalve spat production.

- Integrated Multi-Trophic farming systems improved biomass, economic returns, and environmental sustainability.
- Stock enhancement through ranching of three million clam seeds in Ashtamudi Lake, Kerala, and 24.7 million shrimp larvae in the Gulf of Mannar and Palk Bay enhanced natural stocks and fisher livelihoods.

Fish Biology, Nutrition and Health

- Minimum Legal Size recommendations reinforced the protection of juvenile stocks and supported sustainable exploitation in several States.
- Nutrigenomics and probiotic studies improved fish feed efficiency and growth performance in cultured species.
- Disease surveillance identified EUS outbreaks and viral co-infections, while probiotic

innovations strengthened fish health management.

status, supporting conservation planning.

linkages, and climate-resilient practices through innovative farming interventions.

Genetics and Biotechnology

- Transcriptomes were generated for three key bivalves, and mitogenome studies provided insights into stress response.
- In-vitro muscle cell culture on chitosan-carrageenan scaffolds supported cell growth for 17 days, demonstrating potential for marine biotechnology applications.

Climate, Habitat and Biodiversity

- Adverse weather caused significant fishing-day losses, while marine heatwaves triggered coral bleaching. Mangroves, seagrasses, and seaweed beds showed relatively higher resilience.
- Coastal assessments revealed high marine litter loads and microplastic contamination of sediments and biota in certain locations.
- Biodiversity studies documented ecosystem shifts, jellyfish bloom patterns, and marine mammal

Socio-Economics, Governance, Livelihoods

- The fisheries sector contributed ₹48,585 crore GVA, with marketing efficiency reaching 70.88%.
- Behavioural drivers influencing compliance and fisher migration trends were identified.
- TSP/SCSP interventions generated incomes up to ₹15.5 lakh per unit, strengthening livelihoods and entrepreneurship.

National Database and Outreach

- The Marine Fisheries Census 2025 was conducted as a fully digital, geo-referenced exercise using custom-made mobile applications enabling a national database.
- Farmer outreach across six coastal states through the *Viksit Krishi Sankalp Abhiyan*, identified key priorities for R & D planning.
- Krishi Vigyan Kendras enhanced capacity building, market

Honours, Awards, IP and Publications

- Scientists received prestigious recognitions, including Dr Eldho Varghese being inducted as ICAR-National Fellow and elected as NAAS Fellow, while Dr Sumithra T. G. was inducted as NAAS Associate.
- Earned national (*Kshetriya Rajbhasha Puraskar*) and regional awards (Town Official Language Implementation Committee) for Official Language implementation, while the KVK Lakshadweep received national and regional awards for the best KVK from NAAS, New Delhi.
- Three patents were secured, 11 technologies commercialised/ licensed through MoUs, earning revenue, and 10 technologies received ICAR certifications, alongside 140 research papers, 36 technical articles, 35 popular articles, 15 books/manuals, 57 book chapters, and 34 extension materials.

Executive Summary

ICAR-CMFRI's key outputs in 2025 reflect a comprehensive integration of multidisciplinary research, innovation, and outreach, significantly contributing to sustainable marine fisheries management and advancing India's Blue Economy. These achievements were realised through the implementation of 36 in-house projects, 62 externally funded projects, and 18 consultancy assignments, supported by a wide spectrum of national and international activities, events and engagements. The Institute's multidisciplinary efforts span fisheries assessment, mariculture, biodiversity, genetics and genomics, climate change, ecosystem health, and socio-economic development, thereby strengthening evidence-based policy support and enhancing sectoral resilience.

Marine fisheries resource monitoring in 2025 covered 1,258 fish landing centres and approximately 70,000 fishing trips sampled out of the observed 2.5 lakh total trips. Total marine fish landings were estimated at 3.57 million t, marking a 3% increase over 2024. The value of landings was estimated at ₹69,254 crore at the landing centre level and ₹97,702 crore at the retail level.

Pelagic resources dominated the landings, contributing 54%, led by Indian mackerel

(*Rastrelliger kanagurta*) and oil sardine (*Sardinella longiceps*). Cephalopods and threadfin breams recorded notable increases of 25% and 55%, respectively. Regional trends indicated higher landings along the southwest coast compared to the northwest, while the east coast experienced declines largely due to cyclonic disturbances.

Sector-wise analysis revealed an 11% increase in mechanised fisheries, driven by multiday trawlers and purse seines, whereas motorised and non-mechanised sectors declined by 22% and 6%, respectively. State-wise trends showed Karnataka recording a strong increase of 44%, followed by Maharashtra (18%) and West Bengal (12%). Marginal increases were observed in Kerala (2%), Tamil Nadu (1%), and Goa (3%), while declines occurred in Gujarat (15%), Odisha (15%), Andhra Pradesh (13%), and the Andaman & Nicobar Islands (26%), primarily due to adverse weather-related fishing restrictions.

Price realisation improved significantly, with Gujarat recording approximately 20% increase at both landing and retail levels, followed by Kerala with increases of 18% and 17%, respectively. Overall marketing efficiency improved to 70.88%, reflecting strengthened value chains.

Digital innovations played a key role in strengthening fisheries data systems. A web-based information platform hosting details of around 200 marine fish species was developed, alongside the FishEye mobile application for real-time image-based identification and data access. The MARLIN@CMFRI platform was further expanded with over one lakh high-quality images representing 500 marine fishery resources.

The Marine Fisheries Census 2025 marked a major advancement, transitioning to fully digital, geo-referenced, near real-time data collection across all maritime States and Union Territories. The census generated a comprehensive database covering fisher households (including headcount), crafts, gears, infrastructure, and welfare coverage, supporting evidence-based governance and policy planning.

Elasmobranch landings were estimated at 0.4 lakh tonnes in 2025, dominated by sharks (56%), rays (41%), and guitarfishes (3%), with Tamil Nadu, Maharashtra, and Kerala as major contributors. Stock assessment of *Scoliodon laticaudus* indicated a healthy status, while DNA-based forensic tools and stakeholder awareness programmes strengthened conservation efforts.

Tuna and tuna-like fisheries recorded landings of 1.38 lakh t (tunas), 0.51 lakh t (seerfishes), and 0.21 lakh t (billfishes), with increases observed in tunas (15.4%) and seerfishes (18%). Coastal tunas such as *Euthynnus affinis* and *Auxis* spp., along with seerfish (*Scomberomorus commerson*), dominated the landings. Kerala, Karnataka, and Tamil Nadu together contributed 75% of tuna landings. Low juvenile incidence (<25%) indicated stable exploitation.

Bivalve fisheries recorded landings of 1.12 lakh t, a 6.3% increase from 2024, with clams contributing 81.27%, followed by mussels (10.84%) and oysters (7.89%). *Villorita cyprinoides* dominated the landings.

Penaeid shrimp fisheries showed strong seasonal recruitment patterns. *Metapenaeus dobsoni* dominated in catches in Kochi backwaters (>80%), while *Penaeus indicus* dominated in Andhra Pradesh, *M. kutchensis* in Gujarat, and *P. semisulcatus* in Palk Bay.

Non-conventional fisheries were assessed using length-based indicators and molecular barcoding under data-limited conditions. Exploration of mesopelagic resources (200-1000 m depth) documented 40 species across 20 orders and 37 families. Nutritional profiling revealed high mineral content and DHA/EPA, indicating potential for feed and nutraceutical

Broodstocks of 13 food fish, 27 ornamental species, three bivalves, and 13 gastropods have been maintained. Seed production protocols standardised/ upscaled for 9 food fish, 20 ornamental species, three bivalves and two gastropods, while broodstock development is progressing for *Caranx*

sexfasciatus, *Heniochus acuminatus*, and sea urchin (*Stomopneustes variolaris*). Broodstock transport stress mitigation protocols and seed quality indices were identified, which could improve transit survival. Nursery and grow-out protocols significantly improved survival rates, with notable success in species such as John's snapper.

Innovative farming systems such as Integrated Multi-Trophic Aquaculture (IMTA) demonstrated improved resource efficiency, reduced environmental impacts, and enhanced economic returns. Technologies such as seaweed-lobster integration and polyculture systems contributed to the sustainable intensification of mariculture.

Sea ranching initiatives supported stock enhancement and fisher livelihoods, while seaweed cultivation technologies, including spore-based plantlet production of *Gracilaria corticata*, were standardised.

The All India Network Project (AINP) on Mariculture and the AINP on Ornamental Fish Breeding and Culture strengthened technology development, validation, and adoption across coastal regions. AINP Mariculture advanced cage farming, seed production, IMTA, and seaweed cultivation, demonstrating high survival and scalable production of species such as *Siganus vermiculatus*, *Lates calcarifer*, and *Trachinotus* spp. AINP Ornamental Fish programme standardised captive breeding and larval rearing of high-value clownfishes, dottybacks, gobies, and damselfishes.

Marine ecosystem assessments highlighted increasing pressures from climate variability and anthropogenic activities. Cyclonic disturbances

resulted in significant reductions in fishing days, while marine heatwaves contributed to coral bleaching and ecosystem stress. Coral reef studies indicated high mortality in *Acropora* spp., while mangroves, seagrasses, and seaweed beds exhibited relatively higher resilience.

Marine litter studies revealed significant accumulation in some locations, along with the presence of microplastic contamination in sediments and biota, emphasising the need for strengthened coastal management and pollution mitigation. These findings emphasise the need for strengthened pollution management and conservation measures.

Climate change studies identified declining dissolved oxygen levels, increased thermal stress, and impacts on fisheries productivity and livelihoods in some coastal areas. At the same time, research on adaptive responses, including thermal tolerance in key species and enhanced carbon sequestration in mangroves (132.97 to 181.00 kt C/year), provides pathways for developing climate-resilient fisheries and aquaculture systems.

Biodiversity assessments highlighted ecosystem-level changes driven by fishing pressure and environmental variability. Studies on bycatch, jellyfish blooms, and marine mammals contributed to improved conservation planning and compliance with international frameworks.

Research on fish nutrition and health focused on nutrigenomics, functional feeds, and probiotic innovations. A mangrove-derived microbe (*Rhodotorula* sp.) demonstrated probiotic potential. Nutritional and metabolic studies improved feed

efficiency and growth performance in farmed species.

Disease surveillance identified emerging risks such as Epizootic Ulcerative Syndrome and viral co-infections, while microbial bioprospecting revealed novel bioactive compounds, including L-asparaginase with anticancer potential.

Genetics and genomics research generated advanced molecular resources, including transcriptomes and genome sequences, supporting stock assessment, conservation, and selective breeding programmes. Toxicogenomic studies provided insights into environmental stress responses, while advancements in cell culture opened new avenues in biotechnology and aquaculture.

Economic analyses highlighted the strong contribution of marine fisheries to the national economy, with a Gross Value Added (GVA) of ₹48,585 crore. Improved marketing efficiency and value chain performance enhanced sectoral profitability, although disparities in income distribution persist.

Governance studies emphasised behavioural aspects of compliance and decision-making, providing insights for designing effective policy interventions. Livelihood assessments identified vulnerabilities among small-scale fishers, reinforcing the need for inclusive and targeted support mechanisms.

Extension systems, including *Krishi Vigyan Kendras* (KVKs), played a vital role in technology transfer, training, and capacity building. Outreach programmes enhanced stakeholder awareness, adoption of innovations,

and climate-resilient practices, enabling it to win the Best KVK national and regional awards from NAAS, New Delhi. The TSP and SCSP interventions significantly enhanced livelihoods through aquaculture, biofloc systems, and seaweed farming, generating incomes up to ₹15.5 lakh/unit by some beneficiaries.

Institutional governance was strengthened through RAC, IRC, and IMC mechanisms. HRD initiatives included 27 training programmes benefiting 1,247 staff. Additionally, the Institute, including its Headquarters, Regional Centres, and Stations, has also conducted other medium- and short-term training/awareness programs benefiting ~9500 stakeholders.

The Library and Documentation Centre expanded digital access to knowledge resources, significantly enhancing research support and global visibility, with over 5.4 million downloads recorded. The Marine Biodiversity Museum contributed to education and awareness, attracting 12,466 visitors, strengthening public engagement.

Scientific outputs and outcomes included three patents, 11 technology commercialisations/licensing through MoUs earning revenue, and 10 ICAR-certified technologies, besides 140 peer-reviewed publications, 36 technical articles, 35 popular articles, 15 books/manuals, 57 book chapters and 34 extension materials.

Scientists of ICAR-CMFRI earned prestigious recognitions, with Dr Eldho Varghese being inducted as an ICAR-National Fellow for a five-year term and elected as a Fellow of the National Academy of Agricultural Sciences (NAAS), while Dr Sumithra T. G. was elected as an Associate of NAAS.

The nationwide *Viksit Krishi Sankalp Abhiyan* engaged farmers across six coastal states, promoting modern fisheries and aquaculture technologies while capturing field-level feedback and identifying key priority areas for guiding future research interventions.

Swachh Bharat initiatives strengthened awareness on sanitation, nutrition, and environmental stewardship through major campaigns, supported by clean-up drives, health programmes, waste management, and greening activities, enhancing community participation and public health outcomes.

Official Language implementation was promoted through Hindi Fortnight, workshops, internships, and a national webinar, supported by regular monitoring and bilingual communication. The Institute received national and regional recognition, including the *Kshetriya Rajbhasha Puraskar* and TOLIC Rolling Trophies across multiple centres.

The Women's Cell advanced gender equality through targeted programmes, including recognition of women entrepreneurs, health and hygiene awareness, eye check-up camps, and welfare initiatives, reinforcing inclusivity and the role of women in fisheries and institutional development.

Going forward, priority is to be given to scaling proven technologies, strengthening climate-resilient and ecosystem-based fisheries management, and advancing digital monitoring systems. Greater emphasis on interdisciplinary research, industry partnerships, and stakeholder-centric approaches will be essential to address emerging challenges and ensure long-term sustainability and global leadership.

कार्यकारी सारांश

भा कृ अनु प केन्द्रीय समुद्री मात्स्यिकी अनुसंधान संस्थान के वर्ष 2025 के प्रमुख आउटपुट बहुविषयक अनुसंधान, नवाचार और विस्तार गतिविधियों के समन्वित एकीकरण को दर्शाते हैं, जो टिकाऊ समुद्री मात्स्यिकी प्रबंधन में महत्वपूर्ण योगदान देते हैं और भारत की नीली अर्थव्यवस्था को आगे बढ़ाते हैं। ये उपलब्धियाँ 36 आंतरिक परियोजनाओं, 62 बाह्य वित्तपोषित परियोजनाओं तथा 18 परामर्श सेवाओं के प्रभावी क्रियान्वयन के माध्यम से प्राप्त हुईं, जिन्हें राष्ट्रीय एवं अंतरराष्ट्रीय स्तर की विविध गतिविधियों, कार्यक्रमों और सहभागिताओं द्वारा व्यापक समर्थन किया गया था। संस्थान के बहु – विषयक प्रयास मात्स्यिकी मूल्यांकन, समुद्री संवर्धन, जैव विविधता, आनुवंशिकी और जीनोमिक्स, जलवायु परिवर्तन, पारितंत्र स्वास्थ्य और सामाजिक – आर्थिक विकास तक फैले हुए हैं, जिससे साक्ष्य – आधारित नीति समर्थन मजबूत होता है और क्षेत्रीय लचीलापन बढ़ता है।

वर्ष 2025 में समुद्री मात्स्यिकी संसाधन निगरानी के अंतर्गत 1,258 मछली अवतरण केन्द्रों (मछली अवतरण केंद्र) को कवर किया गया तथा कुल अवलोकित लगभग 2.5 लाख मत्स्यन यात्राओं में से लगभग 70,000 यात्राओं का नमूना लिया गया। कुल समुद्री मछली अवतरण 3.57 मिलियन टन आकलित किया गया, जो वर्ष 2024 की तुलना में 3% की वृद्धि को दर्शाता है। मछली अवतरण का मूल्य अवतरण केन्द्र स्तर पर ₹69,254 करोड़ तथा खुदरा स्तर पर ₹97,702 करोड़ आकलित किया गया।

अवतरण में, वेलापवर्ती संसाधनों ने 54%

योगदान दिया जिनमें भारतीय बांगड़ा (रास्ट्रेल्लिगर कनागुरटा) एवं भारतीय तारली (सारडिनेल्ला लॉजिसेप्स) आते हैं। शीर्षपाद और सूत्रपख ब्रीम में क्रमशः 25% और 55% की वृद्धि पायी गयी। क्षेत्रीय रुझानों से संकेत मिलता है कि दक्षिण-पश्चिम तट पर उत्तर-पश्चिम तट की तुलना में अधिक मछली अवतरण दर्ज किया गया, जबकि पूर्वी तट पर चक्रवाती व्यवधानों के कारण मुख्यतः गिरावट देखी गई।

क्षेत्र-वार विश्लेषण से पता चलता है कि मशीनीकृत मात्स्यिकी में 11% की वृद्धि हुई है, जो बहुदिवसीय आनायकों एवं पर्स सीन्स द्वारा संचालित है जबकि मोटर चालित और गैर-मशीनीकृत क्षेत्रों में क्रमशः 22% और 6% की गिरावट आई है। राज्यवार प्रवृत्तियों से पता चला है कि कर्नाटक में 44% की वृद्धि हुई, जिसके बाद महाराष्ट्र (18%) और पश्चिम बंगाल (12%) आता हैं। केरल (2%), तमिलनाडु (1%) और गोवा (3%) में कम वृद्धि पायी गयी, जबकि प्रतिकूल मौसम और मत्स्यन प्रतिबंधों के कारण गुजरात (15%), ओडिशा (15%), आंध्र प्रदेश (13%) और अंडमान और निकोबार द्वीप समूह (26%) में गिरावट पायी गयी।

मूल्य प्राप्ति में उल्लेखनीय वृद्धि हुई, जिसमें गुजरात में अवतरण और खुदरा दोनों स्तरों पर लगभग 20% की वृद्धि दर्ज की गयी। इसके बाद केरल में क्रमशः 18% और 17% की वृद्धि देखी गयी। समग्र विपणन दक्षता बढ़कर 70.88% हो गई, जो सुदृढ़ मूल्य शृंखलाओं को दर्शाती है।

डिजिटल नवाचारों ने मत्स्य डेटा प्रणालियों को सुदृढ़ बनाने में महत्वपूर्ण भूमिका निभाई।

लगभग 200 समुद्री मछली प्रजातियों के विवरण को समाहित करने वाला एक वेब-आधारित सूचना मंच विकसित किया गया। इसके साथ ही, रियल-टाइम छवि-आधारित पहचान और डेटा उपलब्धता के लिए FishEye मोबाइल एप्लिकेशन भी विकसित किया गया। इसके अतिरिक्त, MARLIN@CMFRI प्लेटफॉर्म का और विस्तार किया गया, जिसमें 500 समुद्री मात्स्यिकी संसाधनों का प्रतिनिधित्व करने वाली एक लाख से अधिक उच्च-गुणवत्ता वाली छवियाँ शामिल की गयीं।

समुद्री मात्स्यिकी जनगणना 2025 ने एक महत्वपूर्ण प्रगति को चिह्नित किया, जिसमें सभी समुद्री राज्यों और केंद्र शासित प्रदेशों में पूर्णतः डिजिटल, भू-संदर्भित तथा लगभग वास्तविक समय डेटा संग्रहण की व्यवस्था अपनायी गयी। इस जनगणना के माध्यम से मछुआरा परिवारों (जनसंख्या सहित), नौकाओं, जाल/उपकरणों, बुनियादी ढाँचे तथा कल्याणकारी योजनाओं के कवरेज को समाहित करते हुए एक व्यापक डाटाबेस तैयार किया गया। यह डाटाबेस साक्ष्य-आधारित शासन और नीतिगत योजना निर्माण को सुदृढ़ करने में सहायक है।

वर्ष 2025 में उपास्थिमीन का अवतरण 0.4 लाख टन आकलित किया गया जिसमें सुरा (56%), रे मछली (41%) तथा गिटार मछली (3%) अधिक पायी गयीं। इस श्रेणी में तमिलनाडु, महाराष्ट्र और केरल प्रमुख योगदानकर्ता रहे। स्कोलियोडोन लाटीकोडस के प्रभव आकलन से इसकी स्थिति स्वस्थ पायी गयी। साथ ही, डी एन ए-आधारित फॉरेंसिक उपकरणों तथा हितधारकों के जागरूकता कार्यक्रमों के माध्यम से संरक्षण प्रयासों को और

सुदृढ़ किया गया।

वर्ष 2025 में ट्यूना एवं ट्यूना जैसी मात्स्यिकी संसाधनों के अंतर्गत अवतरण क्रमशः 1.38 लाख टन (ट्यूना), 0.51 लाख टन (सुरमई) तथा 0.21 लाख टन (बिलफिश) आकलित किया गया। ट्यूना में 15.4% तथा सुरमई में 18% की वृद्धि देखी गयी। तटीय ट्यूना प्रजातियाँ जैसे *यूथैनस एफिनिस* और *ओक्सिस प्र.* तथा सुरमई (*स्कॉम्बेरोमोरस कमेर्सन*) अवतरण में अधिक पायी गयी। केरल, कर्नाटक और तमिलनाडु ने मिलकर कुल ट्यूना अवतरण का लगभग 75% योगदान दिया। किशोर मछली पकड़ की मात्रा (<25%) यह संकेत देती है कि इन संसाधनों का विदोहन संतुलित एवं स्थिर स्थिति में है।

वर्ष 2025 में, द्विकपाटी मात्स्यिकी संसाधनों का अवतरण 1.12 लाख टन आकलित किया गया जो वर्ष 2024 की तुलना में 6.3% अधिक है। इसमें सीपी का सर्वाधिक योगदान 81.27% रहा, इसके बाद शुक्ति 10.84% तथा शंबु 7.89% आते हैं। अवतरण में, *विल्लोरिटा सैप्रीनोयिडस* प्रजाति अधिक पायी गयी।

पेनिआइड झींगा मात्स्यिकी संसाधनों में विभिन्न क्षेत्रों में अधिक मौसमी रिस्कूमेंट पैटर्न देखा गया, जिसमें आवास के अनुसार विभिन्न प्रजातियाँ पायी गयीं। कोच्ची पश्च जल में, 80% से अधिक *मेटापीनस डोबसोनी* पायी गयी जबकि आंध्र प्रदेश के मुहानों में *पीनियस मोनोडोन* अधिक पायी गयी। गुजरात में *मेटापीनियस कछेत्सिस* तथा पाक बे में *पीनियस सेमिसल्केटस* अधिक पायी गयीं।

गैर-पारंपरिक मात्स्यिकी संसाधनों का आकलन डेटा-सीमित परिस्थितियों में लंबाई-आधारित संकेतकों तथा आणविक बारकोडिंग तकनीकों के माध्यम से किया गया। 200–1000 मीटर गहराई वाले मेसोपेलैजिक संसाधनों की खोज में 20 गणों और 37 कुलों में फैली 40 प्रजातियों का प्रलेखन किया गया। पोषण संबंधी विश्लेषण से उच्च खनिज तथा डी एच ए / ई पी ए की प्रचुरता पायी गयी, जो इन्हें पशु-आहार और न्यूट्रास्यूटिकल उपयोग के लिए संभावनाशील बनाती है।

खाद्य मछलियों, 27 अलंकारी मछली 13

प्रजातियों, तीन द्विकपाटी तथा 13 शीर्षपाद का ब्रूडस्टॉक सफलतापूर्वक किया गया। 9 खाद्य मछलियों, 20 अलंकारी मछली प्रजातियों, तीन द्विकपाटी तथा दो शीर्षपाद के लिए बीज उत्पादन प्रोटोकॉल का मानकीकरण एवं विस्तार किया गया। साथ ही, *कारंक्स सेक्सफासियेटस*, *हेनियोचस अक्यूमिनीयेटस* तथा समुद्री अर्चिन *स्टोमोपन्यूसटेस वेरियोलारिस* के लिए ब्रूडस्टॉक विकास प्रगति पर है। ब्रूडस्टॉक के परिवहन के दौरान तनाव को कम करने के लिए प्रोटोकॉल विकसित किए गए तथा बीज गुणवत्ता सूचकांक की पहचान की गयी, जिससे परिवहन के दौरान जीवित रहने की दर में सुधार संभव है। नर्सरी एवं पालन प्रोटोकॉल के कारण जीवित रहने की दर में उल्लेखनीय वृद्धि हुई है, विशेष रूप से जॉन स्नाप्पर (*लुटजानस जोहिनी*) जैसी प्रजातियों में महत्वपूर्ण सफलता प्राप्त हुई है।

एकीकृत बहु पौष्टिक जलजीव पालन (आइ एम टी ए) जैसे नवोन्मेषी पालन प्रणालियों ने संसाधन दक्षता में सुधार, पर्यावरणीय प्रभावों में कमी तथा आर्थिक लाभ में वृद्धि को प्रदर्शित किया। समुद्री शैवाल-महाचिंगट एकीकरण तथा पॉलीकल्चर जैसी तकनीकों ने समुद्री संवर्धन के टिकाऊ तीव्रीकरण में महत्वपूर्ण योगदान दिया।

समुद्र रैंचन पहलों ने मछली प्रभव संवर्धन तथा मछुआरों की आजीविका को समर्थन प्रदान किया। वहीं, समुद्री शैवाल संवर्धन प्रौद्योगिकियों, जिसमें *ग्रेसिलेरिया कोटिकेटा* के बीजाणु-आधारित पादपक उत्पादन शामिल है, का सफलतापूर्वक मानकीकरण किया गया।

समुद्री संवर्धन पर अखिल भारतीय नेटवर्क परियोजना (ए आइ एन पी) तथा अलंकारी मछली प्रजनन एवं पालन पर ए आइ एन पी ने तटीय क्षेत्रों में प्रौद्योगिकी विकास, प्रमाणीकरण और अंगीकरण को सुदृढ़ किया। ए आइ एन पी समुद्री संवर्धन के अंतर्गत पिंजरा मछली पालन, बीज उत्पादन, आइ एम टी ए तथा समुद्री शैवाल संवर्धन में प्रगति हुई, जिसमें *सिगानस वेर्मिकुलेटस*, *लेटस कल्कारिफर* तथा *ट्रकिनोटस प्र.* जैसी प्रजातियों का अतिजीविता दर और बड़े पैमाने पर उत्पादन प्रदर्शित किया गया। वहीं, ए आइ एन पी अलंकारी मछली कार्यक्रम के तहत उच्च मूल्य वाली क्लाउन

मछली, डॉटीबैक्स, गोबीज़ तथा डैम्सल मछली की प्रग्रहण अवस्था में प्रजनन एवं डिम्बक पालन तकनीकों का सफलतापूर्वक मानकीकरण किया गया।

समुद्री पारितंत्र के आकलनों से जलवायु परिवर्तनशीलता तथा मानवीय गतिविधियों के बढ़ते दबाव स्पष्ट रूप से सामने आए। चक्रवाती घटनाओं के कारण मछली पकड़ने के दिनों में उल्लेखनीय कमी आयी, जबकि समुद्री हीटवेव (marine heatwaves) ने कोरल ब्लीचिंग (coral bleaching) और पारितंत्र पर तनाव को बढ़ाया। प्रवाल भिती अध्ययनों में *एक्रोपोरा प्र.* में उच्च मृत्यु दर दर्ज की गयी, जबकि मैंग्रोव, समुद्री घास और समुद्री शैवाल संस्तर में अपेक्षाकृत अधिक लचीलापन पाए गए।

समुद्री अपशिष्ट संबंधी अध्ययनों से कुछ स्थानों पर इसके उल्लेखनीय संचयन का पता चला, साथ ही अवसाद एवं जीव-जंतुओं में माइक्रोप्लास्टिक प्रदूषण की उपस्थिति भी दर्ज की गयी। यह स्थिति तटीय प्रबंधन को सुदृढ़ करने तथा प्रदूषण नियंत्रण उपायों को मजबूत करने की आवश्यकता को रेखांकित करती है। ये निष्कर्ष प्रदूषण प्रबंधन तथा संरक्षण उपायों को और अधिक प्रभावी बनाने की आवश्यकता पर बल देते हैं।

जलवायु परिवर्तन संबंधी अध्ययनों में कुछ तटीय क्षेत्रों में घुलित ऑक्सीजन के स्तर में कमी, तापीय तनाव में वृद्धि तथा मछली उत्पादकता और आजीविका पर प्रतिकूल प्रभावों की पहचान की गयी। साथ ही, अनुकूलन उपायों पर किए गए अनुसंधान—जैसे प्रमुख प्रजातियों में तापीय सहनशीलता तथा मैंग्रोव में कार्बन अवशोषण में वृद्धि (132.97 से 181.00 किलो टन कार्बन/वर्ष)—जलवायु-लचीलापन मछली जलजीव पालन प्रणालियों के विकास के लिए मार्ग प्रशस्त करते हैं।

जैव विविधता के आकलनों ने मत्स्यन दबाव तथा पर्यावरणीय परिवर्तनशीलता के कारण पारितंत्र स्तर पर हो रहे परिवर्तनों को उजागर किया। उप पकड़, जेलीफिश प्रस्फुटन तथा समुद्री स्तनियों पर किए गए अध्ययनों ने संरक्षण योजना में सुधार तथा अंतर्राष्ट्रीय रूपरेखाओं के

अनुपालन को सुदृढ़ किया।

मत्स्य पोषण एवं स्वास्थ्य पर अनुसंधान में न्यूट्रिजीनोमिक्स, फंक्शनल फीड तथा प्रोबायोटिक नवाचारों पर विशेष ध्यान दिया गया। मैग्रोव से प्राप्त सूक्ष्मजीव *रोडोटोरुला प्र* में प्रोबायोटिक क्षमता पायी गयी। पोषण एवं चयापचय अध्ययनों के माध्यम से पालन की जाने वाली प्रजातियों में खाद्य दक्षता और वृद्धि में सुधार हुआ।

रोग निगरानी के माध्यम से एपीज़ूटिक अल्सरेटिव सिन्ड्रोम (ई यू एस) तथा वायरल सह-संक्रमण जैसे उभरते जोखिमों की पहचान की गई। वहीं, सूक्ष्मजीव बायोप्रोस्पेक्टिंग से नवीन जैव सक्रिय यौगिकों की खोज हुई, जिनमें कैंसर-रोधी क्षमता वाला एल-आस्पराजिनेस भी शामिल है।

आनुवंशिकी एवं जीनोमिक्स अनुसंधान के अंतर्गत ट्रांसक्रिप्टोम तथा जीनोम अनुक्रम जैसे उन्नत आणविक संसाधन विकसित किए गए, जो प्रभव आकलन, परिरक्षण तथा चयनात्मक प्रजनन कार्यक्रमों में सहायक हैं। टॉक्सिकोजेनोमिक (toxicogenomic) अध्ययनों ने पर्यावरणीय तनाव के प्रति जैविक प्रतिक्रियाओं को समझने में महत्वपूर्ण जानकारी प्रदान की, जबकि सेल कल्चर (cell culture) में हुई प्रगति ने जैव प्रौद्योगिकी और जलजीव पालन के क्षेत्र में नए अवसर खोले हैं।

आर्थिक विश्लेषणों से यह स्पष्ट हुआ कि समुद्री मात्स्यिकी क्षेत्र की राष्ट्रीय अर्थव्यवस्था में महत्वपूर्ण योगदान है, जिसका सकल मूल्य वर्धन ₹48,585 करोड़ रहा। विपणन दक्षता तथा मूल्य शृंखला के बेहतर प्रदर्शन से क्षेत्र की लाभप्रदता में वृद्धि हुई है, हालांकि आय वितरण में असमानताएँ अब भी बनी हुई हैं।

शासन संबंधी अध्ययनों ने अनुपालन और निर्णय-निर्माण के व्यवहारिक पहलुओं पर जोर दिया, जिससे प्रभावी नीतिगत हस्तक्षेपों के निर्माण के लिए महत्वपूर्ण अंतर्दृष्टि प्राप्त हुई। आजीविका आकलनों ने लघु स्तर के मछुआरों की संवेदनशीलताओं को उजागर किया, जिससे समावेशी एवं लक्षित सहायता तंत्र की आवश्यकता पर बल मिला।

कृषि विज्ञान केंद्र सहित विस्तार प्रणालियों ने प्रौद्योगिकी हस्तांतरण, प्रशिक्षण एवं क्षमता निर्माण में महत्वपूर्ण भूमिका निभाई। प्रसार कार्यक्रमों के माध्यम से हितधारकों में जागरूकता, नवाचारों को अपनाने तथा जलवायु-लचीलापन प्रथाओं को बढ़ावा मिला। टी एस पी एवं एस सी एस पी हस्तक्षेपों ने जलजीव पालन, बायोफ्लॉक प्रणालियों तथा समुद्री शैवाल पैदावार के माध्यम से आजीविका में उल्लेखनीय सुधार किया, जिससे प्रति इकाई ₹15.5 लाख तक की आय की प्राप्ति हुई।

संस्थागत शासन को आर ए सी, आइ आर सी तथा आइ एम सी व्यवस्था के माध्यम से सुदृढ़ किया गया। मानव संसाधन विकास पहलों के अंतर्गत 27 प्रशिक्षण कार्यक्रम आयोजित किए गए, जिनसे 1,247 कर्मचारियों को लाभ हुआ। इसके अतिरिक्त, संस्थान के मुख्यालय, क्षेत्रीय केंद्रों एवं स्टेशनों द्वारा मध्यम एवं अल्पकालिक प्रशिक्षण/जागरूकता कार्यक्रम भी आयोजित किए गए, जिनसे लगभग 9,500 हितधारक लाभान्वित हुए।

पुस्तकालय एवं प्रलेखन केंद्र ने ज्ञान संसाधनों तक डिजिटल पहुँच का विस्तार किया, जिससे अनुसंधान सहयोग और वैश्विक दृश्यता में उल्लेखनीय वृद्धि हुई, तथा 5.4 मिलियन से अधिक डाउनलोड दर्ज किए गए। समुद्री जैव विविधता संग्रहालय ने शिक्षा एवं जन-जागरूकता में महत्वपूर्ण योगदान दिया और 12,466 आगंतुकों को आकर्षित कर जन सहभागिता को सुदृढ़ किया।

वैज्ञानिक उपलब्धियों में तीन पेटेंट, 11 प्रौद्योगिकी वाणिज्यीकरण तथा 10 भा कृ अनु प-प्रमाणित प्रौद्योगिकियाँ शामिल हैं। इसके अतिरिक्त 140 सहकर्मी-समीक्षित शोध पत्र, 36 तकनीकी लेख, 35 लोकप्रिय लेख, 15 पुस्तकें/मैनुअल तथा 57 पुस्तक अध्याय प्रकाशित किए गए।

डॉ. एल्दो वर्गोस को पाँच वर्ष की अवधि के लिए भा कृ अनु प -नेशनल फेलो के रूप में नामित किया गया तथा उन्हें राष्ट्रीय कृषि विज्ञान अकादमी (NAAS) का फेलो भी चुना गया। डॉ. सुमित्रा टी. जी को राष्ट्रीय कृषि विज्ञान अकादमी

(NAAS) का एसोसिएट चुना गया।

विकसित कृषि संकल्प अभियान के अंतर्गत छह तटीय राज्यों में किसानों की व्यापक भागीदारी सुनिश्चित की गयी, जिसमें आधुनिक मछली एवं जलजीव पालन प्रौद्योगिकियों का प्रसार किया गया। साथ ही, क्षेत्रीय स्तर पर फीडबैक संकलित कर भविष्य के अनुसंधान हस्तक्षेपों हेतु प्रमुख प्राथमिकता क्षेत्रों की पहचान की गयी।

स्वच्छ भारत पहल के माध्यम से स्वच्छता, पोषण तथा पर्यावरण संरक्षण के प्रति जागरूकता को सुदृढ़ किया गया। स्वच्छता अभियान, स्वास्थ्य कार्यक्रम, अपशिष्ट प्रबंधन तथा हरित गतिविधियों के जरिए सामुदायिक भागीदारी और जन-स्वास्थ्य परिणामों में सुधार हुआ।

राजभाषा कार्यान्वयन को हिन्दी पखवाड़ा, कार्यशालाओं, प्रशिक्षुता कार्यक्रम तथा राष्ट्रीय वैज्ञानिक हिन्दी वेबिनार के माध्यम से प्रोत्साहित किया गया। नियमित निगरानी एवं दस्तावेजों का द्विभाषीकरण किया गया। संस्थान को क्षेत्रीय राजभाषा पुरस्कार तथा विभिन्न केंद्रों पर न रा का स रोलिंग ट्रॉफियाँ प्राप्त कर राष्ट्रीय एवं क्षेत्रीय स्तर पर सम्मानित किया गया।

महिला सेल ने लैंगिक समानता को बढ़ावा देने हेतु लक्षित कार्यक्रम संचालित किए, जिनमें महिला उद्यमियों का सम्मान, स्वास्थ्य एवं स्वच्छता जागरूकता, नेत्र जांच शिविर तथा कल्याणकारी पहल शामिल हैं। इन प्रयासों ने मत्स्य क्षेत्र एवं संस्थागत विकास में महिलाओं की भूमिका को सुदृढ़ किया।

भविष्य की दिशा में, सिद्ध प्रौद्योगिकियों के विस्तार, जलवायु-लचीलापन एवं पारितंत्र-आधारित मात्स्यिकी प्रबंधन को मजबूत करने तथा डिजिटल निगरानी प्रणालियों को उन्नत करने पर विशेष ध्यान दिया जाएगा। साथ ही, अंतर्विषयक अनुसंधान, उद्योग साझेदारी तथा हितधारक-केंद्रित दृष्टिकोण को बढ़ावा देना आवश्यक होगा, ताकि उभरती चुनौतियों का समाधान कर दीर्घकालिक स्थिरता और वैश्विक नेतृत्व सुनिश्चित किया जा सके।

Fisheries Resource Monitoring

The ICAR-CMFRI continued activities on marine fisheries monitoring, fish landing estimates, fish stock assessments, and research and development on sustainable fisheries management in India. India's marine fish landings were estimated at 3.57 million t in 2025, showing a 3% increase from 2024, with Indian mackerel and oil sardines dominating the catches. Strengthened fisheries monitoring systems through systematic surveys, georeferenced data acquisition, digital tools, and updated databases such as FCSA 2.0 and MARLIN@CMFRI, along with FishEye, a prototype AI-based species identification system, developed by the Institute. Research focused on fisheries of elasmobranchs, large pelagic fish, small-scale bivalve and gastropods, penaeid shrimp nursery habitats, non-conventional fisheries resources, and mesopelagic resources generated essential biological, ecological, and stock-status information, highlighting resource resilience, recruitment dynamics, opportunities for sustainable utilisation and support to science-based resource management in India.



Squid landed at Port Kollam fishing harbour, Kerala

Geo-referenced marine fisheries resources information system for Indian EEZ based on enhanced survey protocols and methodological platforms for stock assessment, modelling and forecasting

Project: FRAEED/GIS/01

India’s marine fish landings 2025

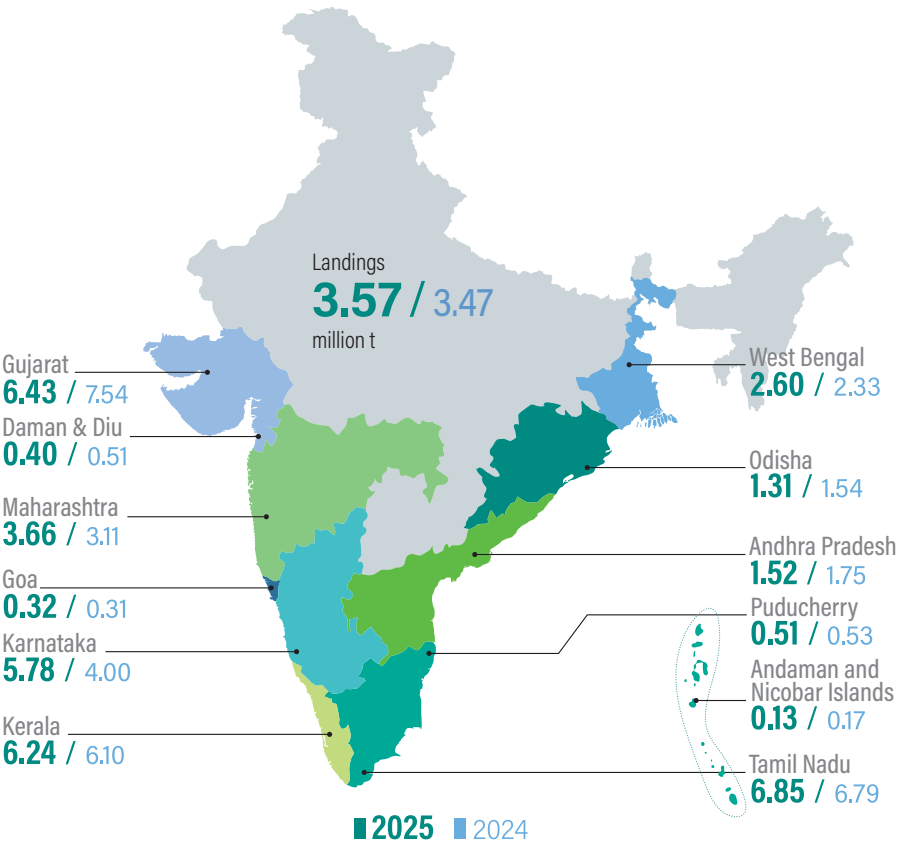
Trends, challenges and pathways to sustainable growth

India occupies a prominent position in the global fisheries sector, contributing nearly 8% of the world’s total fish production (FAO, 2024) and ranking among the leading producers. Despite the rapid

India’s marine fish landings reached 3.57 million t in 2025, marking a 3% increase over 2024.

expansion of aquaculture, marine capture fisheries remain central to the national economy, supporting the livelihoods of millions of coastal communities. Government initiatives such as the Pradhan Mantri Matsya Sampada Yojana (PMMSY) aim to modernise fisheries infrastructure and enhance fishers’ incomes through sustainable and responsible fisheries management.

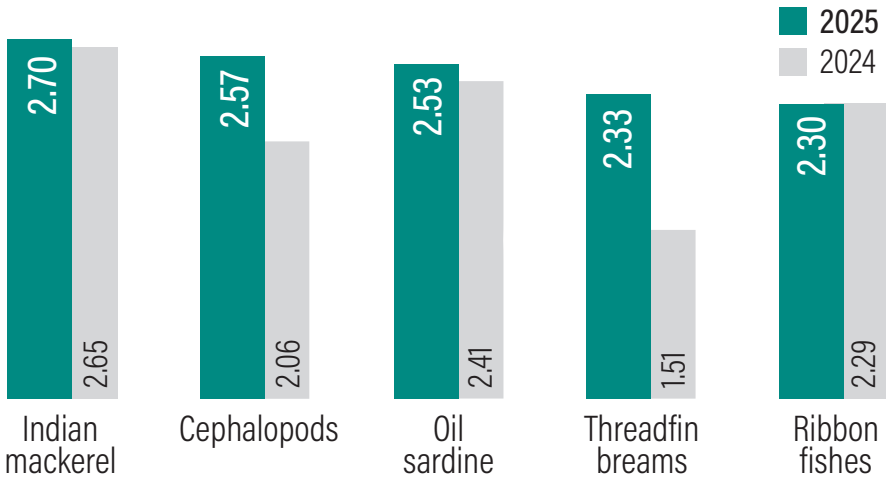
Monitoring of marine fisheries is primarily undertaken by ICAR-CMFRI through a scientifically designed and adaptive data



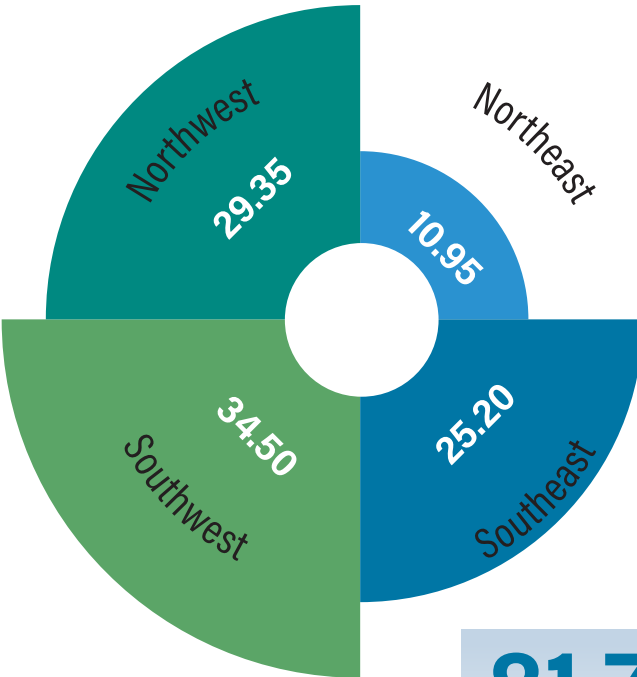
State-wise marine fish landings (in lakh t)

collection system. Using a two-stage stratified random sampling approach, the programme covers 1,258 landing centres along the mainland coast and the Andaman and Nicobar Islands, ensuring reliable and consistent fisheries statistics.

Around 150 trained technicians function as harbour-based observers, regularly recording catch and fishing effort data during field visits. Continuous training programmes strengthen their expertise in species identification and taxonomy, improving the accuracy of fisheries information.



Major species/ groups with their contribution (lakh t) to the total marine fish landings in India

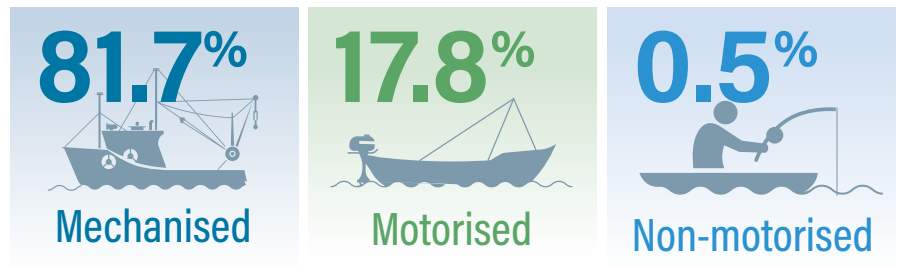


Region-wise landings (%)

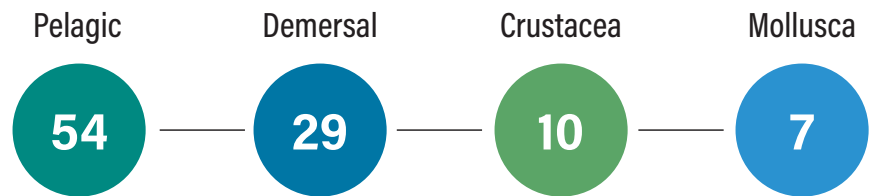
The system has been strengthened through digital tools such as the Fish Catch Survey and Analysis (FCSA) 2.0 application, enabling near real-time data collection on landings, quality parameters and environmental influences on fishing activity. Spatial information on fishing grounds also supports analyses such as landings per unit effort and biomass estimation across defined grids. In 2025, about 70,000 boat trips were observed out of approximately 2.5 lakh fishing trips recorded during sampling days.

India's marine fish landings reached 3.57 million t in 2025, a 3% increase from 3.47 million t in 2024. However, Gujarat recorded a 15% decline and lost its top position, mainly due to reduced fishing days caused by adverse weather, maritime activity restriction due to Operation Sindoor ban in mid-May, extension of the fishing from 60 to 75 days (June to mid-August), and cyclone *Shakti* in early October, which also affected Daman and Diu (20% decline).

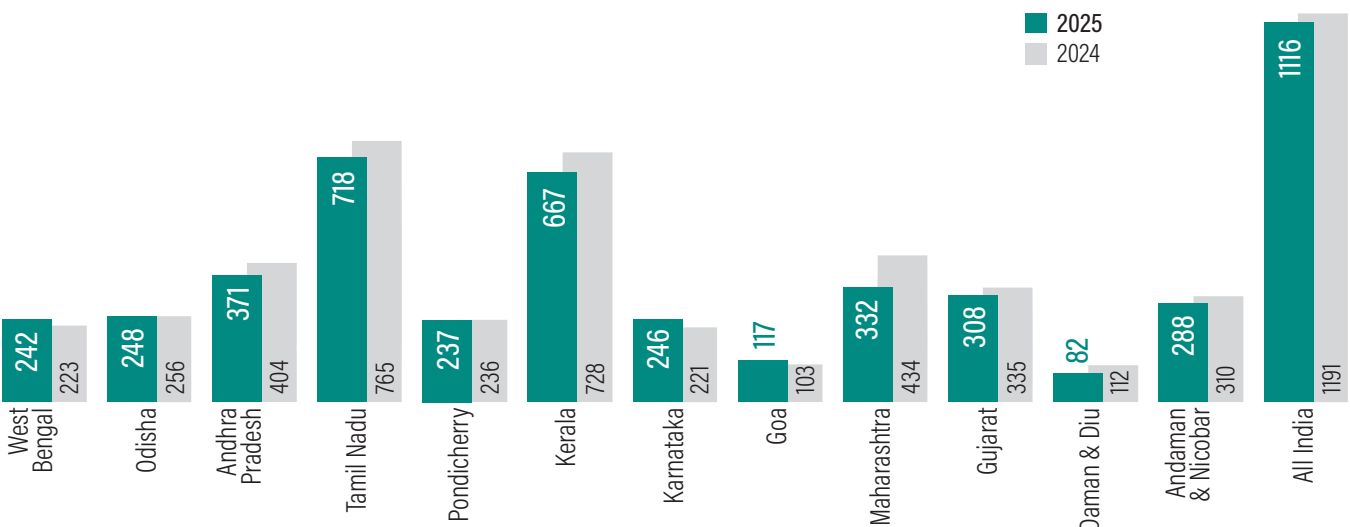
On the east coast, fishing operations were disrupted by cyclone *Montha* in late October and cyclone *Ditwah* during late November–early



Sector-wise landings (%)



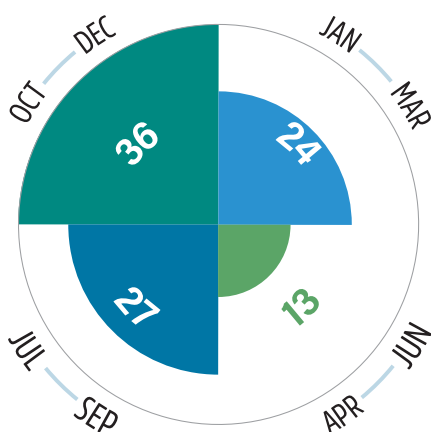
Fish assemblage (%)



Exploited/harvested/ species diversity (Nos.)

December, affecting Odisha, Andhra Pradesh, Tamil Nadu, Puducherry and the Andaman and Nicobar Islands. Consequently, landings declined in Odisha (15%), Andhra Pradesh (13%), Puducherry (3%) and the Andaman and Nicobar Islands (26%).

Cephalopods and threadfin breams increased by 25% and 55%, respectively, reaching decadal-high levels, while ribbon fish landings



Quarter-wise landings (%)

remained stable. The mechanised sector increased by 11%, whereas the motorised and non-motorised sectors declined by 22% and 6%, respectively. Multi-day trawl nets recorded an increase of over 2 lakh t

Pelagic resources dominated marine harvests with a 54% share, led by Indian mackerel and oil sardine, while cephalopods and threadfin breams recorded decadal-high levels.

with more than 7,000 additional trips, and mechanised purse seines increased by about 1.2 lakh t, mainly in Karnataka and Maharashtra.

Estimated marine fish landings (t) in India-2025

PELAGIC FINFISH

CLUPEOIDS	
Wolf herring	11746
Oil sardine	253260
Lesser sardines	129609
Hilsa shad	13429
Other shads	30754
Anchovies	
<i>Coilia</i>	55816
<i>Setipinna</i>	16507
<i>Stolephorus</i>	80399
<i>Thryssa</i>	29115
Other clupeids	66581
Bombayduck	96170
Half beaks & Full beaks	10038
Flying fishes	3539
Ribbonfish	230099

CARANGIDS

Horse mackerel	36270
Scads	75981
Leather-jackets	15536
Other carangids	126158

MACKERELS

Indian mackerel	269757
Other mackerels	67

SEERFISH

<i>Scomberomorus commerson</i>	32925
<i>Scomberomorus guttatus</i>	17256
<i>Scomberomorus lineolatus</i>	5
<i>Acanthocybium solandri</i>	518

TUNNIES

<i>Euthynnus affinis</i>	58949
<i>Auxis</i> spp.	32026
<i>Katsuwonus pelamis</i>	21028
<i>Thunnus tonggol</i>	3576
<i>Thunnus albacares</i>	20257
Other tunnies	1823

Bill fishes	20650
Barracudas	37910
Mulletts	15558
Unicorn cod	238

OTHERS

<i>Odonus niger</i>	38984
<i>Lagocephalus</i> spp.	23276

MISCELLANEOUS

	189352
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Production of resources that are harvested by localised effort

Seaweed	82728
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TOTAL

	3768939
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DEMERSAL FINFISH

ELASMOBRANCHS

Sharks	22368
Skates / Guitarfish	1228
Rays	16151
Eels	12893
Catfishes	57154
Lizard fishes	67191

PERCHES

Rock cods	57307
Snappers	11106
Pig-face breams	10137
Threadfin breams	233492
Bullseyes	35858
Other perches	62745
Goatfishes	15516
Threadfins	13742
Croakers	112426
Silverbellies	46702
Whitefish	5396

POMFRETS

Black pomfret	20752
Silver pomfret	25349
Chinese pomfret	7209

FLAT FISHES

Halibut	1074
Flounders	262
Soles	33215

CRUSTACEANS

Penaeid shrimps	163215
Non-penaeid shrimps	141650
Lobsters	1632
Crabs	61115
Stomatopods	6858

MOLLUSCS

Bivalves	3616
Gastropods	4877
Cephalopods	
Squids	148595
Cuttlefish	95835
Octopus	12398

TOTAL

	3574226
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Mussels, Oysters & Clams	111985
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	3768939
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Karnataka recorded a strong recovery with a 44% increase in landings after a 34% decline in 2024. Maharashtra and West Bengal also showed notable growth of 18% and 12%, respectively, while Goa, Kerala and Tamil Nadu registered marginal increases of 3%, 2% and 1%, respectively.

Regionally, the southwest coast surpassed the northwest in total landings, mainly due to the surge in Karnataka. Pelagic resources dominated with a 54% share,

The estimated value of marine fish landings reached ₹69,254 crore at landing centres and ₹97,702 crore at retail markets.

followed by demersal, crustacean and molluscan groups. Indian mackerel and oil sardine led the pelagic catch, while threadfin breams dominated demersal resources. Penaeid shrimps showed a slight decline, non-penaeid shrimps declined by 24%, and squids and cuttlefish were the main molluscan contributors. Indian mackerel remained the most landed species with a 2% increase, while cephalopods and threadfin breams rose by 25% and 55%, respectively, reaching decadal-high levels; ribbon fish landings remained stable.

Sector-wise, mechanised landings increased by 11%, whereas motorised and non-motorised sectors declined by 22% and 6%. Multi-day trawl nets contributed an additional 2 lakh t with over 7,000 more trips, and mechanised purse seines increased by about 1.2 lakh t, mainly from Karnataka and Maharashtra. Most gears in the motorised sector declined in both landings and operations. Average landings were estimated at 3,426 kg/trip for mechanised crafts, 148 kg/trip

for motorised crafts and 37 kg/trip for non-motorised crafts.

Seasonally, the fourth quarter contributed the highest share (36%) of annual landings, followed by the third and first quarters, while the second quarter recorded the lowest due to fishing bans and the southwest monsoon. A total of 1,116 taxa were recorded, reflecting the high biodiversity of India's marine ecosystems. Although total landings increased by 3% in 2025, regional variations, particularly cyclone-related declines, highlight the need for adaptive and weather-resilient fisheries management supported by real-time monitoring and systematic data analysis.

Market dynamics, price realization, and trade

Marine fish landings in 2025 were valued at ₹69,254 crore at the landing centre level, a 10.45% increase from 2024, and ₹97,702 crore at the retail level, reflecting an 8.43% rise. National marketing efficiency improved to

70.88%, with Kerala recording the highest state-level efficiency (72.83%) and Goa the lowest (67.30%). Gujarat achieved the highest price realisation at both landing centre (20%) and retail (20%) levels, followed by Kerala with increases of 18% and 17%, respectively, compared with 2024.

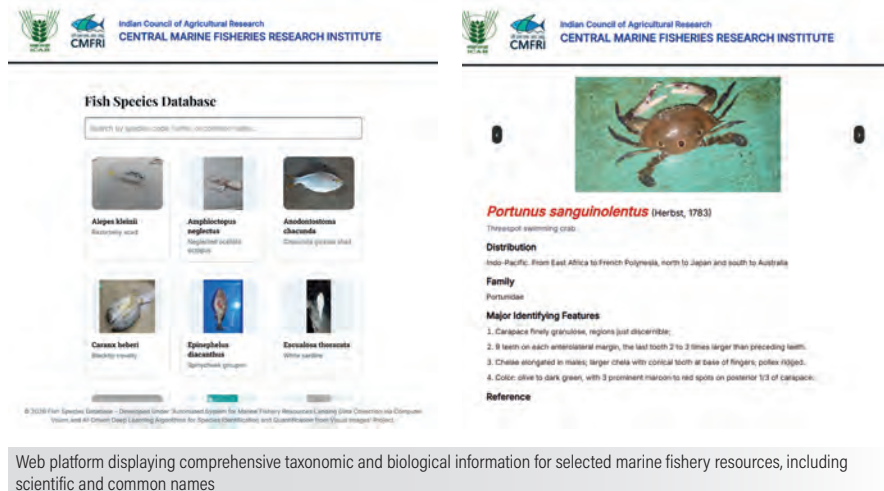
Automated system for marine fishery resources landing data collection via computer vision and AI-driven deep learning algorithms for species identification and quantification from visual images

Project: FRAEED/CV/02

MARLIN@CMFRI has been developed as a centralised digital platform to support automated marine fisheries data systems, functioning as an image repository for training and validating computer vision and



Representative images of species available in the MARLIN@CMFRI image database



Web platform displaying comprehensive taxonomic and biological information for selected marine fishery resources, including scientific and common names

deep learning models for species identification from fishery landing images. The repository contains over 1 lakh images representing about 500 marine fishery resources, generated through systematic landing centre surveys across the Indian coast and supplemented by citizen science contributions.

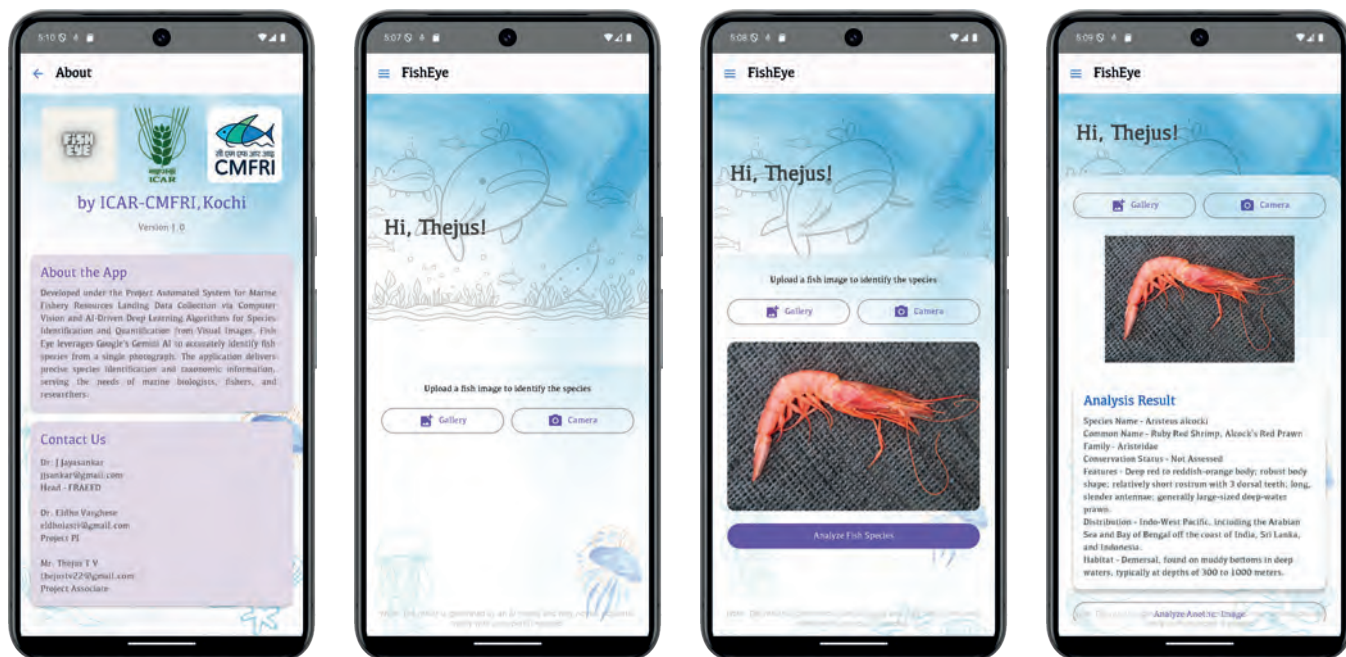
Alongside the MARLIN@CMFRI image repository, a dedicated web-based information platform was developed as a comprehensive repository of marine fish species information. The platform

MARLIN@CMFRI supports AI-based marine fisheries research, hosting over one lakh images of nearly 500 marine fishery resources from landing centres and citizen science, with taxonomic information and metadata to support accurate species identification.

currently hosts detailed profiles of about 200 marine fishery resources, providing structured species-level information to support research, education and fisheries management.

It offers taxonomic and biological information with high-quality visual references, serving as an accessible knowledge base for researchers, students, fisheries professionals, extension personnel and the public. Each species entry is supported by metadata such as species and common names, distribution, author citation, family, diagnostic features, references and photographic records, facilitating accurate identification and supporting AI-based classification models.

An AI-based mobile application, FishEye, has also been developed to enable automated fish species identification from images. The Android application allows users to capture images using the device camera or upload photographs from the gallery, which are analysed using AI-based image recognition through the Google Gemini AI API to generate species-level predictions.



Interface of the FishEye mobile application demonstrating AI-driven image recognition for fish species identification using the Google Gemini AI API

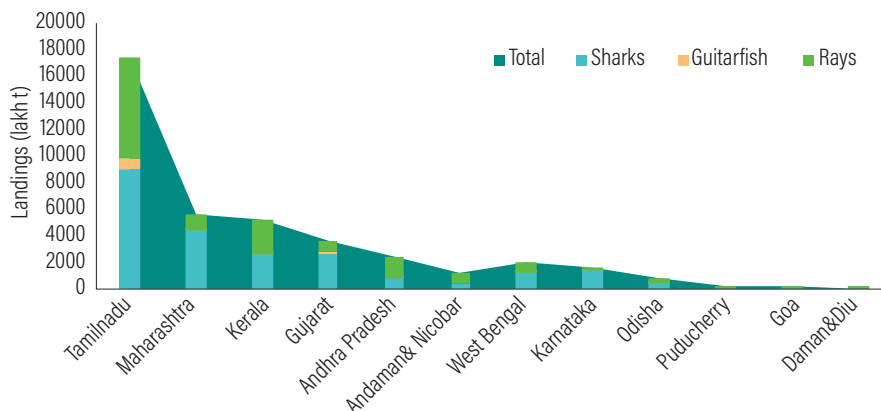
Upon identification, the application provides species information including scientific and common names, taxonomic family, conservation status, diagnostic features, distribution and habitat. At present, the system operates in a local or controlled environment for testing, performance evaluation and refinement prior to public deployment.

Decoding the interplay of fisheries-dependent and fisheries-independent factors on elasmobranchs

Project: FFD/ELM/07

Fishery

Elasmobranch landings in 2025 were ~0.4 lakh t, with mainland states contributing 0.38 lakh t (~0.003 lakh t from 2024) and Andaman & Nicobar Islands 0.01 lakh t; Tamil Nadu (~44%), Maharashtra (~14.2%) and Kerala (~12.9%) were the major contributors. Sharks formed ~56% of landings, followed by rays (~41%) and guitarfishes (~3%); the east coast dominated ray (80.5%) and guitarfish (65.7%) landings, while shark landings were nearly equal between



Elasmobranch landings in India (t) in 2025

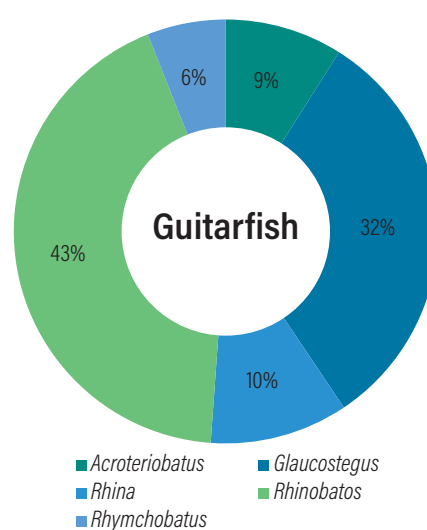
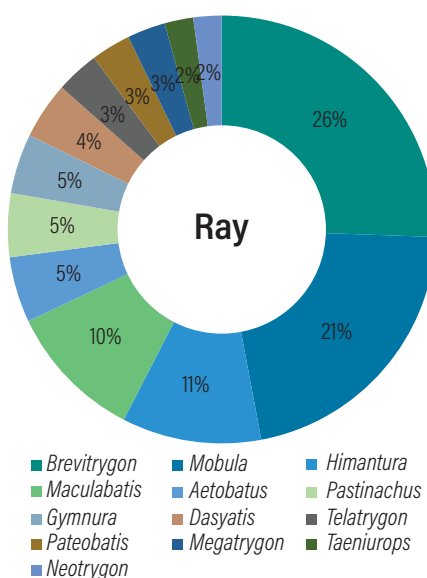
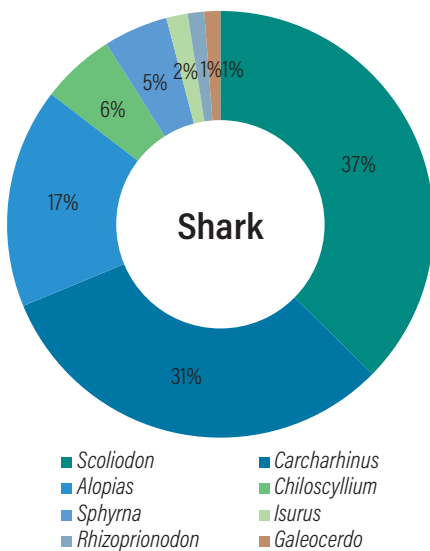
coasts. Shark landings (24 genera) were dominated by *Scoliodon*, *Carcharhinus*, *Alopias*, *Chiloscyllium*, *Sphyrna*, *Isurus*, *Rhizoprionodon* and *Galeocerdo* (~98%); rays (19 genera) by *Brevitrygon*, *Mobula*, *Himantura*, *Maculabatis*, *Aetobatus* and *Pastinachus* (top 75%); and guitarfishes by *Rhinobatos* and *Glaucostegus* (~75%).

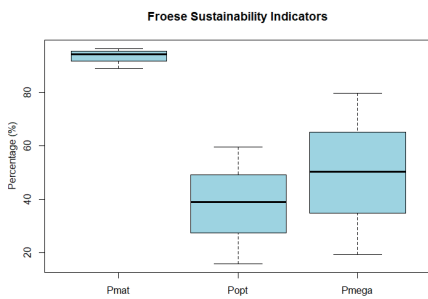
Stock status

Length-based indicator analysis of *Scoliodon laticaudus*, off Gujarat, indicated a healthy exploitation pattern. High proportions of mature ($P_{mat} > 0.80$) and large/old individuals

Length-based indicators for *Scoliodon laticaudus* off Gujarat show a healthy stock structure, with high proportions of mature and large individuals, indicating low recruitment overfishing risk and strong stock resilience.

($P_{mega} = 0.50$) suggested strong stock resilience and low risk of recruitment overfishing.





Estimates of Froese sustainability indicators for *S. laticaudus* from the Gujarat coast

Elasmobranch hotspots

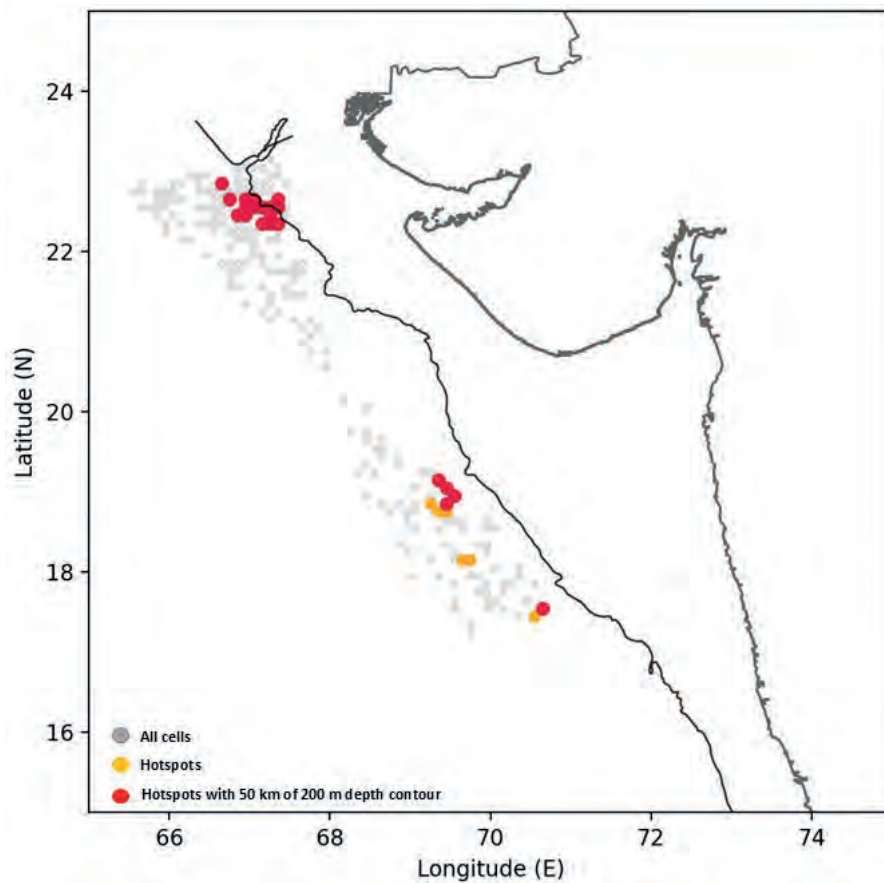
Seasonal aggregations of large-bodied species occurred along the Gujarat shelf break (post-monsoon–winter), with Getis–Ord Gi* identifying two key juvenile/sub-adult hotspots; in Andhra Pradesh, fishers identified “Addu konda” (near Chintapalle) as a major shark hotspot.

Conservation and management

Stranding and incidental landings of protected elasmobranchs included whale shark (*Rhincodon typus*); a 7.7 m (4 t) male stranded at Yarada and two individuals (6.65 m female; 6.6 m male) incidentally caught in shore seines at Kanyakumari, and giant manta ray (*Mobula birostris*), with a large female (DW > 500 cm) recorded at Paradeep, Odisha.

Increased awareness led to successful releases of protected guitarfishes, including four mature female widenose guitarfish (*Glaucostegus obtusus*) by fishers in Karnataka and Kerala, and a critically endangered bottlenose guitarfish (*Rhynchobatus cf. australiae*) at Lakshadweep.

The Institute also provided forensic support to the Chennai Air Intelligence Unit, where DNA barcoding (COI gene amplification and NCBI BLAST) identified seized shark fins as *Alopias pelagicus* (pelagic thresher).



Identified seasonal aggregation hotspots for large-bodied elasmobranchs along the Gujarat coast within 50 km of the 200 m depth contour



Live release of widenose guitarfish at Majali

Workshops and awareness campaigns

A series of strategic workshops and awareness campaigns were organised to strengthen the conservation framework for elasmobranchs in compliance with the Wildlife (Protection) Amendment Act (2022) and CITES.

Awareness and stakeholder engagements on elasmobranch conservation included a programme at Digha (7 January 2025) training 30 fishers in species identification, ecological risks and legal provisions; a consultation at Thengaipattinam (24 January 2025; 70 participants) highlighting livelihood dependencies, regulatory ambiguities and the need for enforcement-stakeholder dialogue; and a high-level hybrid workshop in Kochi (14 July) with national agencies identifying monitoring gaps and recommending habitat mapping, AI-based species recognition and gear modifications. State-wide programmes across

Integrated conservation through stakeholder engagement, awareness, forensics and policy alignment strengthened compliance and sustainable elasmobranch management.

Karnataka (July–August 2025) trained stakeholders on SOPs for safe handling and release of ETP species, alongside outreach initiatives such as district-level student competitions in Ernakulam promoting awareness on endangered elasmobranchs and habitat conservation.

In Tamil Nadu, awareness programmes at Thoothukudi and Tharuvaiikulam sensitised fishers, traders and field



Awareness programme at Digha Regional Station



Participants of the one-day workshop organised at ICAR-CMFRI, Kochi



Awareness programmes on ETP species in Karnataka

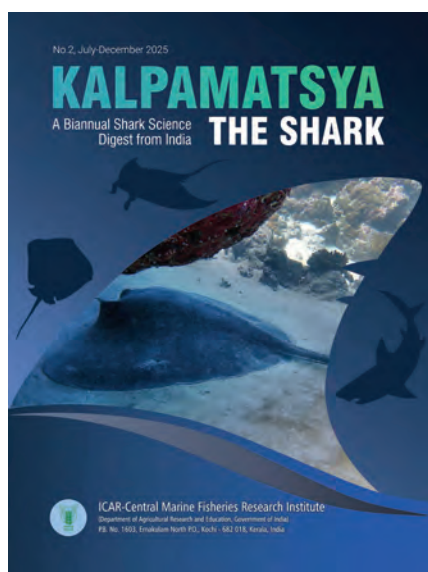


Stakeholder awareness programmes in Tamil Nadu

staff on ETP species, IUCN status and regulatory frameworks, promoting responsible fishing, improved data reporting and compliance through distribution of identification guides.

Shark Science Digest launched

In July 2025, the Institute launched *Kalpamatsya – The Shark*, a biannual digest providing a specialised platform for research, conservation milestones, and stakeholder engagement. It serves as a strategic communication tool for policymakers and global conservation entities.



Kalpamatsya, a biannual digest released

Stakeholder consultation

A consultation in Kochi on “Conservation of Sharks, Rays, and Fisher Livelihoods” engaged 100 stakeholders (boat owners, gillnet/

The tuna and tuna-like fishery was primarily dominated by coastal tuna species and narrow-barred Spanish mackerel.



Stakeholder consultation in Kochi

longline associations and customs officials) to address impacts of the Wildlife (Protection) Amendment Act, 2022 on trade and livelihoods, and to develop a science-based management and communication roadmap.

Biological and livelihood sustainability of tuna and tuna-like fishes along the Indian coast

Project: FFD/LPF/08

Tunas, seerfishes, and billfishes are key large pelagic resources of high economic importance, requiring continuous monitoring of fisheries, biology, and stock status along the Indian coast. They are exploited by longlines, gillnets, trawls, handlines,

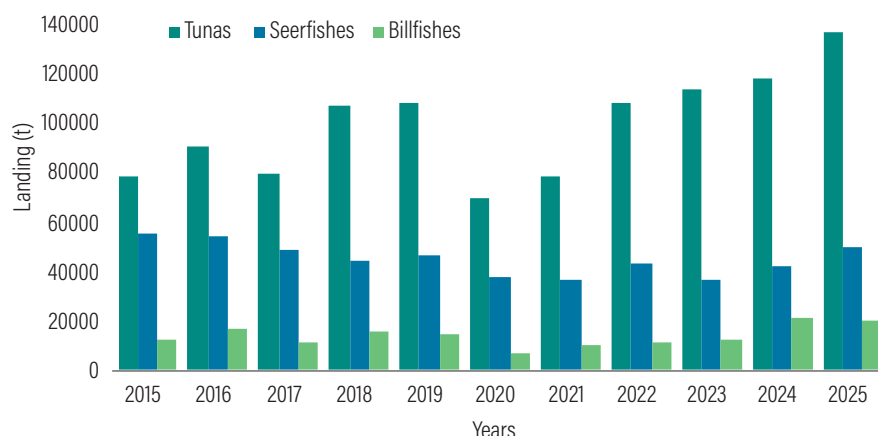
purse seines, and ring seines, with systematic monitoring across regions.

In 2025, landings were 137,342 t (tunas), 50,597 t (seerfishes), and 20,621 t (billfishes), with increases of 15.4% and 18.0% in tunas and seerfishes, and a 3.3% decline in billfishes compared to 2024. Initial estimates from the Andaman and Nicobar Islands recorded 290 t (tunas), 106 t (seerfishes), and 29 t (billfishes).

State-wise landings and species composition

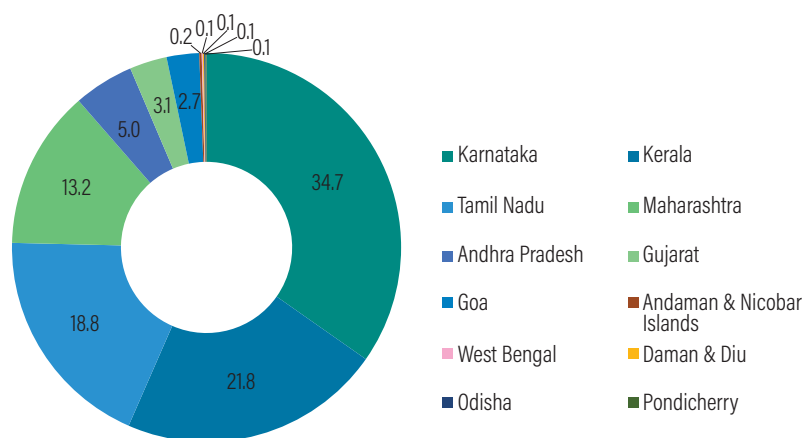
Tunas

Tunas were landed along the entire mainland coast of India and from



Trends in landings of tuna and tuna-like fishes (t)

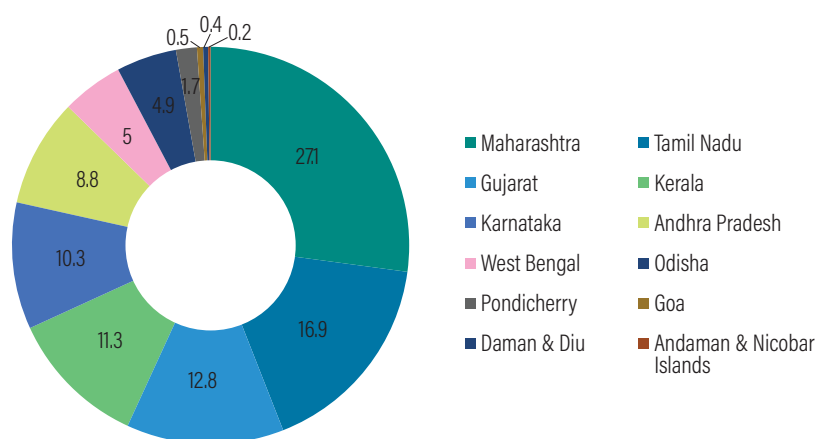
Andaman & Nicobar, with Kerala, Karnataka and Tamil Nadu together contributing 75% of the total landings. Coastal tunas dominated the landings, accounting for 69.2% of the total tuna catch, and were mainly represented by *Euthynnus affinis* (42.7%), *Auxis thazard* (14.7%), and *Auxis rochei* (8.5%). Other neritic tunas contributing to the fishery included *Thunnus tonggol*, and *Sarda orientalis*. Among oceanic tunas, *Katsuwonus pelamis* formed the major component (15.2%), followed by *Thunnus albacares* (14.7%), with only nominal landings



State-wise landing of tunas (%)

Size composition indicated predominance of adults with low juvenile incidence, suggesting stable exploitation

of *Thunnus obesus* and *Gymnosarda unicolor*. Purse seine and gillnet were the major gears that contributed to the landings of tunas.



State-wise landing of seerfishes (%)

Seerfish

The seerfish fishery was dominated by the narrow-barred Spanish mackerel (*Scomberomorus commerson*), which accounted for 64.9% of the total landings. Spotted seerfishes (*S. guttatus*), contributed about 34.0%, while wahoo formed 1.0% of the landings. Mechanised trawl (32.3%), gillnet (29.7%), and purse seines (21.8%) were the major gears exploited that seerfishes.

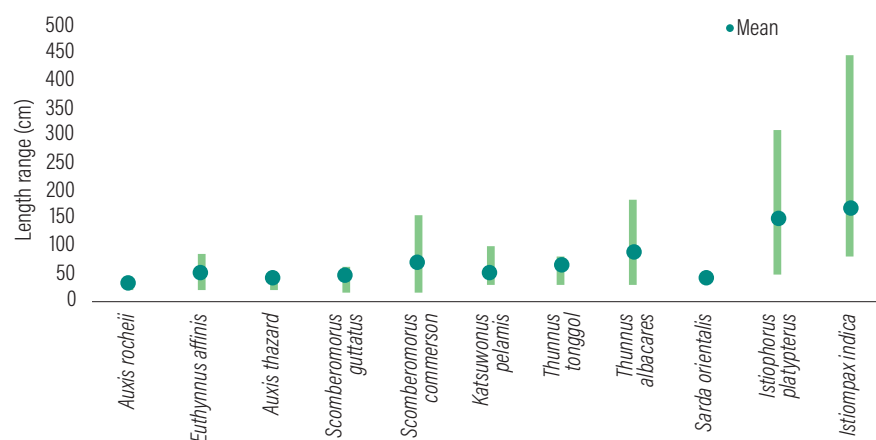
Billfish

The billfish fishery was dominated by Indo-Pacific sailfish and black marlin, which contributed respectively by 48.2% and 36.5% of the total billfish landings. Swordfish, represented by a single species, *Xiphias gladius* accounted for 9.3% of the landings, while marlins, represented by four species, constituted the remaining share.

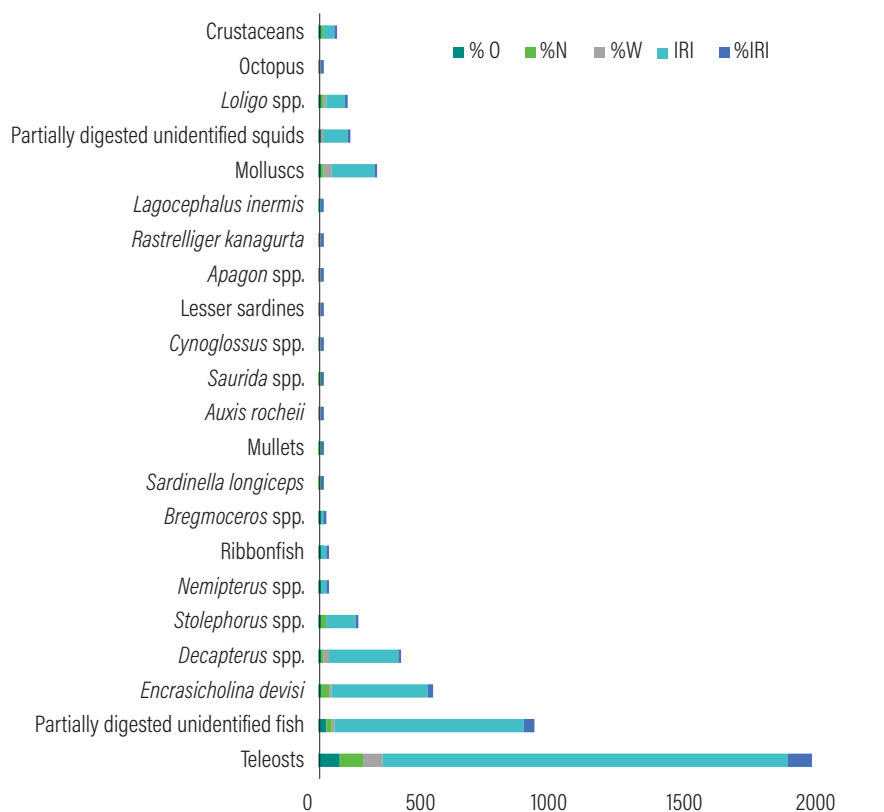
Biological studies

Regular assessments were conducted on the size range and mean size of tunas, seerfishes, and billfishes landed along the Indian coast. The observed size distribution indicated

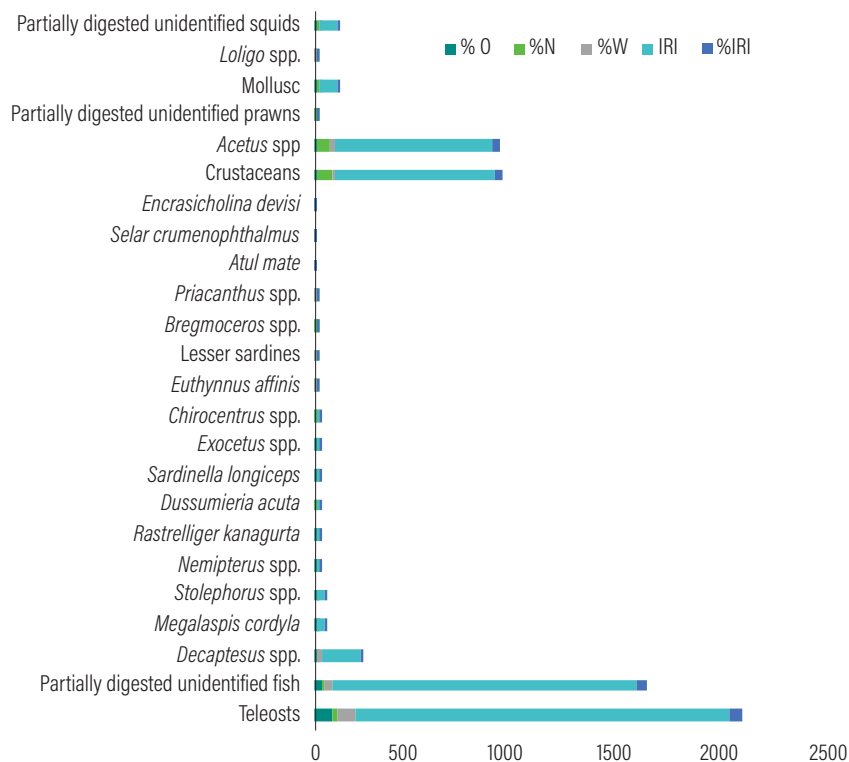
that the majority of landed specimens comprised adult individuals, suggesting a stable stock structure and sustainable exploitation of these resources. Based on the minimum legal size and recorded size range, the juvenile proportion of major



Length range (cm) and mean size of tuna and tuna-like fishes landed along the Indian coast



Diet composition of *Thunnus albacares* as percentage of occurrence (%O), percentage of number (%N), percentage by weight (%W) and Index of Relative Importance (IRI).



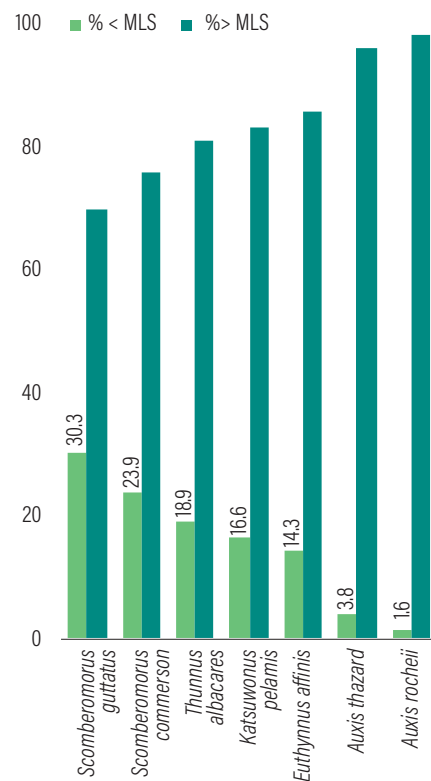
Diet composition of *Katsuwonus pelamis* as percentage of occurrence (%O), percentage of number (%N), percentage by weight (%W) and Index of relative importance (IRI).

tuna and tuna-like species along the southwest coast of India was estimated, revealing that juvenile composition constituted less than 25% of the total landings.

Diet composition analyses of these large pelagic species identified teleost fishes as the dominant prey component, with crustaceans and molluscs serving as secondary dietary constituents. Reproductive characteristics, assessed through maturity stage analysis, indicated that most large pelagic species exhibit year-round spawning, with peak spawning periods varying among species.

Fishing grounds of tuna and tuna-like fishes

Purse seine vessels and multi-day gillnetters from the Raigad region target large pelagic resources in



Juvenile composition (% < MLS) of tuna and tuna-like fishes along the southwest coast of India

Peak spawning period of tuna and tuna-like fishes

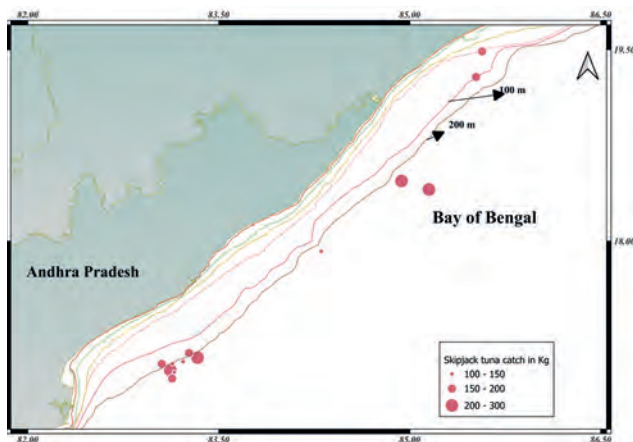
Months	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
West coast												
<i>Euthynnus affinis</i>												
<i>Auxis rocheii</i>												
<i>Auxis thazard</i>												
<i>Katsuwonus pelamis</i>												
<i>Thunnus tonggol</i>												
<i>Scomberomorus commerson</i>												
<i>Scomberomorus guttatus</i>												
East coast												
<i>Euthynnus affinis</i>												
<i>Katsuwonus pelamis</i>												
<i>Thunnus albacares</i>												
<i>Scomberomorus commerson</i>												
<i>Scomberomorus guttatus</i>												



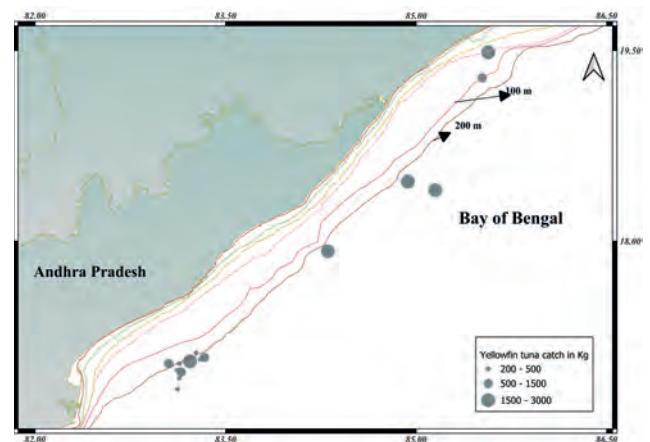
Yellowfin tuna landed at Vishakhapatnam fishing harbour

offshore waters along the Maharashtra coast. This specialised fishery plays a key role in the exploitation of tuna and tuna-like species and supports livelihood sustainability. Fishing grounds in this sector were mapped to facilitate effective management programmes.

GIS-based spatial mapping of fishing grounds operated by Pudimadaka fishers of Andhra Pradesh using FRP boats equipped with hook-and-line revealed distinct catch distribution patterns for skipjack tuna (100–300 kg), and yellowfin tuna (200–3000 kg) across the northwestern Bay of Bengal. The major fishing grounds were concentrated along the 100–200 m depth contours off the Andhra Pradesh coast, between latitudes 17.5°N and 19.5°N.



Fishing grounds of skipjack tuna off Andhra Pradesh



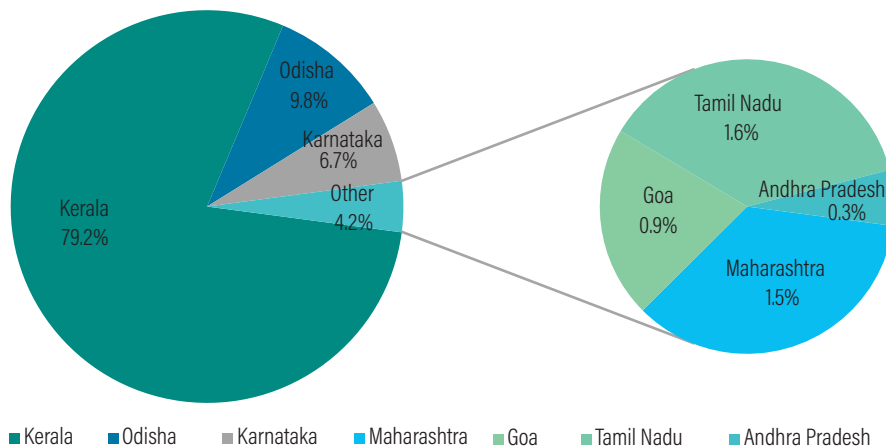
Fishing grounds of yellowfin tuna off Andhra Pradesh

Assessment and management of small-scale bivalve and gastropod fisheries

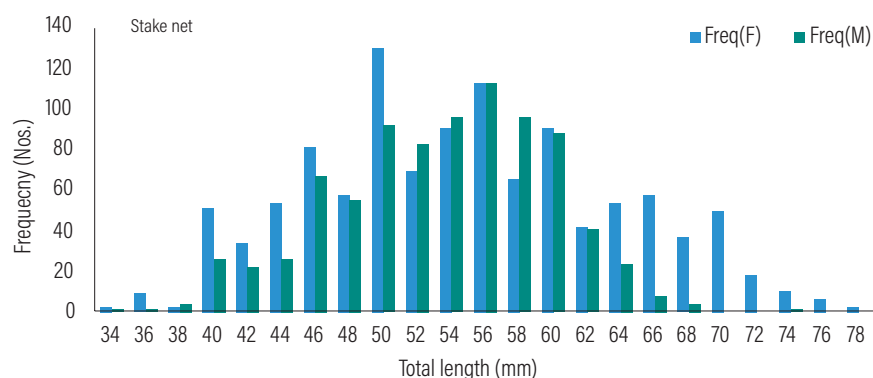
Project: SFD/BGF/17

The total landings of clams, oysters and mussels from the coastal States of Kerala, Karnataka, Goa, Maharashtra, Tamil Nadu, Andhra Pradesh and Odisha were estimated at 111,985 t in 2025. This represents a 6.3% increase compared to 2024, when the landings were 105,361 t, primarily due to an increase in clam landings.

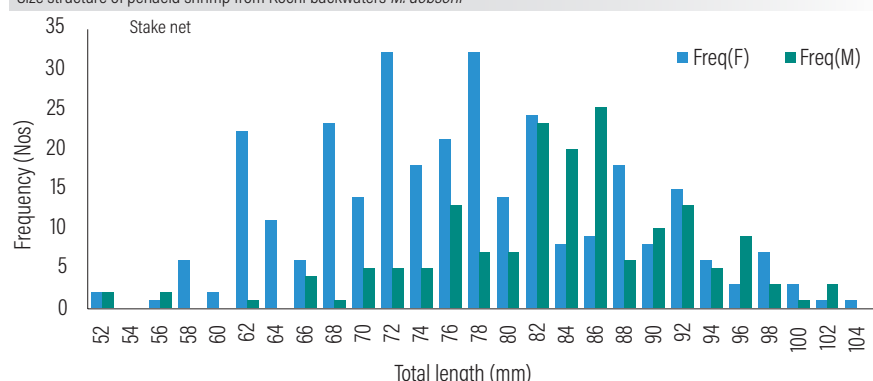
Bivalve landings increased in Maharashtra, Kerala, Tamil Nadu and Goa compared to 2024. Among the bivalve resources, clams (81.27%) constituted the major share of the landings, followed by mussels (10.84%) and oysters (7.89%). *Villorita cyprinoides* continued to be the dominant bivalve species contributing to the total landings.



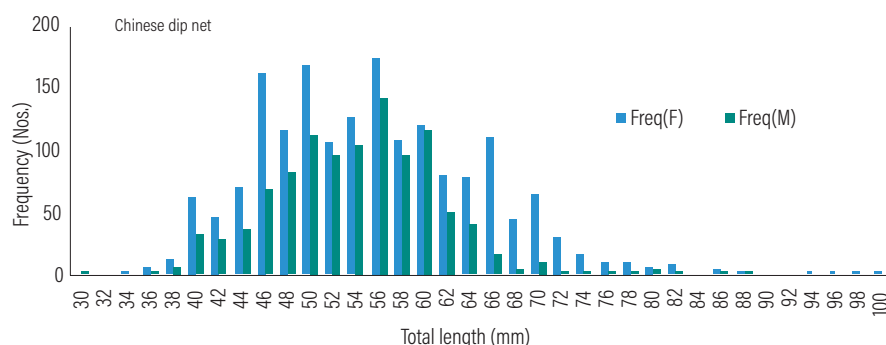
State-wise contribution of bivalve production in India



Size structure of penaeid shrimp from Kochi backwaters *M. dobsoni*



Size structure of penaeid shrimp from Kochi backwaters *M. monoceros*



Size structure of penaeid shrimp from Kochi backwaters *M. dobsoni*

Investigations on the juvenile/subadult penaeid shrimps in nursery habitats

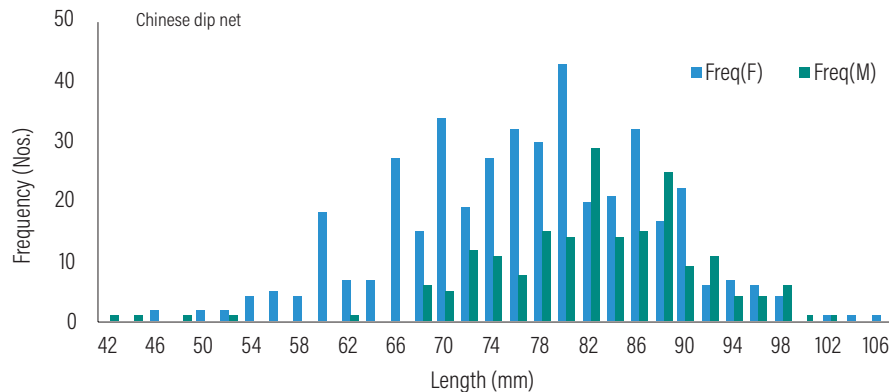
Project: SFD/PSF/16

Size range and species composition of penaeid shrimp, plankton density, and water parameters from the fishing grounds were estimated from selected nursery habitats of penaeid shrimps.

Kerala (Kochi backwaters)

The species composition of stake net catches was dominated by

Penaeid shrimp species composition and recruitment patterns are driven largely by monsoon-regulated environmental conditions

Size structure of penaeid shrimp from Kochi backwaters. *M. monoceros*

Metapenaeus dobsoni (80.6%), followed by *Metapenaeus monoceros* (11.2%), *Penaeus indicus* (6.8%), and *Penaeus semisulcatus* (1.4%). In Chinese dip

and elevated productivity, favouring recruitment of *M. kutchensis*.

Tamil Nadu (Palk Bay)

Seasonal variability in environmental conditions and population structure of *P. semisulcatus* at offshore Devipattinam (Palk Bay) indicated strong monsoon-driven dynamics. Sea surface temperature ranged from 26.8-32.1°C, salinity from 25-34 ppt, pH from 7.68-8.73, and dissolved oxygen from 4.38-6.58 mg/l. Size-frequency distributions showed dominance of smaller size classes (60-75 mm) during monsoon and pre-monsoon, indicating distinct recruitment pulses.

Generated critical biological baselines and stock status insights to guide sustainable exploitation and informed fisheries diversification

nets, penaeid shrimps were similarly dominated by *M. dobsoni* (81.48%), with contributions from *P. indicus* (13.9%), *P. semisulcatus* (2.72%) and *M. monoceros* (1.9%).

Gujarat (Surajbhari creek)

Seasonal monitoring (post-monsoon to winter) of hydrography and productivity linked to *M. kutchensis* showed strong monsoonal control, with fishing commencing post southwest monsoon.

Salinity and total dissolved solids were lowest in September and increased towards January, while nutrients (phosphate, nitrate), plankton densities, and chlorophyll *a* peaked in early post-monsoon and declined thereafter. These patterns indicate tight coupling between post-monsoon nutrient enrichment

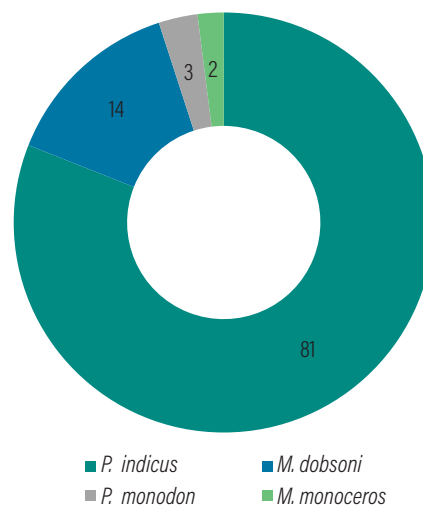
Andhra Pradesh (Bhimli estuary)

Four penaeid shrimp species were recorded from cast nets (*P. indicus*, *M. dobsoni*, *M. monoceros*, and *P. monodon*). Their average length in the landings was *P. indicus* 46.4 mm, *M. dobsoni* 48.2 mm, *M. monoceros* 55.6 mm and *P. monodon* 80.7 mm.

Exploring non-conventional fisheries resources: assessing their fishery, stock status, and potential for commercial exploitation

Project: FFD/ENCFR/33

The project developed region-specific biological reference datasets for multiple non-conventional fisheries resources (NCR) taxa along the Indian coast. Length-based stock indicators (Pmat, Popt, Pmega) and decision-tree frameworks were applied to assess stock status under data-limited conditions. Molecular barcoding improved species-level taxonomic resolution. Seasonal reproductive patterns and feeding ecology were documented, enhancing understanding of population dynamics, ecosystem linkages, and species-specific exploitation trajectories amid increasing catch diversification in trawl and longline fisheries. Growth analyses indicate a predominance of negative allometric patterns across taxa. *Oratosquilla perpersa* exhibited a strong length-weight relationship ($W = 0.0158L^{2.8486}$; $R^2 = 0.91$), confirming robust model fit with negative allometry. Similarly, *Monomia argentata* showed sex-specific growth coefficients ($b = 2.938$ in males; 2.601 in females) and condition factor values ranging between 1.1-1.3, suggesting moderate somatic well-being. *Bleekeria kalliolepis* also displayed negative allometry ($K \approx 1$), reinforcing the trend of energy allocation toward reproduction rather than



Species composition of penaeid shrimp from cast nets in Bhimli (%)

*Monomia argentata*

somatic mass accretion in several emerging taxa.

Exploitation patterns were heterogeneous. *Charybdis hoplites* demonstrated clear size truncation indicative of growth overfishing, whereas relatively stable size structures and spawning potential were retained in *Miyakella nepa*,

Benthosoma fibulatum, and *Acropoma* sp. Multi-cohort representation in *Aluterus monoceros*, *Odonus niger*, *Lagocephalus* spp., and *Fistularia petimba* (14.9–63.8 cm) indicates sustained recruitment within exploited stocks. Maturity parameters further strengthen stock-status interpretation: *Strophiodon sathate* exhibited LM₅₀ at 98.5 cm, while *Diodon holocanthus*

matured above ~120 mm TL with evidence of prolonged spawning.

Reproductive assessments revealed recurrent female dominance across taxa. A female-biased sex ratio (1:1.3, M:F) was recorded in *Sepia trygonina*, which also exhibited predominantly empty stomachs, suggesting reduced feeding intensity during reproductive phases. Female predominance and largely spent gonadal condition were observed in *Trachysalambria aspera*, while slight female biases occurred in *Pellona ditchela*, *Pempheris malabarica*, and *Thryssa setirostris*. Conversely, *Pempheris mangula* showed male dominance.

Generated biological, reproductive, feeding, and stock-status baselines for non-conventional fisheries resources along India's coast, supporting sustainable exploitation, fisheries diversification, and supporting informed management of emerging, data-limited marine stocks.

*Bleekeria kalliolepis* caught from Tamil Nadu coast

Feeding ecology highlights their trophic integration within coastal food webs. *Lagocephalus guentheri* and *Lagocephalus inermis* demonstrated carnivorous diets dominated by crustaceans and finfishes (*Decapterus* sp.), whereas *Pempheris mangula* and *Pempheris malabarica* relied heavily on *Acetes*, linking mesozooplankton to higher trophic levels. Seasonal peaks (November–March; December–January) in taxa such as *Charybdis smithii*, *Charybdis lucifera*, *Miyakella nepa*, *Harpisquilla indica*, *Oratosquilla inornata*, *Quollastra gonyptes*, and *Erugosquilla woodmasoni* indicate structured temporal availability, often coinciding with reproductive activity.



Harvested mesopelagic species resource

Exploring the harvest and post-harvest potential of mesopelagic resources

Project: NFDB-PMMSY

The pilot project by ICAR-CMFRI and ICAR-CIFT evaluates the harvest and post-harvest potential of mesopelagic resources in the

Indian EEZ to support sustainable blue economy development. The 200-1000 m zone was explored using modified deep-water gear, upgraded vessels and multidisciplinary sampling. Taxonomic studies documented 40 species across 20 orders and 37 families, supported by morphological characterisation and genetic barcoding.

Biological assessments, including maturity staging, gut content analysis and length-weight relationships, have generated key parameters for stock assessment and sustainability modelling. Post-harvest studies of selected species showed an iced shelf life of up to nine days and enabled the development of value-added products.

A pilot study by ICAR-CMFRI and ICAR-CIFT documented 40 mesopelagic species in the Indian EEZ (200–1000 m) and identified their potential for food, feed and nutraceutical applications.

Nine species were evaluated for fish meal production, and the blended meal met Indian Standards for moisture (7.2%), protein (66.5%), fat (11.12%), and ash (16.64%), indicating quality comparable to that of commercial species. Two species, *Pycnocrasedum squamipinne* and *Hypopleuron caninum*, were assessed for nutritional composition, freshness, shelf life and value addition. Both species showed good biochemical profiles, with iced shelf life up to nine days.

Value-added products such as cutlets and momos were developed, with *H. caninum* showing high sensory acceptability, while ω -3 PUFA-rich oil extracted using supercritical fluid extraction, yielding up to 24.48% in *Congrhynchus talabonoides*. Subcritical water extracts of deoiled biomass exhibited strong antioxidant activity, indicating potential for aquafeed applications. Additionally, by-products such as foliar spray were developed and found to be shelf-stable. Overall, mesopelagic resources demonstrated significant nutritional and industrial potential for diverse applications.

Sustainable Fisheries Management

Gujarat, Daman and Diu

Marine fisheries in Gujarat and Daman and Diu during 2025 showed notable variability in landings and stock status. Gujarat recorded 6.43 lakh t of marine fish landings, a 15% decline from 2024 due to reduced fishing days caused by adverse weather, fishing bans and cyclonic disturbances. Ribbonfish dominated the catch, while most resources showed declining trends. Different assessment approaches using different datasets (length frequency or catch) and stock categories (species or groups) indicated that about 63-72% of the assessed stocks are either healthy or are sustainably exploited. In Daman and Diu, landings declined to 0.40 lakh t, with multi-day trawl nets contributing nearly 95% of the catch.



Bumper landings of groupers at Bhidiya, Veraval, Gujarat

Developing an integrated assessment framework to support management decisions for marine fisheries in Gujarat and Daman and Diu

Project: SFD/IAF/14

Gujarat

Marine fish landings

Gujarat recorded an estimated marine fish landing of 6.43 lakh t in 2025, representing a 15% decline compared to the previous year, resulting in the State losing its leading position in marine fish production. The decline was mainly attributed to reduced fishing days due to adverse weather conditions, the mid-May fishing ban imposed under Operation Sindoor, the statutory fishing ban from June to mid-August, and additional disruptions caused by cyclonic activity, including Cyclone Shakti.

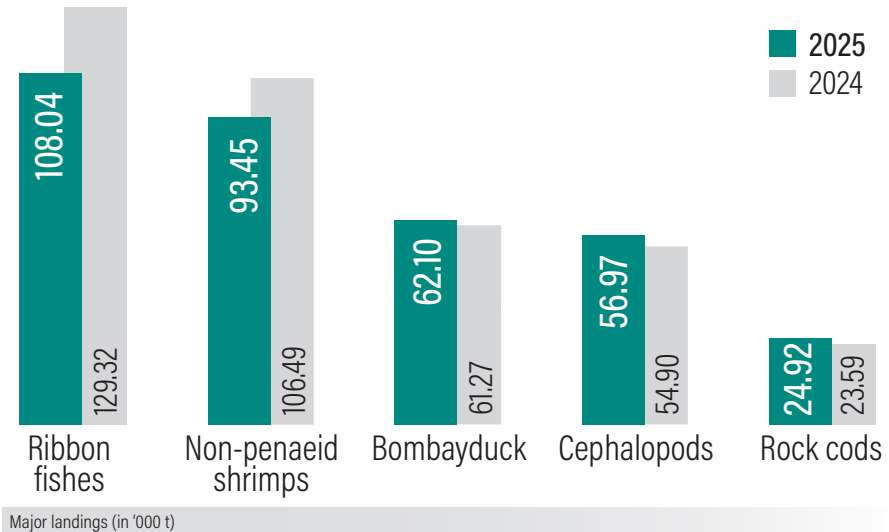
Ribbonfish remained the dominant resource despite a 16% decline in landings, while most other resources also exhibited declining trends, except Bombay duck, cephalopods and rock cods, which recorded marginal increases. Overall landings declined during most quarters of the year except the fourth quarter, with Gir Somnath (37%), Porbandar (16%) and Junagadh (14%) contributing the largest shares to the total catch.

Length-based health assessment of marine fisheries of Gujarat

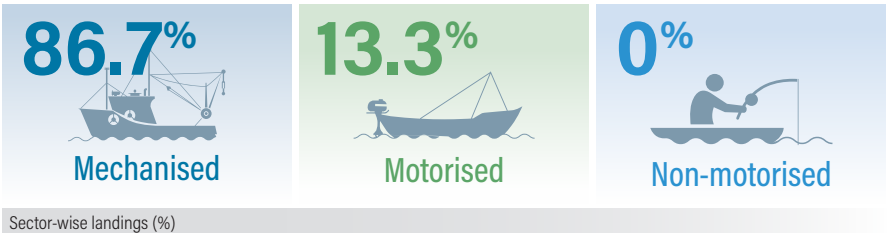
A length-based assessment of 35 major fishery resources was conducted using the length–frequency distribution recorded in 2025 as the primary input. Stocks with sufficient biomass ($B/B_0 > 0.30$ and $B/B_{MSY} > 0.8$) were classified as healthy, while



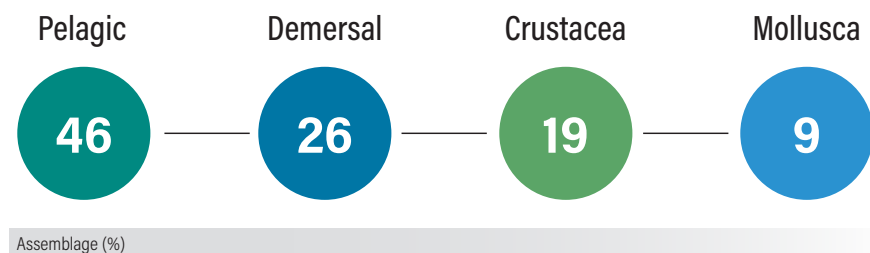
Ribbonfish landings at Veraval fishing harbour



Major landings (in '000 t)

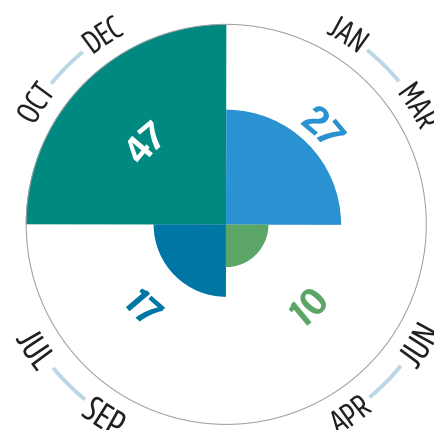


Sector-wise landings (%)



Stock status of major fishery resources of Gujarat based on the LBB approach

Species	B/B ₀	B/B _{MSY}	F/M	Status
<i>Epinephelus diacanthus</i>	0.27	0.73	1.49	Overfished
<i>Nemipterus japonicus</i>	0.32	0.81	1.15	Healthy
<i>Nemipterus randalli</i>	0.41	0.97	1.01	Healthy
<i>Pararius proxilus</i>	0.32	0.79	1.02	Healthy
<i>Johnius glaucus</i>	0.28	0.74	1.85	Overfished
<i>Johnius boornensis</i>	0.36	0.89	1.15	Healthy
<i>Johnius dussumieri</i>	0.44	1.15	0.91	Healthy
<i>Otolithes cuvieri</i>	0.27	0.78	1.23	Overfished
<i>Otolithes ruber</i>	0.42	1.01	0.96	Healthy
<i>Sardinella albella</i>	0.48	1.14	0.91	Healthy
<i>Thryssa dussumieri</i>	0.42	1.25	0.78	Healthy
<i>Acanthopagrus arabicus</i>	0.51	1.14	0.91	Healthy
<i>Saurida tumbil</i>	0.33	0.96	1.01	Healthy
<i>Saurida undosquamis</i>	0.37	0.95	1.14	Healthy
<i>Pampus candidus</i>	0.27	0.77	1.86	Overfished
<i>Parastromateus niger</i>	0.28	0.76	1.93	Overfished
<i>Plicofollis layardi</i>	0.26	0.71	2.02	Overfished
<i>Parapenaeopsis styliifera</i>	0.37	0.91	0.95	Healthy
<i>Solenocera crassicornis</i>	0.36	0.92	1.14	Healthy
<i>Metapenaeus monoceros</i>	0.29	0.77	1.04	Overfished
<i>Metapenaeus affinis</i>	0.33	0.88	1.12	Healthy
<i>Penaeus merguensis</i>	0.31	0.83	0.98	Healthy
<i>Enaeus monodon</i>	0.25	0.76	1.43	Overfished
<i>Portunus sanguinolentus</i> (CW)	0.31	0.81	1.02	Healthy
<i>Charybdis feriata</i>	0.34	0.87	0.96	Healthy
<i>Thunnus unimaculatus</i>	0.24	0.69	2.56	Overfished
<i>Panulirus polyphagus</i>	0.22	0.61	1.61	Overfished
<i>Rastrelliger kanagurta</i>	0.44	1.07	0.98	Healthy
<i>Harpadon nehereus</i>	0.31	0.88	1.32	Healthy
<i>Coilia dussumeiri</i>	0.28	0.74	1.88	Overfished
<i>Megalopsis cordyla</i>	0.37	0.89	0.95	Healthy
<i>Trichurus lepturus</i>	0.27	0.79	1.45	Overfished
<i>Coryphaena hippurus</i>	0.34	0.88	1.33	Healthy
<i>Chirocentrus nudus</i>	0.32	0.82	1.15	Healthy
<i>Loligo duvauceli</i> (DML)	0.29	0.79	2.02	Overfished

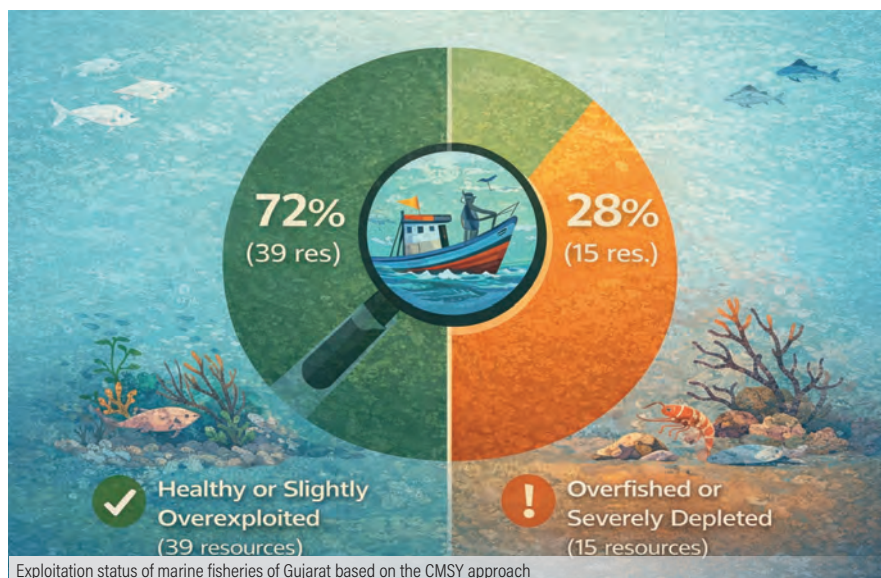


Stock assessments using length-based methods indicated that about 63% of the assessed marine fish stocks of Gujarat were in healthy condition, while the remaining resources showed signs of overfishing.

those with lower observed biomass ($B/B_0 < 0.30$ and $B/B_{MSY} < 0.8$) were considered overfished. The analysis indicated that 63% (22 stocks) were in a healthy condition, whereas the remaining 13 stocks were classified as overfished. These assessments need to be complemented with catch-based or integrated assessment approaches to obtain a more comprehensive understanding of the status of marine fishery resources in Gujarat, which is in progress.

Catch-based assessment of marine fisheries of Gujarat

The stock status of 54 major fishery resources exploited by the Gujarat fishing fleet in the northeastern Arabian Sea was assessed using the data-limited CMSY (Monte Carlo Catch-MSY) approach. The



results indicated that about 72% of the assessed resources were either healthy or only slightly overexploited, suggesting scope for sustainable utilisation, while the remaining 28% were classified as overfished, recovering, or severely depleted.

Catch-based CMSY analysis of 54 resources suggested that nearly 72% of the stocks were sustainably exploited, although a few pelagic and demersal species indicated increasing fishing pressure.

Several commercially important pelagic and demersal stocks showed indications of overexploitation, reflecting the impact of increasing fishing pressure. In contrast, many crustacean and cephalopod resources were found to be sustainably exploited. The study generated biological reference points (B/BMSY and F/FMSY) for data-poor fisheries and highlights the importance of regular stock monitoring, regulation of fishing effort, and targeted rebuilding

strategies for depleted stocks to ensure the long-term sustainability of Gujarat's marine fisheries.

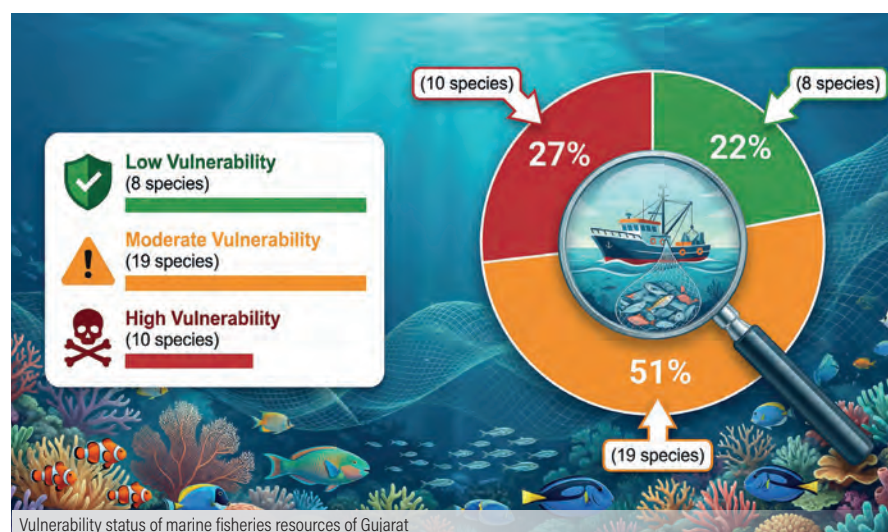
Productivity and susceptibility analysis

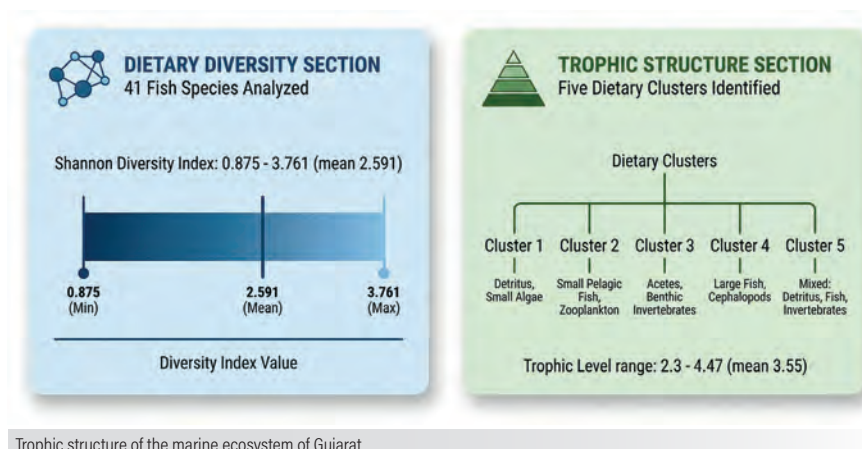
Productivity and Susceptibility Analysis (PSA) was conducted to evaluate the vulnerability of key marine fishery resources exploited along the Gujarat coast under data-limited conditions. The assessment classified species into low, moderate, and high vulnerability categories based on life-history productivity attributes and their exposure to fishing pressure.

The results indicated that nearly half of the assessed species fall under the low vulnerability category, suggesting relatively resilient stocks, while a substantial proportion exhibited moderate vulnerability, indicating the need for careful monitoring and precautionary management. A few species were identified as highly vulnerable, primarily due to low productivity and high susceptibility to fishing gears. The study highlights PSA as a practical screening tool for prioritising species for management intervention and emphasises the need for targeted conservation and adaptive management measures for vulnerable resources to ensure the long-term sustainability of Gujarat's marine fisheries.

Trophodynamic structure and fishing impacts

A comprehensive trophodynamic assessment of the marine fisheries of Gujarat was undertaken to examine dietary structure, resource partitioning, and long-term fishing impacts. Diet composition of 41 commercially important fish species, covering 24 prey groups, revealed high dietary diversity and pronounced niche differentiation, indicating structured resource partitioning within the ecosystem. Detritus, small pelagic fishes, and *Acetes* were identified





as key prey groups sustaining the food web.

Trophic level analysis showed a broad gradient from low-trophic crustaceans to high-trophic pelagic predators, indicating strong top-down regulation within the ecosystem. Long-term indicators demonstrated

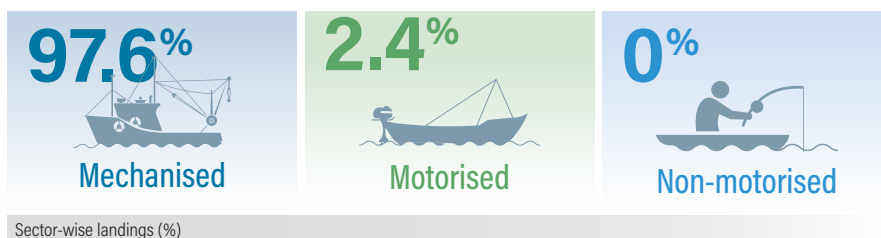
Trophodynamic analysis revealed diverse feeding interactions and a long-term decline in trophic levels, indicating “fishing-down” trends in the Gujarat marine ecosystem.

a significant decline in the mean trophic level since the mid-1980s, with an accelerated decline after 2015, consistent with “fishing-down” trends, while the Fishing-in-Balance index indicated a compensatory expansion of fishing activities. Overall, the study provides a trophic profile for the Gujarat marine ecosystem and highlights the need for ecosystem-based fisheries management, with emphasis on conserving apex predators and maintaining key prey resources to ensure long-term sustainability.

Daman and Diu

Marine fish landings

The Union Territory of Daman and Diu recorded an estimated marine fish landing of 0.40 lakh t in 2025, representing a 20% decline compared to the previous year. Similar to Gujarat, fishing activities in Diu were affected by reduced fishing days due to adverse weather conditions, fishing bans and cyclonic disturbances.

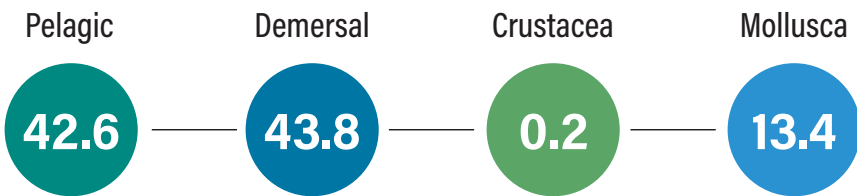




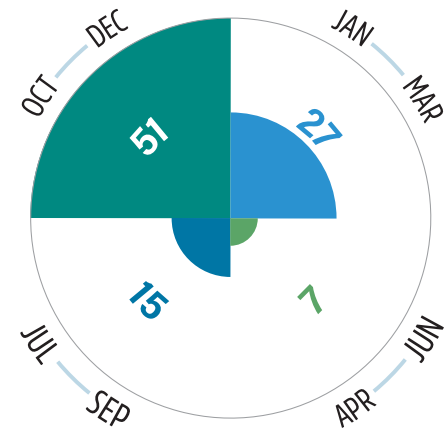
Emerging dry fish industry at Diu

Resource-wise, cephalopods experienced a sharp decline of 51% in landings, while rock cods showed a remarkable increase of nearly threefold; crustacean resources also registered a significant decline. Among

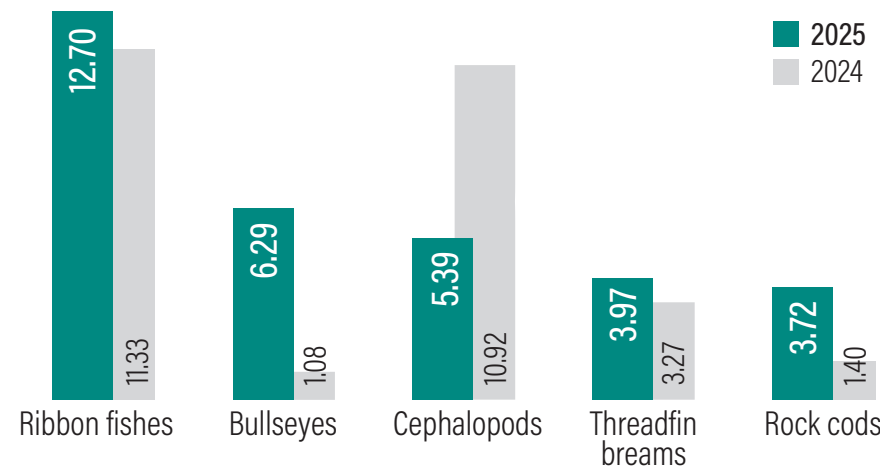
pelagic resources, almost all major groups exhibited an increasing trend, except oil sardine, which declined. Although overall landings decreased, the first quarter showed a sharp increase, with landings rising nearly



Assemblage (%)



Quarter-wise landings (%)



Major landings (in '000 t)

In Daman and Diu, resource trends varied widely during 2025, with cephalopods declining sharply while rock cods showed a nearly three-fold increase in landings.

eight-fold. Gear-wise, multi-day trawl nets dominated the catch, contributing nearly 95% of the total landings, followed by motorised gillnets with about 2%.

Sustainable Fisheries Management

Maharashtra

Maharashtra recorded marine fish landings of 3.66 lakh t in 2025, an 18% increase from 2024 and a strong recovery compared with 2023. Indian mackerel dominated the fishery, reaching a decadal high, while most other resources also showed increasing trends except shrimps. Mechanised purse seines contributed the largest share of landings, followed by multi-day trawl nets and dol nets. Pelagic resources formed the major component of the catch, whereas crustacean landings declined and molluscan resources increased, dominated by squids. Biological monitoring, plankton studies and vulnerability assessments supported fisheries management and ecosystem-based resource evaluation.



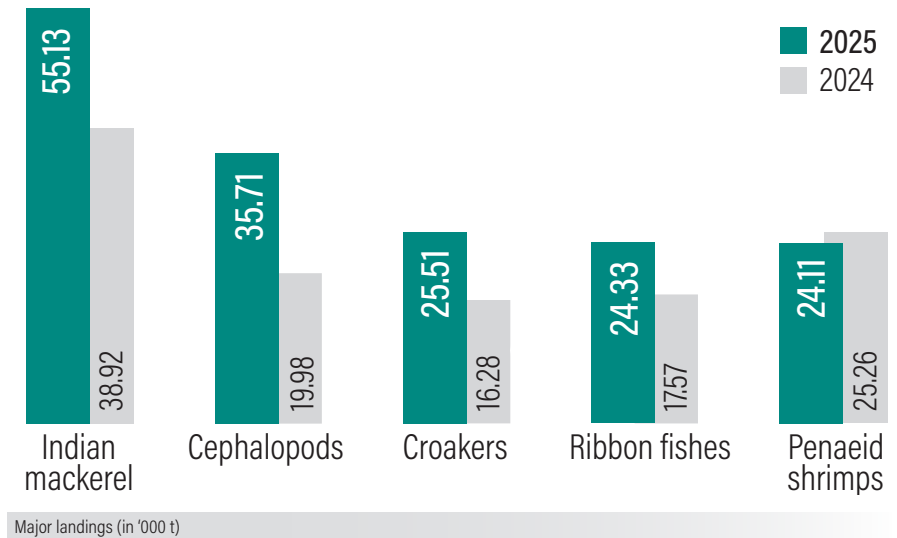
Crustacean landing at Alibag fishing harbour, Maharashtra

Developing an Integrated Assessment Framework to support management decisions for marine fisheries in Maharashtra

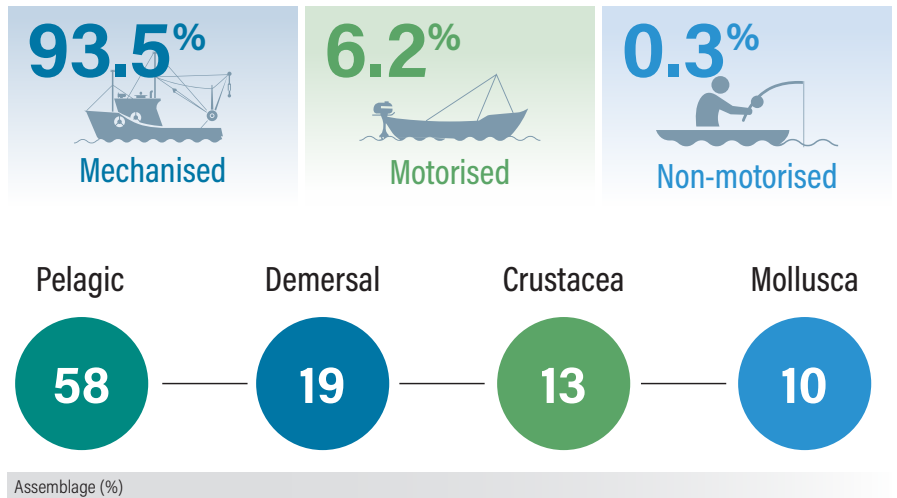
Project: SFD/IAF/15

Marine fish landings

Maharashtra registered an estimated marine fish landing of 3.66 lakh t in 2025, reflecting an 18% increase compared to 2024 and a substantial rise of nearly 74% over 2023. Indian mackerel emerged as the leading



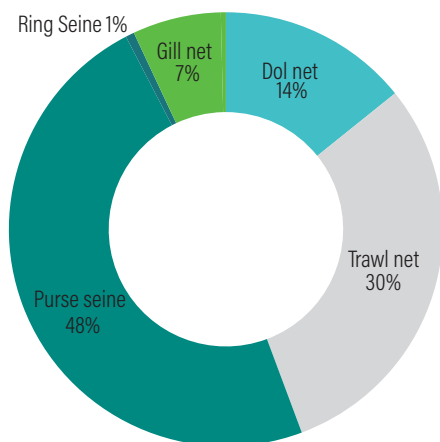
Mechanised purse seines formed the backbone of the Maharashtra marine fishery, contributing nearly 48% of the total landings, followed by multi-day trawl nets and dol nets



resource with a 42% increase in landings, reaching a decadal high. Most other major resources also



Night fish landing at Naigao, Thane



Gear wise marine fish landing (%)

showed an increasing trend, except penaeid and non-penaeid shrimps, which recorded a decline.

Sector-wise, landings from the mechanised sector increased by 23%, with mechanised purse seines contributing the largest share (48%), followed by multi-day trawl nets (29%) and mechanised dol nets (10%). Seasonally, landings declined by 30% during the first quarter. Among the major landing centres, Sassoon Dock accounted for the highest share (19%), followed closely by New Ferry Wharf with 18% of the total landings.

Pelagic resources

The estimated landing of pelagic fishes in 2025 was 192,412 t. Among the pelagic catch, Indian mackerel contributed 28.65% of the total pelagic landings, followed by ribbonfishes at 12.64%. Within the carangid

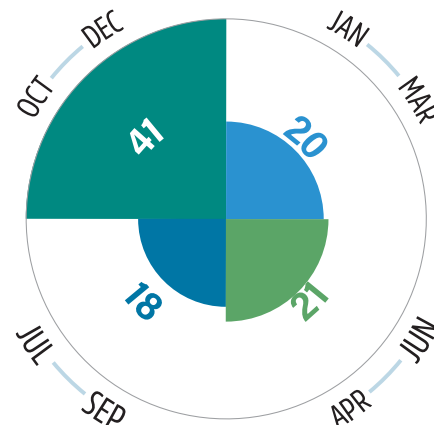
group, other carangids were the primary contributors with a landing of 13,683.29 t, while horse mackerel contributed 5,183.55 t. Clupeid species collectively accounted for 23.33% of the total pelagic landings. Among the clupeids, oil sardine recorded the highest contribution (21,563.59 t), followed by lesser sardines (4,502.10 t).

The seer fishery in the region primarily comprised two species, namely *Scomberomorus commerson* (9,072.77 t) and *S. guttatus* (4,689.47 t). Tunnies accounted for a relatively minor share of the pelagic fishery (9.46%), dominated mainly by *Euthynnus affinis*, which constituted 46% of the total tunny catch.

Approximately 69.12% of the total pelagic catch was contributed by mechanised purse seiners, followed by multi-day trawler netters (11.12%), dol netters (10.47%), gillnetters (7.5%) and ring seiners (0.84%).

Demersal resources

Demersal fish landings for 2025 are estimated at 73,628.37 t which is a notable increase of approximately 43 % compared to 2024. The demersal fish species were found to have made a significant contribution of 20.11% towards the overall fish landings estimated in Maharashtra. The fishery was primarily sustained by croakers (34.65%), catfishes (10.18%), silver pomfret (8.95%), sharks (5.96%) and threadfin breams (5.38). A major increase was noticed in leatherjackets



Quarter-wise landings (%)

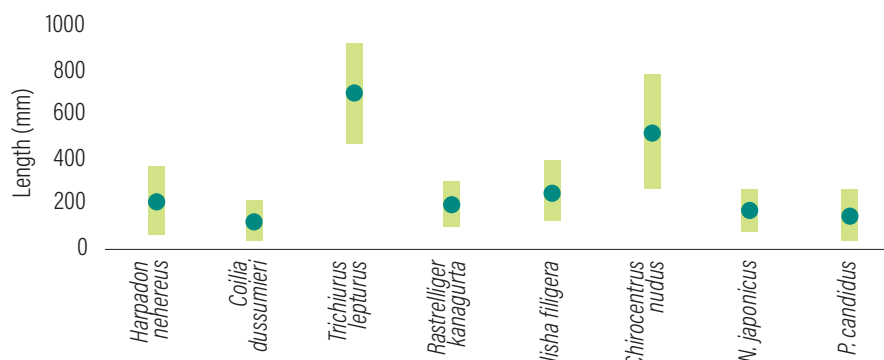
(238.17%), catfishes (100.61%), and croakers (56.66%). The first quarter contributed 19.58% of total demersal resources, followed by the fourth quarter 42.63%, the third quarter 17.85%, and the second quarter

Demersal fisheries were mainly supported by croakers, catfishes and silver pomfrets, with notable increases recorded in leatherjackets and catfishes.

19.95%. A major chunk of demersal resources was landed by trawlers (63.16%), followed by dol netters (10.52%), gill netters (10.26%) and purse seiners (15.01%).

Crustacean resources

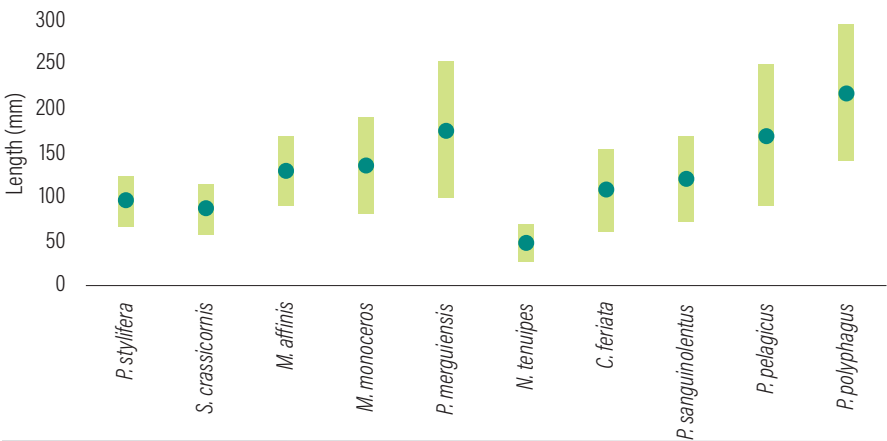
The total crustacean landings in Maharashtra during 2025 were estimated at 0.46 lakh t, contributing 12.65% to the total marine fish landings in the state. This represents a decrease of 27.4% compared with the crustacean landings recorded in 2024. Penaeid prawns were the major contributors, accounting for 52.1% of the crustacean landings, followed by non-penaeid prawns (38.4%), crabs (5.4%), stomatopods



Length distribution of finfish species landed in Maharashtra



Barnacle infestation on the three-spot swimming crab



Length distribution of crustacean species landed in Maharashtra

(3.4%) and lobsters (0.8%). Penaeid prawns constituted the largest share of crustaceans landed by trawlers, whereas non-penaeid prawns formed the major component of crustaceans landed by dol netters, followed by penaeid prawns.

During field observations along the Ratnagiri coast, heavy barnacle infestation was recorded on the carapace and appendages of the

three-spot swimming crab (*Portunus sanguinolentus*). The infestation consisted of dense aggregations of epibiotic barnacles attached mainly to the dorsal carapace, chelipeds and walking legs, potentially affecting the crab's mobility, feeding efficiency and overall fitness. Such epibiont colonisation is generally associated with reduced moulting frequency, prolonged intermoult periods and environmental stress.

Molluscan resources

The total mollusc landings in Maharashtra during 2025 were estimated at 0.357 lakh t, contributing 9.76% to the total marine landings in the state. This represents a substantial increase of 77% compared with mollusc landings recorded in 2024. Squids were the major contributors, accounting for 87% (31,033 t) of the total mollusc landings, followed by cuttlefishes (12.5%) and octopus (0.6%). Among molluscs landed by trawlers, squids constituted the dominant component.

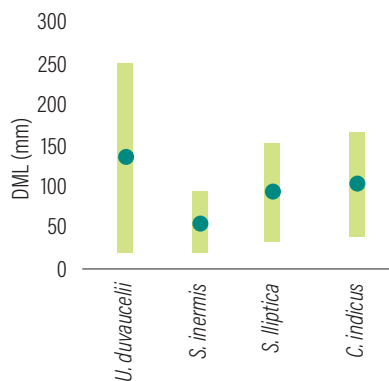
Molluscan resources showed a strong increase in 2025, with squids accounting for about 87% of the total mollusc landings along the Maharashtra coast.

In 2025, cephalopod landings along the Maharashtra coast were predominantly contributed by purse seine operations, which accounted for 73.33% of the total cephalopod catch. This indicates a clear shift in harvesting patterns from a trawl-dominated cephalopod fishery to purse seine-based operations.

Biological monitoring and assessment

The length range, sex ratio, food and feeding habits, maturity status and peak spawning period were recorded for commercially important species landed along the Maharashtra coast. A length-based assessment of major fishery resources was carried out using the length-frequency distribution recorded during 2025 as the primary input. The spawning season of major commercial species was determined through biological analyses.

Comprehensive assessments of plankton communities, fish eggs



Length distribution of cephalopod species landed in Maharashtra

and larval populations were also undertaken along the coastal areas of Maharashtra. These studies are important for understanding marine productivity, fish recruitment patterns and the overall health of coastal ecosystems. The spatial and temporal distribution of these microscopic organisms provides valuable insights into potential spawning grounds and nursery areas.

Productivity-Susceptibility Analysis

Productivity Susceptibility Analysis (PSA) was applied to evaluate the vulnerability of 70 commercially important finfish species, comprising 35 pelagic and 35 demersal species. Among the demersal species, vulnerability scores ranged from 0.9 to 2.0. The spotted eagle ray (*Aetobatus narinari*) recorded the highest vulnerability score (2.0), whereas the black pomfret (*Parastromateus*

niger) showed the lowest vulnerability (0.9). Four demersal species (11.42%) exhibited moderate vulnerability, with scores between 1.8 and 1.9, while thirty species (85.71%) were categorised as having low vulnerability, with scores ranging from 0.9 to 1.7.

Among pelagic species, vulnerability scores varied from 0.9 to 1.9. The lowest score (0.9) was recorded for the Indian oil sardine (*Sardinella longiceps*) and Commerson's anchovy (*Stolephorus commersoni*), whereas the great barracuda (*Sphyræna barracuda*) exhibited the highest vulnerability score (1.9) among pelagic fishes along the northwest coast of India. Overall, most species were associated with moderate data quality, while susceptibility data quality was generally low, highlighting the need for improved data collection, particularly on life-history traits.

Decadal analysis of marine fish landings (1961-2024)

Marine fish landings in Maharashtra during 1961-2024 exhibited pronounced temporal variability influenced by technological advancements, intensification of fishing effort, environmental changes and policy interventions. The early decades (1961-1980) were characterised by rapid growth driven by motorisation and mechanisation, with landings increasing from 1.38 to

2.47 lakh t and contributing nearly 20% to India's marine fish production. Technological innovations, including multi-day trawling and purse seining during 1981-2000, further enhanced production, culminating in peak landings of 3.50 lakh t, although early signs of resource saturation and ecosystem stress became evident.

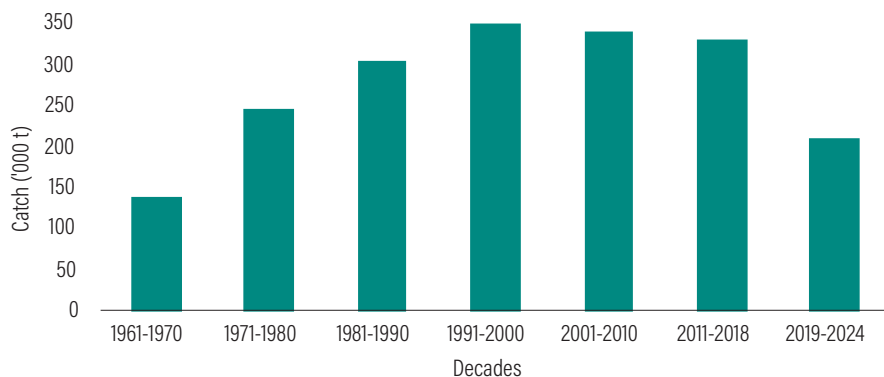
The early 2000s witnessed record catches, with landings peaking at 4.49 lakh t in 2002. During this period, Maharashtra's contribution to national marine fish production declined to about 12.6%. The last decade has been characterised by environmental variability, sectoral conflicts and technological transitions, with the average annual landings showing a decline compared with the 2000s.

Productivity-Susceptibility Analysis indicated that most pelagic and demersal species exhibited low to moderate vulnerability.

Stakeholder consultation

A series of stakeholder consultations was conducted in the Thane and Palghar districts of Maharashtra. The consultations involved scientists, fishers, members of cooperative societies and officials from the fisheries department to discuss issues related to marine fisheries sustainability, juvenile fishing and the monsoon fishing ban.

During the consultations, fishers urged ICAR-CMFRI to strengthen awareness campaigns on juvenile fishing and the implementation of Minimum Legal Size regulations. Some fishers from Thane also demanded the extension of the monsoon fishing ban to 90 days. Concerns regarding declining fish catches and the impacts of coastal development were also raised during the discussions.



Annual average fish landings (in '000 t)

Sustainable Fisheries Management

Karnataka and Goa

Karnataka recorded a strong recovery with marine fish landings in 2025, registering 5.78 lakh t, mainly driven by high catches of threadfin breams, with multi-day trawl nets contributing the largest share. Biological studies examined growth, spawning patterns and trophic relationships of major finfish and shellfish resources, while stock assessments indicated a mix of sustainably exploited, rebuilding and overfished species. Socio-economic analyses highlighted the profitability of fishing operations. In Goa, landings reached 0.32 lakh t, with Indian mackerel dominating and purse seines contributing the majority of the catch.



Hangarkatta fishing harbour, Udupi district, Karnataka

Developing an integrated assessment framework to support management decisions for marine fisheries in Karnataka and Goa

Project: FFD/IAF/10

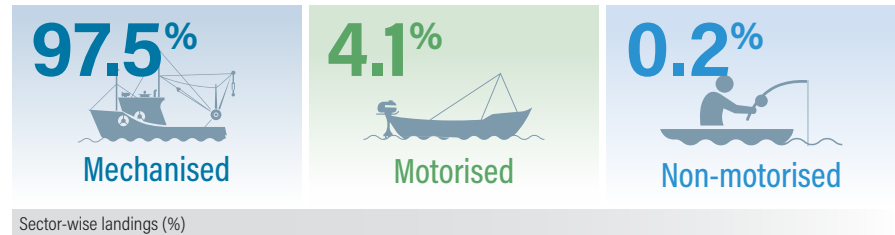
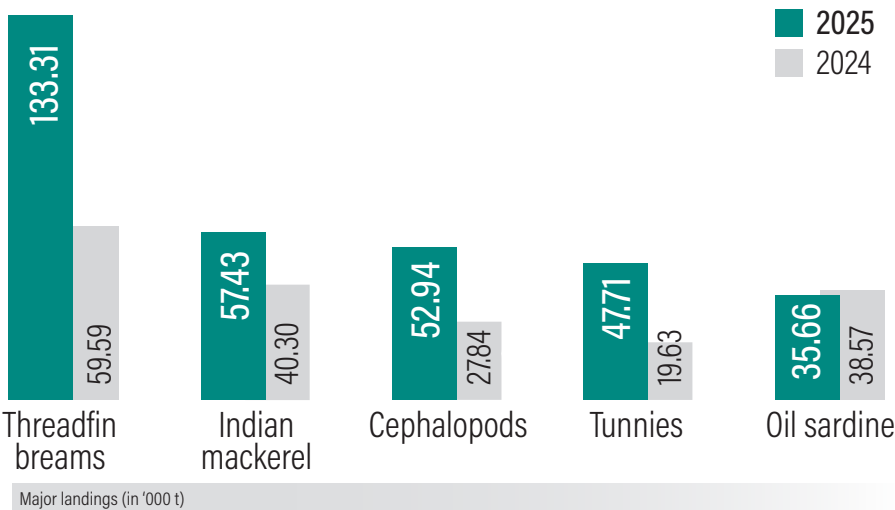
Karnataka

Marine fish landings

Karnataka recorded the most notable recovery among the coastal States in 2025, with estimated marine fish landings (5.88 lakh t) increasing by

Threadfin breams emerged as the dominant resource in Karnataka during 2025, contributing to 23% of the total marine fish landings.

44% following a sharp decline in 2024. This surge was largely driven by a decadal-high catch of threadfin breams. Most major resources showed



an increasing trend during the year, except oil sardine (8%), scads (6%), and anchovies (4%), while crustacean resources overall declined by 23%.

In terms of fishing gears, multi-day trawl nets dominated the landings,

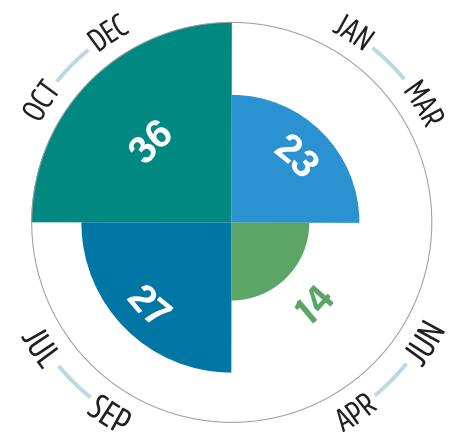
contributing 71% of the total catch and registering a 50% increase in their share. Seasonally, landings increased across most quarters, except for a marginal decline of 3% during the second quarter. The majority of the landings originated from major fishing



Malpe fishing harbour, a major marine fish landing centre in Karnataka



Sampling in the Mangalore fisheries harbour



Quarter-wise landings (%)

Crustacean resources

Among the crustacean resources, penaeid prawns dominated the fishery, contributing 65% of the total crustacean landings, followed by crabs (16.8%) and stomatopods (12.8%). Non-penaeid prawns accounted for about 5.4% of the crustacean landings in Karnataka. Among shrimps, *Metapenaeus dobsoni* (51%) dominated the landing, followed by *Parapenaeopsis stylifera* (15%). Other shrimps which contributed to the landing were *M. monoceros*, *M. affinis*, *Solenocera choprai*, etc.

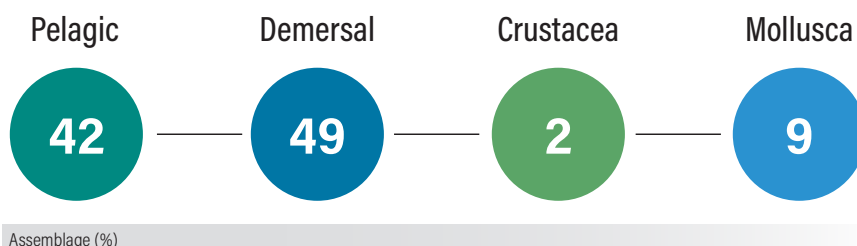
The dominant crab landings in Karnataka were constituted by *Portunus sanguinolentus* (38%), *P. pelagicus* (36%), and *Charybdis feriata* (17%).

Molluscan resources

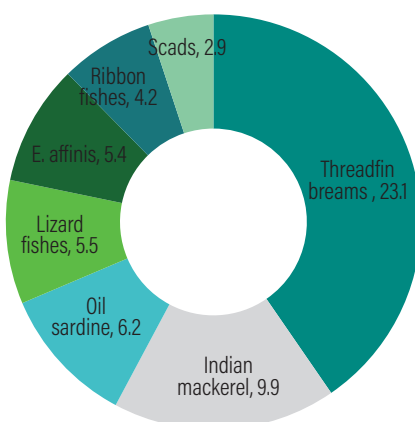
Squids dominated the landings, contributing 56% of the molluscan resource, followed by cuttlefish (41%). A minor quantity of octopus (2%) and Gastropods (>1%) also landed during the period.

Biology and stock assessment

A life history study was conducted on 26 finfish species, 7 crustaceans,



Assemblage (%)



Major resources contributing to the finfish landings (%)

harbours, with Mangaluru contributing the largest share (53%), followed by Malpe (36%).

Finfish resources

The threadfin breams emerged as the single largest resource contributing to the Karnataka marine fishery in 2025, accounting for 23.1% of the total landings. Other major contributors included Indian mackerel (9.9%), oil sardine (6.2%), lizardfishes (5.5%), ribbonfishes (4.2%). Among threadfin breams *Nemipterus randalli* dominated the catch.



Women workers in Malpe fishing harbour



Purse seine net cleaning in Malpe harbour

and 7 cephalopods, examining growth patterns, reproductive traits, and trophodynamics.

Length range and mean size of finfishes

The length range and mean size of the major finfish and shellfish resources

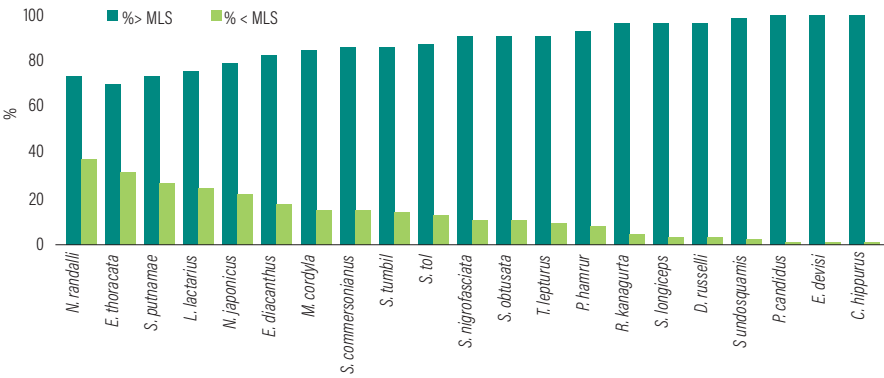
landed along the Karnataka coast were studied.

Juvenile composition

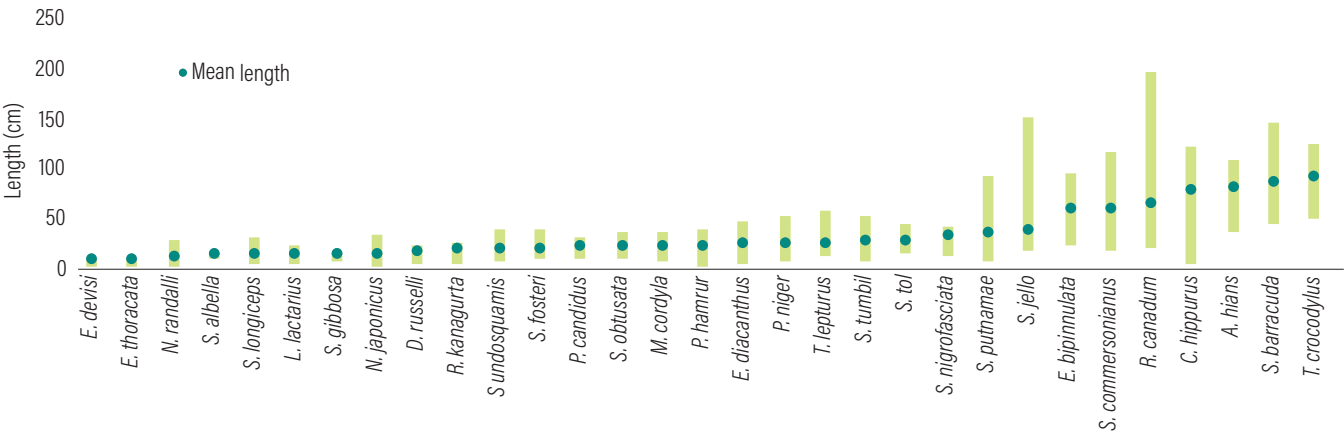
Assessment of the size composition of major finfish landings along the Karnataka coast revealed that individuals below the Minimum Legal Size accounted for less than 37% in most species.

Spawning season of major fishery resources

The spawning season of major commercial species was identified through biological analyses. Although most species exhibited year-round spawning, peak reproductive activity was predominantly observed during the post-monsoon period (Table 1)

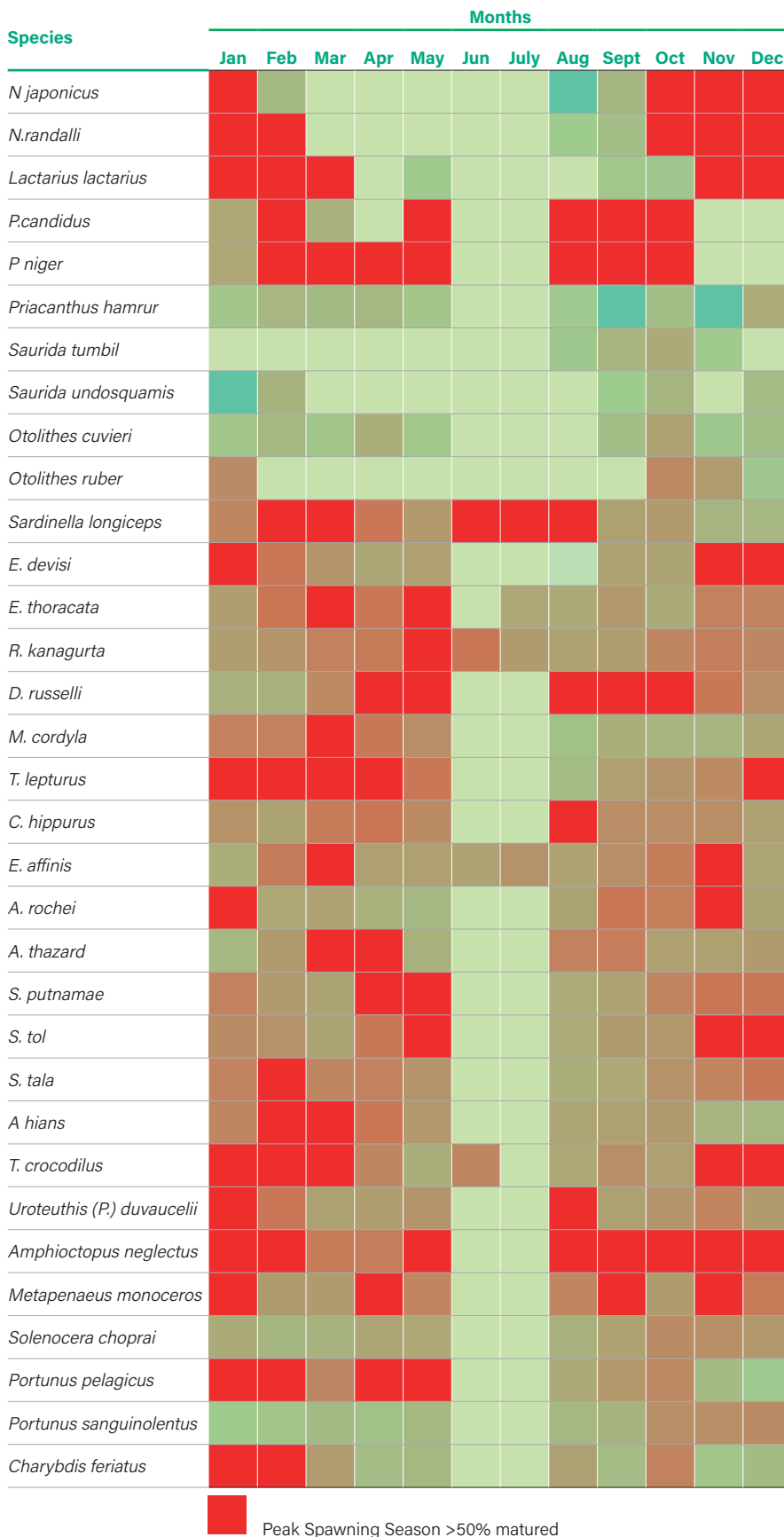


Juvenile composition of major commercial resources landed in Karnataka (%)



Length range and mean size of major finfish resources of Karnataka

Peak spawning season of major finfish and shellfish along the Karnataka coast



Trophic studies

The predator-prey similarity network, based on major-prey filtered diet data, revealed clear dietary overlap patterns among 19 predator species linked by 35 strong interactions. Edges represented shared major prey categories, with strength indicating similarity, and visualisation focused on stronger overlaps to enhance the interpretability of key trophic relationships.

Distinct feeding guilds were identified, showing strong within-group similarity and weak inter-group overlap, indicating structured trophic organisation and resource partitioning. Species such as *Megalaspis cordyla* exhibited high connectivity with broad

Stock assessment using the Bayesian Schaefer Model indicated that several species are sustainably exploited, while a few remain overfished but are not critically depleted.

dietary overlap, while *Rastrelliger kanagurta* showed strong weighted links, particularly with *Sardinella longiceps*. Clusters of related taxa (e.g., *Saurida* spp., *Nemipterus* spp.) further reflected ecological similarity in feeding patterns.

Stock status

The Bayesian Schaefer Model (BSM) was applied to ten major finfish species harvested by trawlers along the Karnataka coast using annual catch and CPUE data from 2015 to 2025. Results revealed that three species (*Otolithes cuvieri*, *Saurida undosquamis*, *Trichiurus lepturus*) are currently exploited sustainably, four species remain overfished (*Pampus*



Stakeholder consultation

candidus, *Lactarius lactarius*, *S. tumbil*, *Nemipterus randalli*), and three species show signs of rebuilding (*Megalaspis cordyla*, *O. ruber*, *Parastromateus niger*). Importantly, biomass levels for all species were above the precautionary limit ($B/B MSY > 0.3$), suggesting no stocks are in a critically depleted condition.

Goa

Marine fish landings

Goa recorded an estimated marine fish landing of 0.32 lakh t in 2025, a slight increase of 3% over the previous year. *Rastrelliger kanagurta* emerged as the dominant resource with a 20%

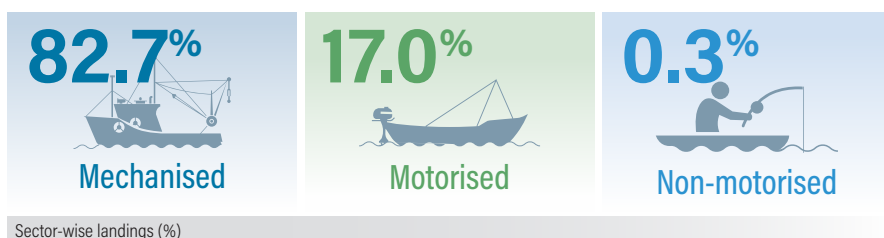
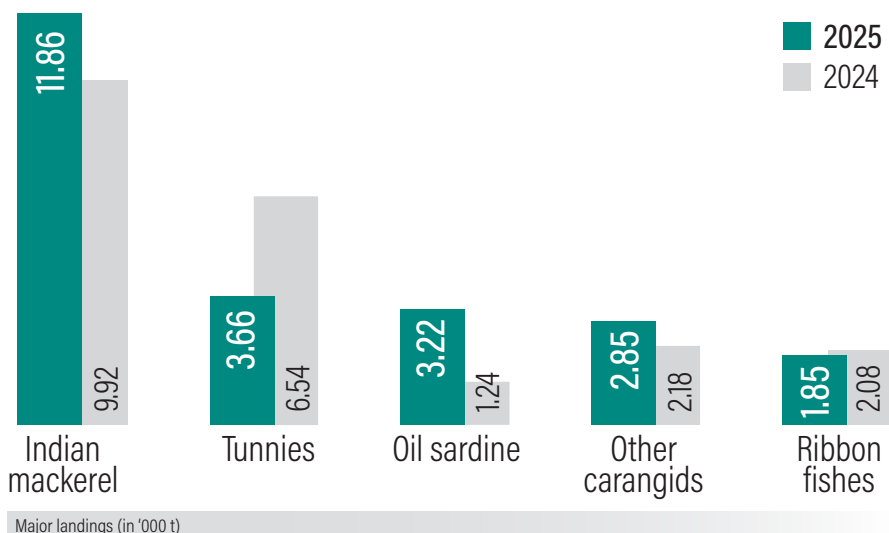
increase in landings, while oil sardine and lesser sardines recorded nearly three-fold and four-fold increases, respectively. Pelagic resources increased by 9%, whereas demersal and molluscan resources declined by 27% and 66%. Mechanised purse seines dominated the catch (62%), followed by multi-day trawl nets (14%).

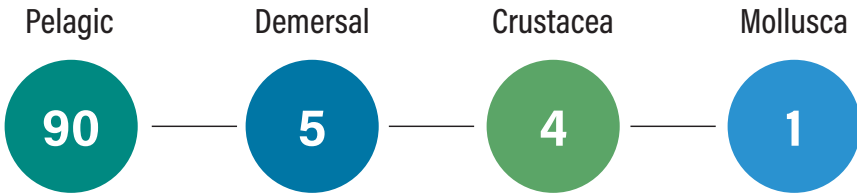
Socioeconomics

Primary data on costs, earnings, and other economic indicators were collected weekly from various fishing units at the Mangalore and Malpe fish landing centres using a multi-stage stratified random sampling design. The data were analysed to estimate key economic indicators and to generate policy-relevant insights on the profitability and efficiency of different fishing methods.

Stakeholder consultation

A series of stakeholder consultations was held across the state, engaging key groups including traditional fishers, fish meal plant owners, and fish farmers. These interactions provided a platform for deliberating on issues related to fisheries management, sustainability, and environmental challenges.

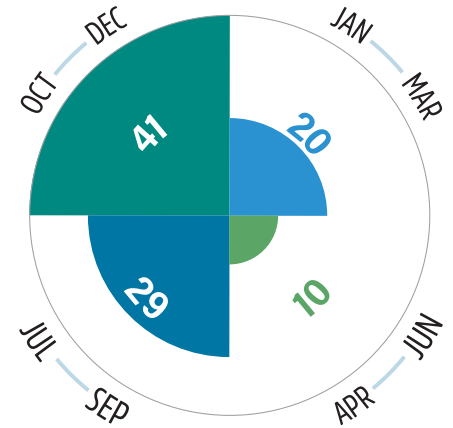




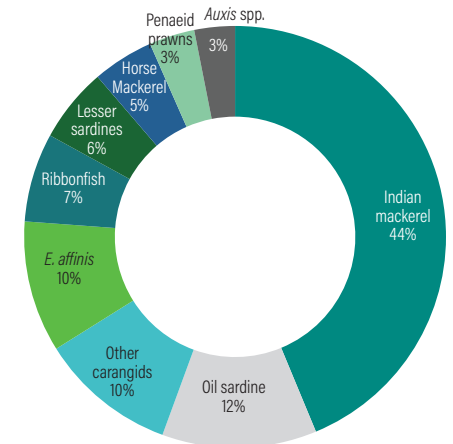
Assemblage (%)



Talpona fishing harbour, Goa

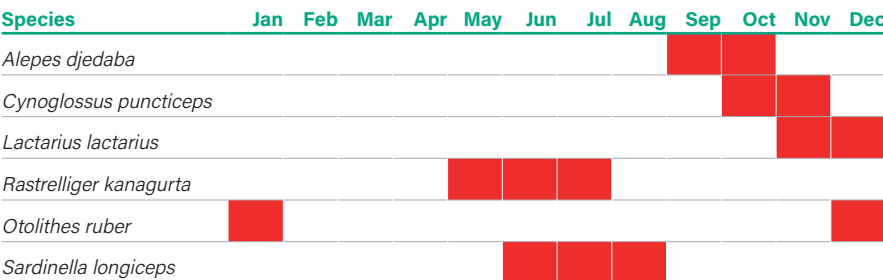


Quarter-wise landings (%)



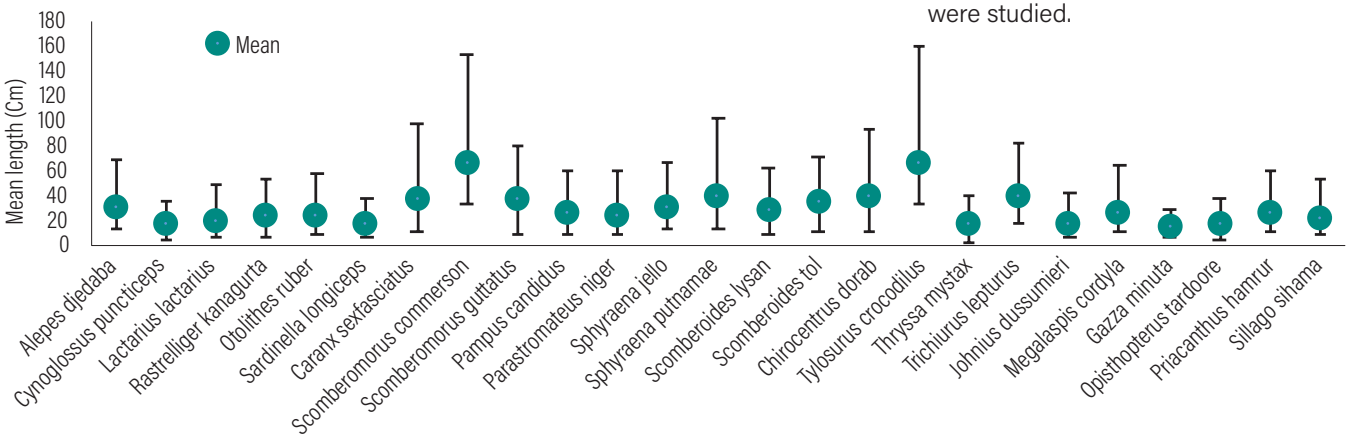
Major resources contributing to the landings in Goa (%)

Peak spawning season of some species along the Goa coast



Seasonally, landings peaked during the third quarter, rising nearly six-fold compared with other quarters.

The length range and mean size of the major finfish and shellfish resources landed along the Goa coast were studied.



Length range of major resources in Goa (cm)

Sustainable Fisheries Management

Kerala and Lakshadweep

Kerala recorded marine fish landings of 6.24 lakh t in 2025, a 2% increase over the previous year, contributing to 17% to the national total. Oil sardine dominated the catch, reaching a decadal high, while threadfin breams and cephalopods also increased. Mechanised ring seine operations and catch rates improved, though motorised sector performance declined. Crustacean landings decreased, whereas molluscan landings increased, led by squids. In Lakshadweep, the fisheries remained tuna-centric, with total landings of 0.18 lakh t, dominated by skipjack and yellowfin tuna harvested through pole-and-line operations supported by livebait fisheries.



Landings of *M. dobsoni* at Cochin Fisheries Harbour

Developing an Integrated Assessment Framework to support management decisions for marine fisheries in Kerala and Lakshadweep

Project: FFD/IAF/09

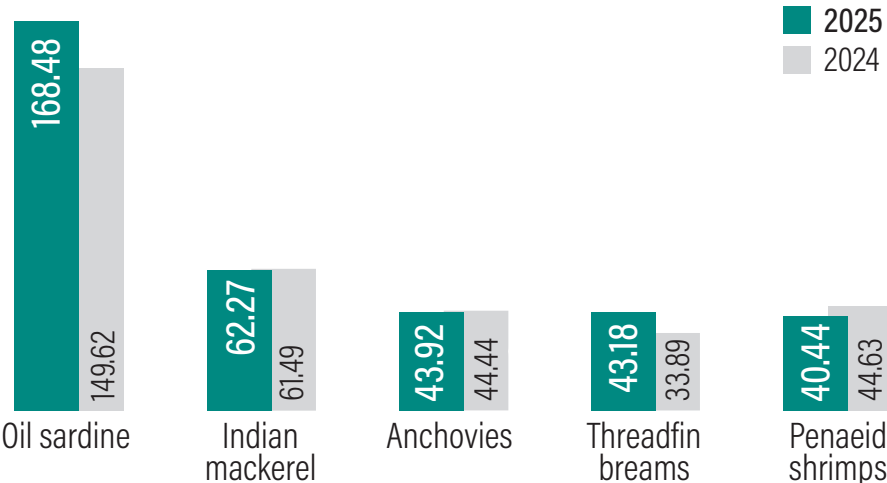
Kerala

Marine fish landings

Kerala recorded an estimated marine fish landing of 6.24 lakh t in 2025, showing a marginal increase of 2% compared with the previous year. The state contributed about 17% to the national total and ranked third among the maritime States. Oil sardine emerged as the leading resource with a 13% increase in landings, reaching a decadal high, while threadfin breams and cephalopods also recorded notable increases of 27% and 16%, respectively.



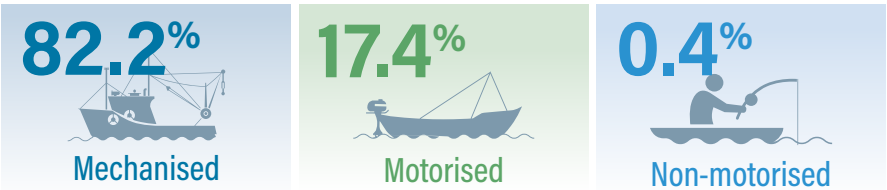
Heavy landings of oil sardine in Kerala



Major landings (in '000 t)

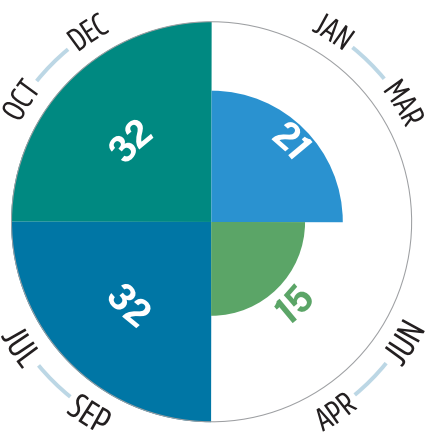
Ernakulam district accounted for the highest share of marine fish landings in Kerala (29%), followed by Kollam (25%) and Kozhikode (18%).

The contribution of pelagic resources remained unchanged from 2024, and landings from mechanised ring seine operations increased by 13%. District-wise, Ernakulam accounted for the highest share of landings (29%), followed by Kollam (25%) and Kozhikode (18%). However, fishing activities in the southern districts of Kerala were briefly affected in May due to heavy rainfall and a cargo shipwreck, resulting in the loss of approximately one week of fishing days.



Sector-wise landings (%)

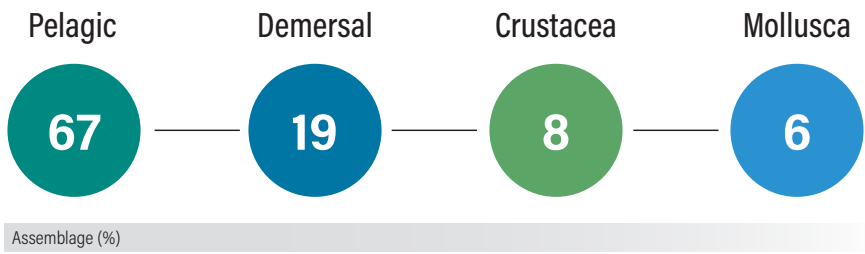
Catch rate per hour in mechanised fishing increased by 11%, while



Quarter-wise landings (%)



Catch rates (CPH t/hour) of major fishing sectors in Kerala during 2025



Assemblage (%)

motorised fishing recorded a significant decline (–29%). The CPUE for mechanised units rose by 5.7% to 2.46 t/unit, whereas motorised units showed a decrease of 25.6% compared to the previous year.

and black pomfrets (3.3%) followed, with declines in soles (–8%) and lizardfishes (–1%). Elasmobranch landings rose by 60% to 5,120 t, comprising sharks (51.6%), rays (48.2%), and guitarfishes.

Finfish fishery and biology

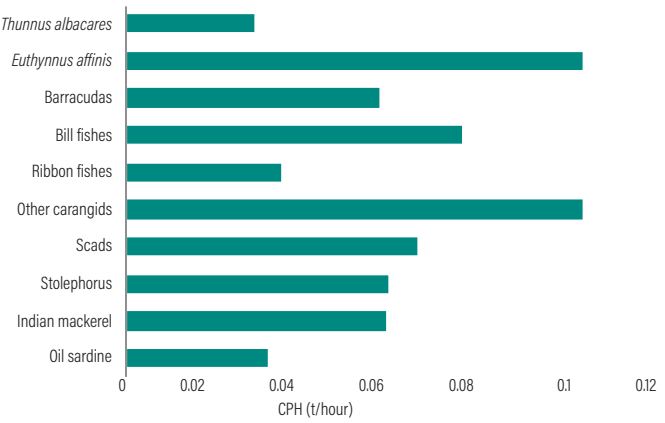
In 2025, Kerala’s oil sardine landings rose to 1.68 lakh t (+12.6%), dominated by ring seines (89%), with recruitment gains from monsoon-driven productivity improving survival but constraining growth, underscoring the need for dynamic harvest control. Indian mackerel landings were stable (+1%; 0.62 lakh t), while clupeids and barracudas increased, and Stolephorus, ribbonfishes, and scads declined.

Demersal fisheries were dominated by threadfin breams, contributing nearly 46% of demersal landings, followed by lizardfishes, perches and soles.

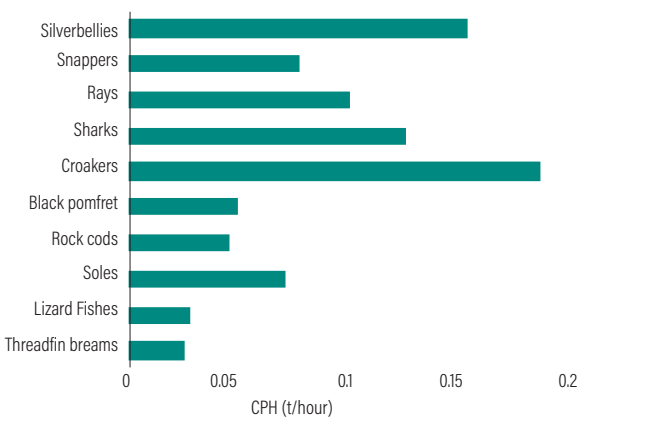
Threadfin breams dominated demersal landings with 0.13 lakh t (45.6%), a 22% increase, mainly from mechanised trawlers (47.6 kg/hour). Lizardfishes (14.0%), other perches (9.0%), soles (8.5%), rockcods (5.8%),

Shellfish fishery and biology

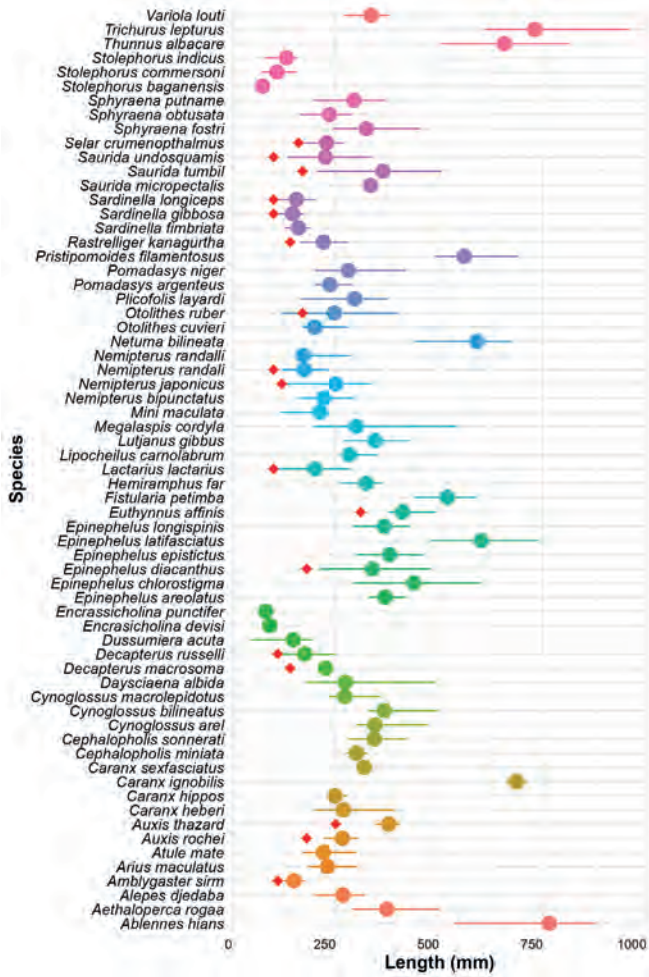
Crustaceans contributed 0.47 lakh t (8.5%) to Kerala’s marine landings in 2025, a 9% decline from 2024, dominated by penaeid prawns (86%), followed by crabs (10%) and non-penaeids (3.9%). Inshore species



Standardised catch rates (t/hour) of major pelagic finfish resources of Kerala in 2025



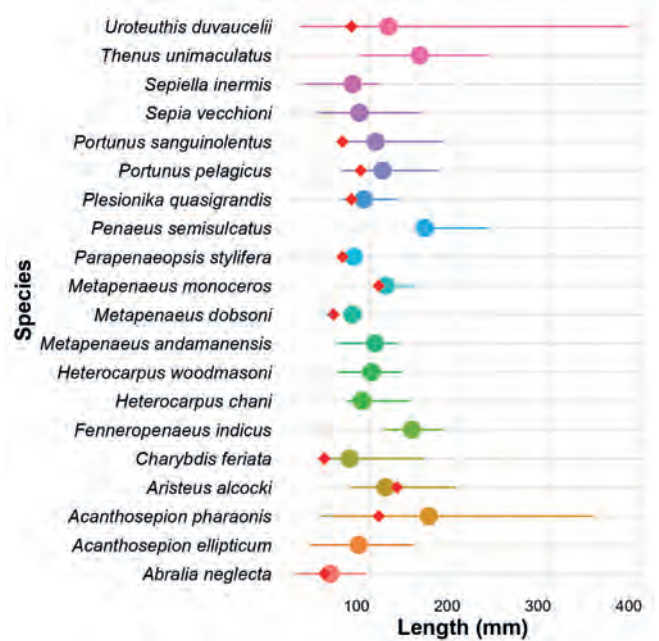
Standardised catch rates (t/hour) of major demersal finfish resources of Kerala in 2025



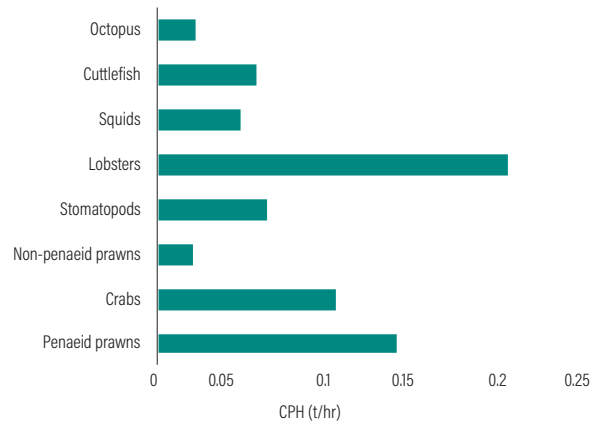
Mean length, length ranges and MLS of the finfish species in fish landings in Kerala in 2025



Blue swimmer crab (*Portunus pelagicus*) landed at Thattupuram landing centre

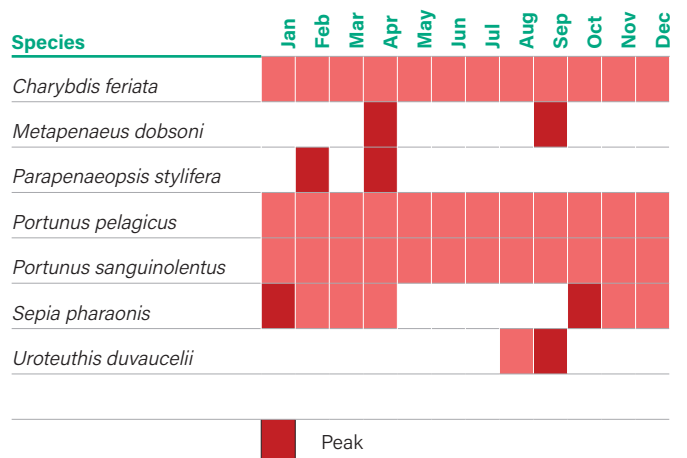


Mean length, length ranges and MLS of the shellfish species in the landings of Kerala in 2025



Standardised catch rates (t/hour) of major shellfish fishery resources of Kerala in 2025

Spawning period of shellfish species along the Kerala waters



Spawning period of finfish species along Kerala waters



dominated (61%), followed by cuttlefish (25%) and octopuses (11%), with squid landings increasing by 53%. The mean size of *Uroteuthis duvaucelii* exceeded the MLS (80 mm), indicating mature stock exploitation, while *Amphioctopus neglectus* showed a narrower size range (20-96 mm; mean 56.6 mm). Peak spawning of *U. duvaucelii* occurred from mid-August to September, coinciding with the “squid run”. *Sepia pharaonis* dominated cuttlefish landings (82%); size data relative to MLS were recorded.

Socioeconomics

Kerala fisheries are undergoing technology- and climate-driven restructuring, marked by corporatisation, declining native ownership, migrant labour influx, and altered governance; intensified fishing via high-powered engines and modified gears is increasing unsustainable practices amid weak enforcement, alongside rising competition and low sardine availability.

Stakeholder consultation

Stakeholder consultations at ICAR-CMFRI (Kerala & Lakshadweep IAF) addressed sea turtle conservation (TEDs), shrimp price decline, trawl ban extension, Periyar pollution impacts, and MLS implementation, complemented by an awareness workshop at Munambam on sustainable fisheries.

included *Metapenaeus* spp. and *Parapenaeopsis* spp., while deep-sea catches comprised *Aristeus alcocki* and *Heterocarpus chani*, the latter showing detritus-dominated feeding. Major crabs (*Portunus* and *Charybdis* spp.) exhibited wide fecundity ranges, indicating strong reproductive potential.

Molluscs contributed 39,900 t (7%) to Kerala landings in 2025, a 16% increase from 2024. Squids



Stakeholder awareness workshop organised at Munambam, Ernakulam



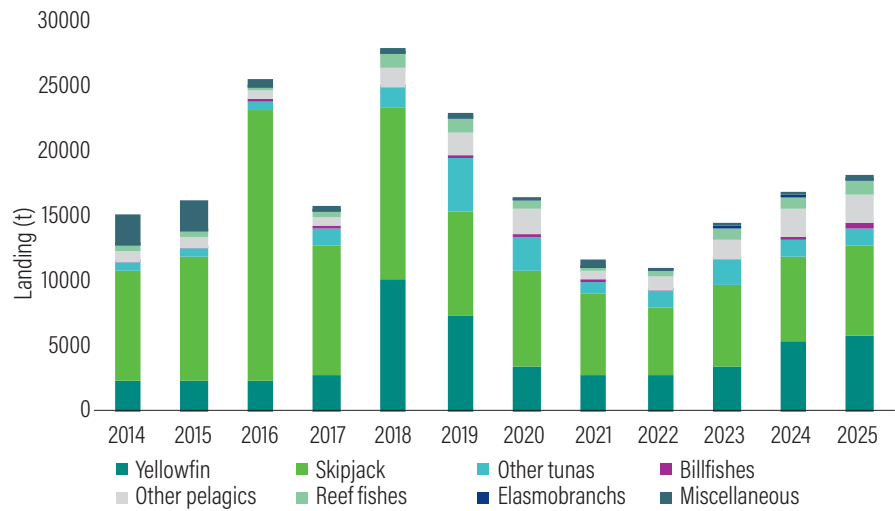
Stakeholder consultation workshop held at ICAR-CMFRI, Kochi

Lakshadweep

Marine fish landings

Tuna fisheries

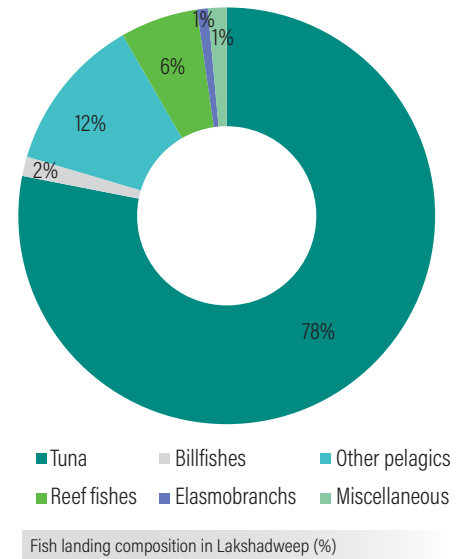
ICAR-CMFRI in-house projects are developing a database for evolving science-based fishery management plans (FMP) for the fisheries of the Lakshadweep islands. Fish landing data collected by the Department of Fisheries, U.T of Lakshadweep, is used for the study. The fish landing in 2025 was 0.18 lakh t, recording a slight increase (i.e. 7.36%) over the previous year, and fish landing showed



Fish landing in Lakshadweep from 2014 to 2025 (t)



Tuna pole and line fishing in Lakshadweep



Fish landing composition in Lakshadweep (%)

a continuously increasing trend since 2021. Tuna (0.142 lakh t) was the major group, forming nearly 78.07% of the

total catch, followed by other pelagics (12.1%) and reef fishes (6%).

All the resources showed a slight increase in the landing compared to last year. Skipjack and yellowfin recorded the highest individual species landings, with 0.07 lakh t and 0.059 lakh t, respectively. Island-wise landing shows Amini, Kalpeni, and Agatti contributed the highest with 0.050 lakh t, 0.049 lakh t, and 0.047 lakh t, respectively. Furthermore, Minicoy (85.1%), Androth (82.9%) and Agatti (79.1%) dominated the maximum share in tuna landings. The major fishing season in Lakshadweep depends on the tuna shoal availability near atolls,

with the peak landing observed during January-March.

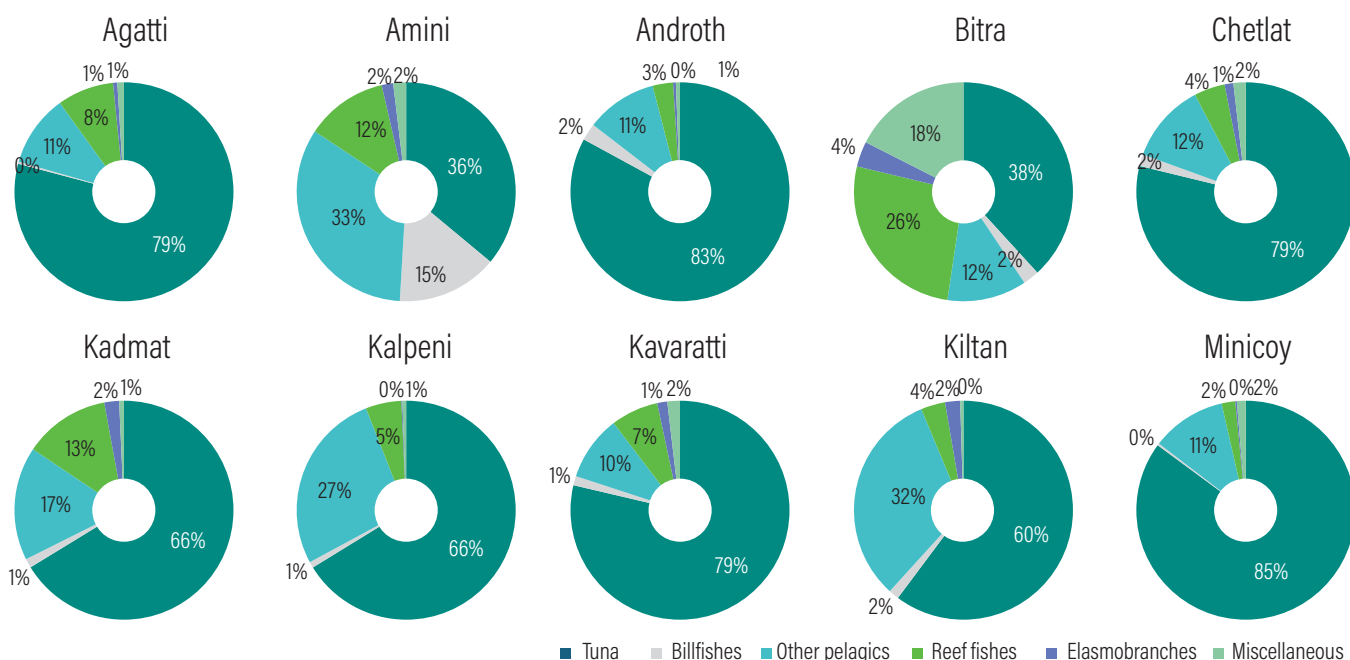
Livebait monitoring

The tuna livebait fishery underpins skipjack pole-and-line operations, with monitoring in Kavaratti and Agatti and periodic surveys in other islands. Species composition varies with atoll geomorphology: *Sprattelloides delicatulus* dominates lagoon habitats, while *S. gracilis* occurs in deeper or outer reef areas. Atolls without lagoons (Amini, Androth, Chetlat, Kiltan) depend on outer reefs with *S. gracilis* (55%), whereas lagoon-rich atolls (Agatti, Minicoy, Bitra,

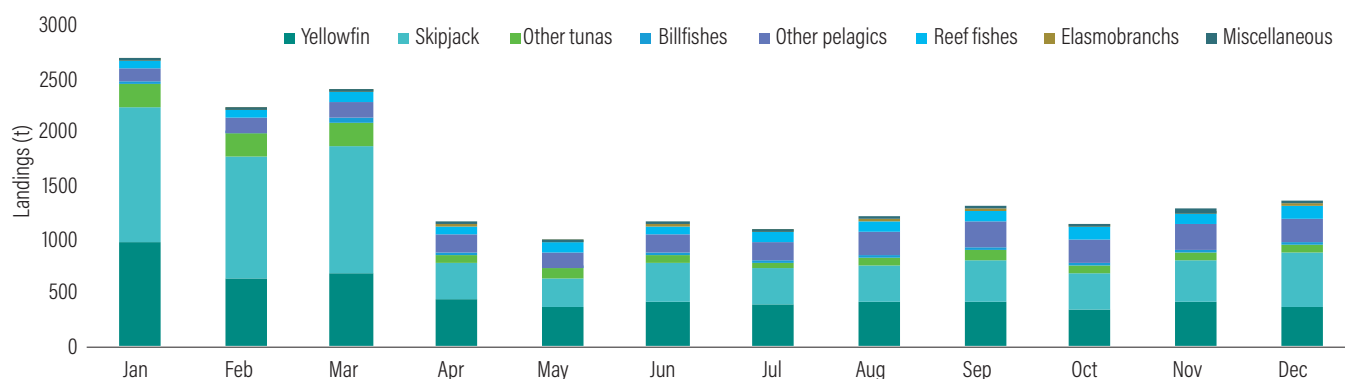
In Lakshadweep, tuna fisheries were supported by livebait resources (*Sprattelloides delicatulus* and *S. gracilis*), which sustain the traditional pole-and-line fishery.

Kadmth, Kalpeni) are dominated by *S. delicatulus* (65%).

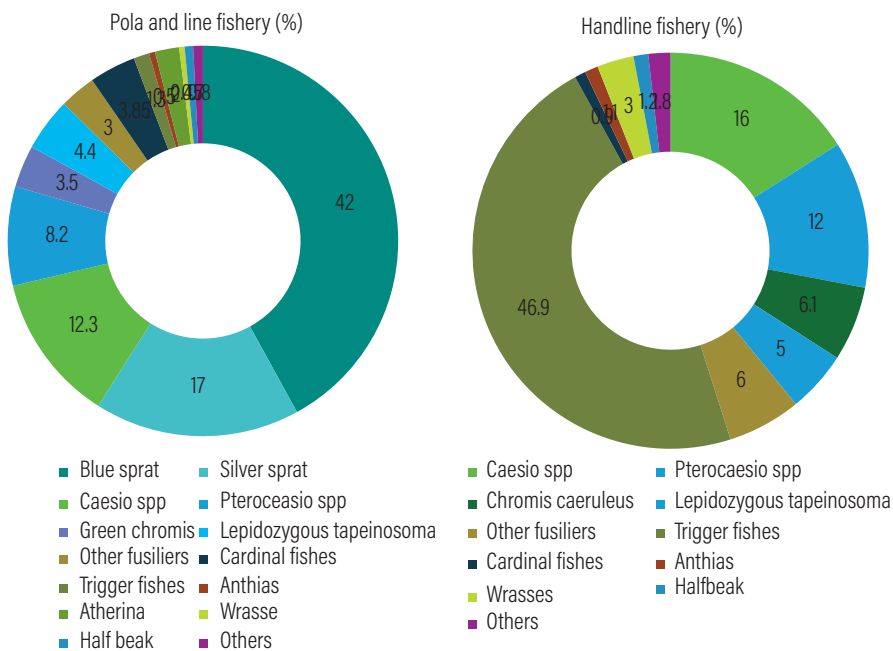
Pole-and-line tuna fishery is dominated by blue sprat (42%),



Fish landing composition of various islands in Lakshadweep (%)



Fish landing composition in different months (%)



Composition of live bait resources in pole and line and handline fishing (%)

followed by silver sprat (17%) and *Caesio* spp. (12.3%). While the handline fishery is dominated by triggerfish (46.9%), with moderate contributions from *Caesio* and *Pterocaesio* spp.

Reef fishery

The Lakshadweep reef fishery is a small-scale, multi-species system supporting local consumption and trade, mainly using gillnets and handlines, with limited spearfishing.

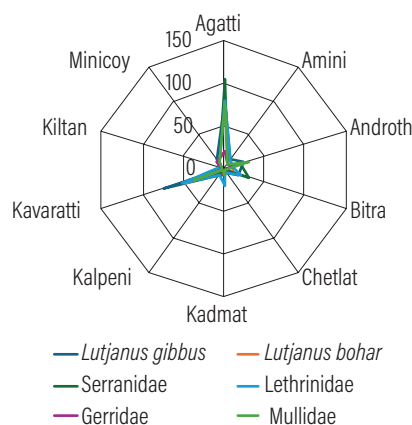
Landings are dominated by Lethrinidae and Lutjanidae (e.g., *Lutjanus bohar*, *L. gibbus*), followed by Serranidae, Mullidae, and Gerridae, with emperors and snappers contributing the largest share. Agatti (0.039 lakh t) and Kavaratti (0.029 lakh t) together contribute 61.91% of total reef fish landings, driven by targeted fishing and higher prices from mainland-linked collection systems. Emerging exploitation of non-conventional resources such

as parrotfish reflects increasing recreational demand.

Stakeholder consultation

A stakeholder meeting was conducted on the final day of Matsyamela 2026 at Kavaratti on January 12, 2026, in the presence of the Director of ICAR-CMFRI. The meeting focused on key challenges and emerging opportunities in the fisheries sector of Lakshadweep. Major issues discussed included limited market accessibility, constraints in ice and fuel supply, seasonal fluctuations in resource availability, and inadequate cold storage infrastructure across the islands.

Participants also explored alternative livelihood options such as seaweed farming and ornamental fish culture to reduce pressure on capture fisheries and enhance income diversification. The meeting was attended by fishers representing all ten islands, SHG, fishermen cooperative societies, the Lakshadweep Fishermen Association, fisheries department officials, NGOs and scientists from ICAR-CMFRI. The discussion provided a common platform for stakeholders to voice concerns, share practical solutions and strengthen coordination for sustainable fisheries development in the islands.



Reef fish landings (t) composition in various islands in Lakshadweep



Stakeholder consultation in Kavaratti, Lakshadweep

Sustainable Fisheries Management

Tamil Nadu and Puducherry

Tamil Nadu recorded marine fish landings of 6.85 lakh t in 2025, a marginal increase over the previous year, with mechanised trawl nets contributing the largest share. Pelagic resources increased, supported mainly by carangids, Indian mackerel and scads, while demersal resources showed marginal growth. Crustacean landings were dominated by crabs and penaeid prawns, and cephalopod landings increased significantly, led by squids. In Puducherry, total landings declined slightly to 0.51 lakh t, though cephalopods and penaeid shrimps increased. Biological studies indicated the presence of immature individuals in several finfish catches, suggesting the need for improved management measures.



Shore seine operation at Valinokkam, Gulf of Mannar

Developing an Integrated Assessment Framework to inform management decisions for marine fisheries in Tamil Nadu & Puducherry

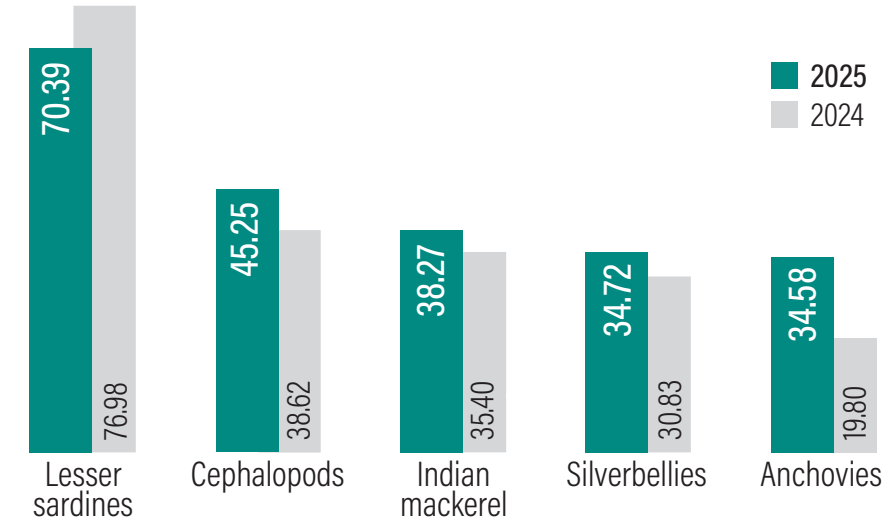
Project: SFD/IAF/13

Tamil Nadu

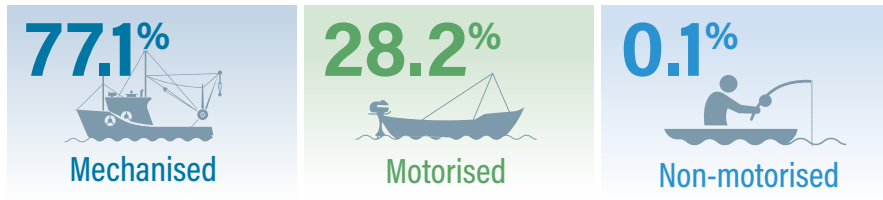
Marine fish landings

Tamil Nadu recorded an estimated marine fish landing of 6.85 lakh t in 2025, a marginal increase of 1% over 2024, retaining the top position among the maritime States. Fishing activities were affected by Cyclone Montha

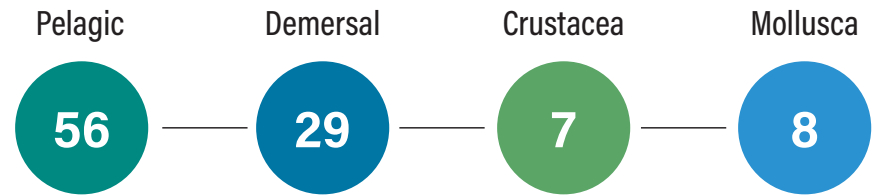
The mechanised sector dominated fisheries in Tamil Nadu, contributing about 69% of pelagic and 78% of demersal landings, while the motorised sector formed the secondary component of the fishery.



Major landings (in '000 t)



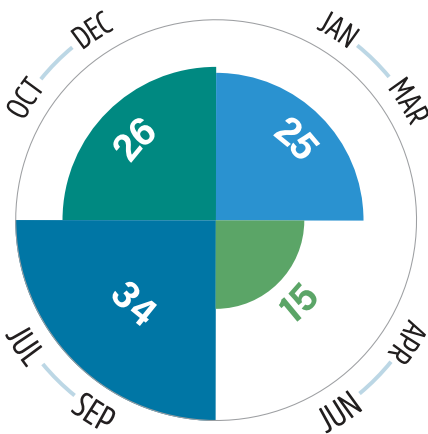
Sector-wise landings (%)



Assemblage (%)



Auction at Madras Fisheries Harbour



Quarter-wise landings (%)

(late October) and Cyclone Ditwah (late November–early December). Lesser sardines remained the dominant resource

for the fifth consecutive year, contributing 0.70 lakh t despite a 9% decline.

Mechanised single-day trawl nets contributed the largest share of landings (44%), followed by motorised gillnets (18%) and multi-day trawl nets (16%). Kanyakumari accounted for the highest district share (23%), followed by Thoothukudi (16%) and Pudukkottai (14%), while Chennai Fisheries Harbour contributed about 12% of the State's total marine fish landings.

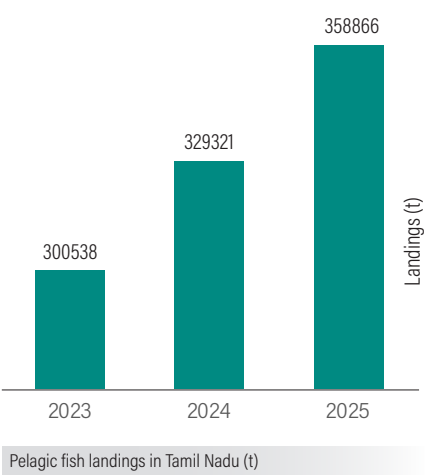
Catch Per Unit Effort

Trawl gears showed wide variation, with MTN recording the highest landings (115.96 thousand t; CPUE 0.073 kg/hour), followed by MDTN (43.93 thousand t; CPUE 0.045 kg/hour). Among other gears, OBGN landed

80.64 thousand t (CPUE 0.053 kg/unit). The highest efficiencies were observed in MHL (11.90 thousand t; CPUE 7.36 kg/unit) and MGN (10.76 thousand t; CPUE 7.09 kg/unit), while MOTHS (28.04 thousand t; CPUE 3.50 kg/unit) and MRS (0.85 thousand t; CPUE 3.53 kg/unit) showed moderate efficiency.

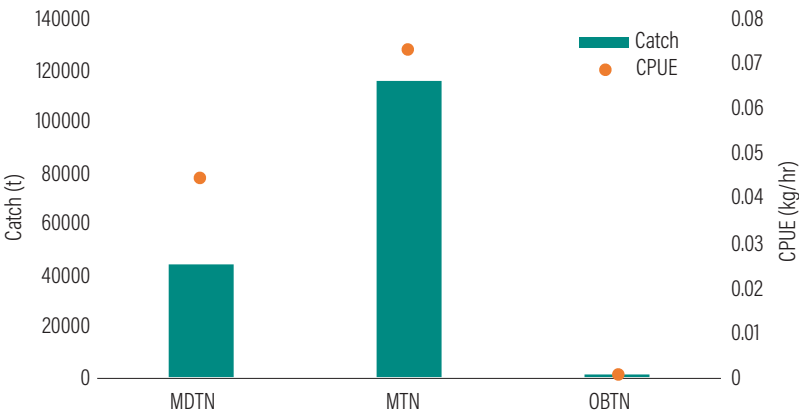
Pelagic finfish landings

The total pelagic fish landings increased from 3,29,321 t in 2024 to 3,58,866 t in 2025, registering an additional rise of 29,545 t over 2024.

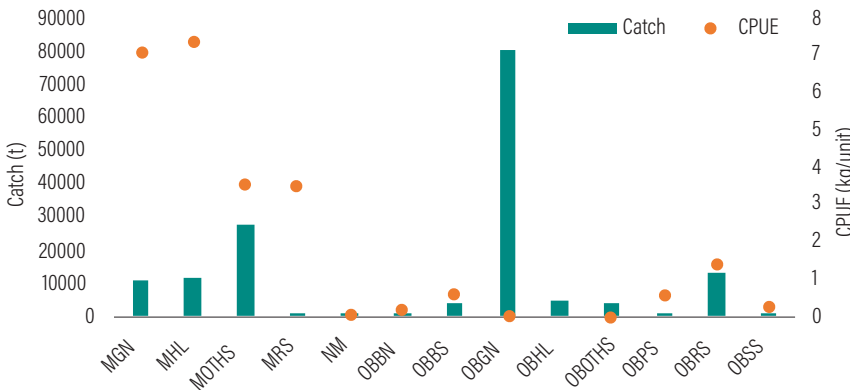


Sector-wise pelagic landings

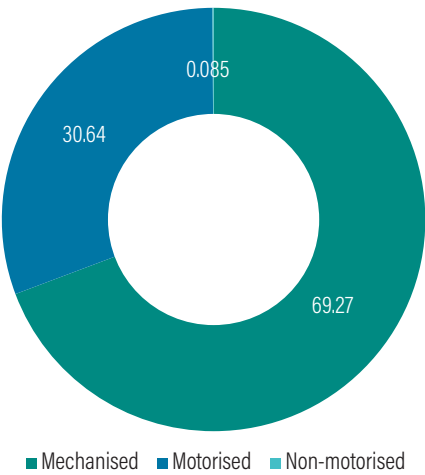
The fishery is predominantly supported by the mechanised sector,



CPUE of trawlers in Tamil Nadu (MDTN-Multi-Day Trawl Net, MTN-Mechanised Trawl Net (Single Day), OBGN-Outboard Trawl Net)



CPUE of gill net and hook & line in Tamil Nadu (MGN-Mechanised Gill Netter, MHL-Mechanised Hook & Line, MOTHS-Motorised Others, MRS-Mechanised Ring Seine, NM-Non motorised, OBGN-Outboard Bag Net, OBBS-Outboard Beach Seine, OBGN-Outboard Gill Net, OBHL-Outboard Hook & Line, OBOTH-Outboard Others, OBPS-Outboard Purse Seine, OBRS-Outboard Ring Seine, OBSS-Outboard Shore Seine)



Sector-wise landing of pelagic fish resources in Tamil Nadu (%)

which contributed the highest share of landings at 69.3%, followed by the motorised sector at 30.6%. The non-motorised sector contributed only 0.1%, indicating a negligible share in total production.

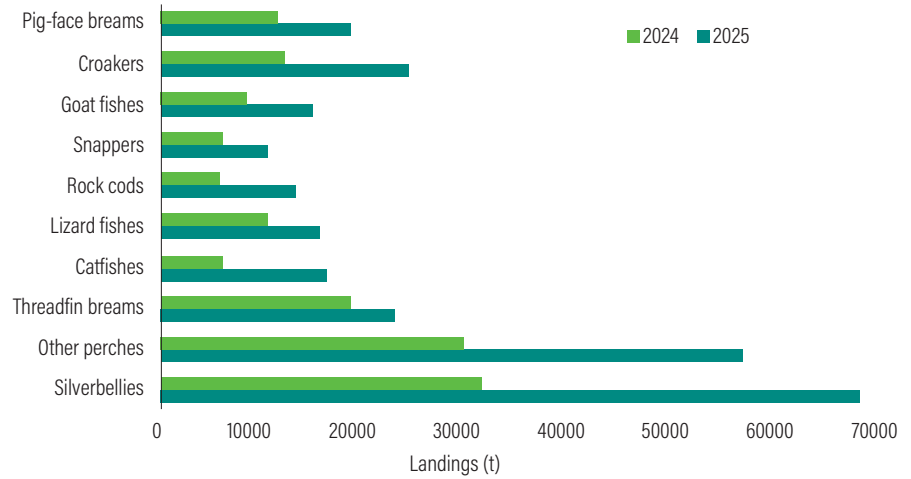
Landing of major pelagic resources

All major pelagic groups increased in 2025 except lesser sardines (*Sardinella* spp.), which declined from 76.80 to 70.39 thousand t. Other carangids increased from 49.69 to 53.11 thousand t, Indian mackerel (*Rastrelliger kanagurta*) from 35.40 to 38.27 thousand t, and scads from 18.64 to 22.17 thousand t.

Demersal resources

The demersal fish landings increased from 2,15,442 t in 2024 to 2,15,901 t in 2025, reflecting a marginal growth of 0.21%.

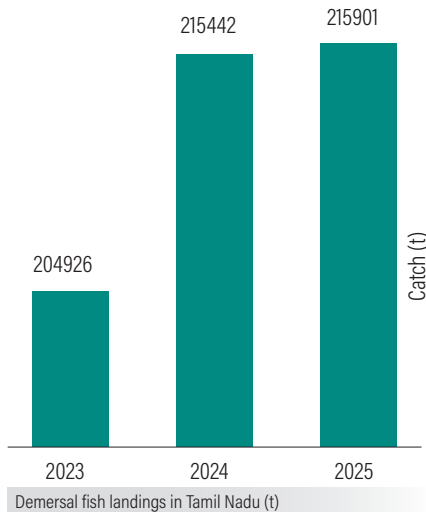
Several demersal groups showed increased landings in 2025, including silverbellies (*Leiognathidae*), other perches, threadfin breams (*Nemipterus* spp.), catfishes, lizardfishes (*Saurida* spp.), rock cods, snappers (*Lutjanus* spp.), goatfishes (*Upeneus* spp.), croakers (*Sciaenidae*) and pig-face breams (*Lethrinus* spp.).



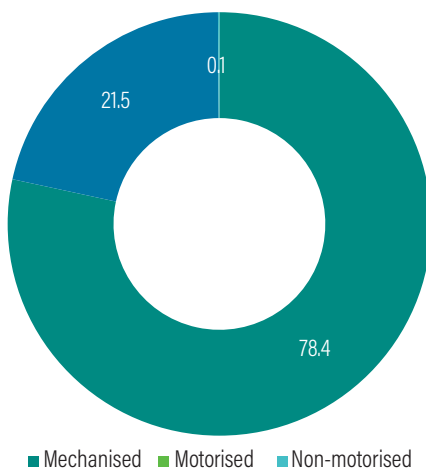
Major demersal resources landed in Tamil Nadu (t)

Sector-wise demersal landings

The mechanised sector dominated demersal landings (78.4%), followed

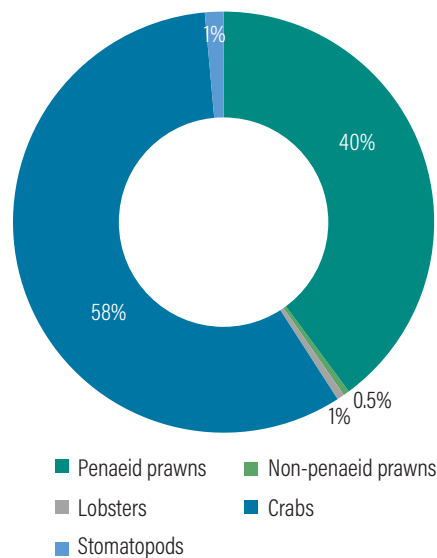


Demersal fish landings in Tamil Nadu (t)



Sector-wise landing (%) of demersal resources in Tamil Nadu

by the motorised sector (21.5%), while the non-motorised sector contributed only 0.1%.



Per cent share of different crustacean resources to the total crustacean landings in Tamil Nadu

Crustacean resources

In 2025, crustacean landings in Tamil Nadu were 49.53 thousand t, dominated by crabs (28.57 thousand t; 57.68%) and penaeid prawns (Penaeidae; 19.74 thousand t; 39.86%), while stomatopods, lobsters (Palinuridae) and non-penaeid prawns formed minor shares.

Cephalopod landings in Tamil Nadu

In 2025, cephalopod landings in Tamil Nadu were 45.25 thousand t (16.1% increase over 2024), dominated by squids (Loliginidae), followed by cuttlefishes (Sepiidae) and octopuses (Octopodidae); multiday trawls (39.6%) and mechanised trawls (33.1%) contributed most of the catch.



Trend in landings of cephalopods from 2007 to 2025 in Tamil Nadu (t)

Puducherry

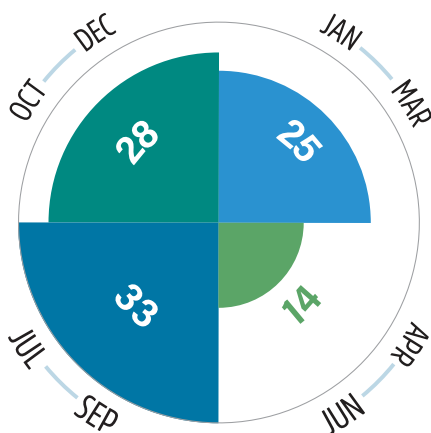
Marine fish landings

Puducherry recorded a 3% decline in marine fish landings in 2025, with total landings estimated at 0.51 lakh t. Fishing operations were temporarily affected by Cyclone Ditwah during late November to early December, reducing fishing days. Cephalopods emerged as the dominant resource with a 3% increase, while Indian mackerel declined sharply by 43%; penaeid shrimps and ribbonfishes showed nearly a two-fold increase.

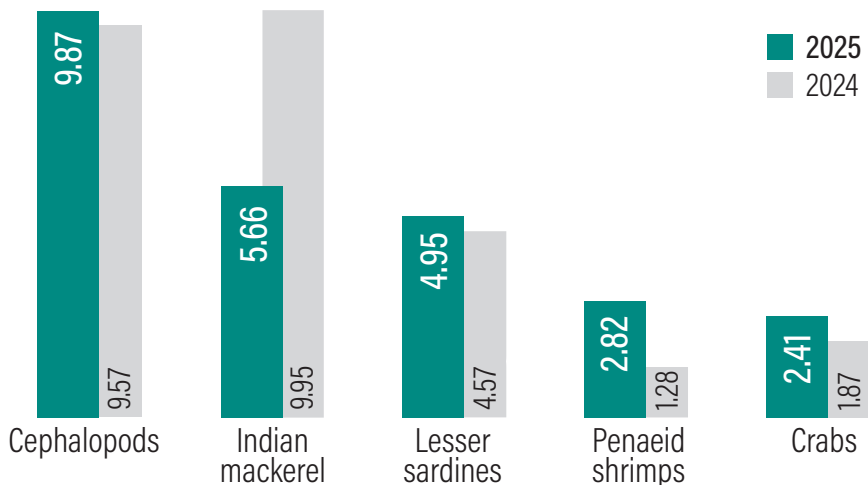
Multi-day trawl nets dominated the catch, contributing 58% of the total landings, a 40% increase over the previous year. Puducherry Fisheries Harbour accounted for the largest

In Puducherry, demersal fish landings increased by 18%, with silverbellies, perches, croakers and snappers contributing significantly to the catch.

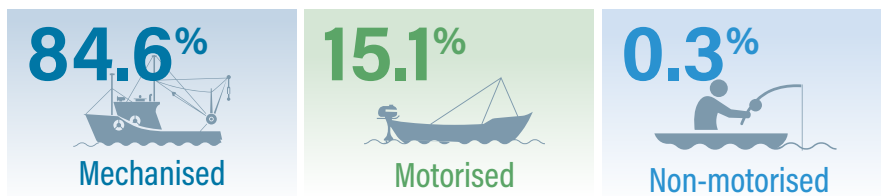
share, contributing about 55% of the Union Territory's total marine fish landings.



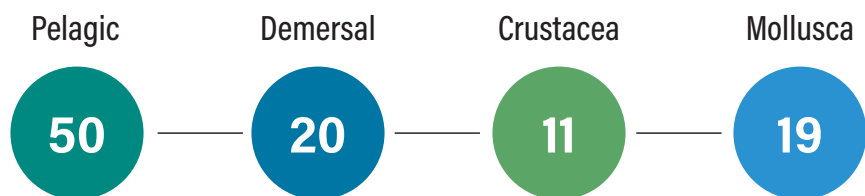
Quarter-wise landings (%)



Major landings (in '000 t)



Sector-wise landings (%)



Assemblage (%)

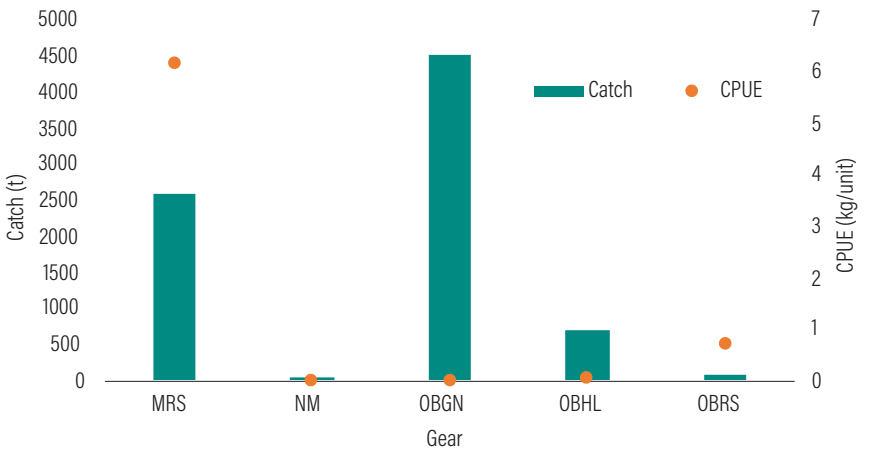
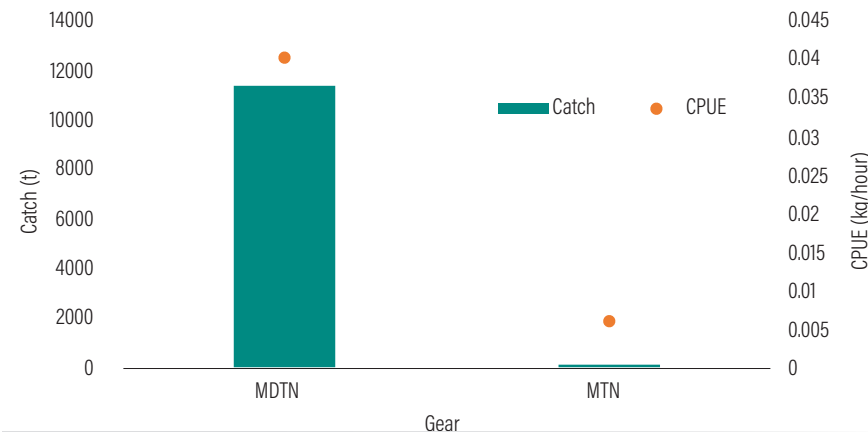


Blue swimmer crab, *Portunus pelagicus*, landed in Palk Bay

Catch Per Unit Effort

Trawlers dominated landings but showed low efficiency, with MDTN (11.44 thousand t; CPUE 0.040 kg/

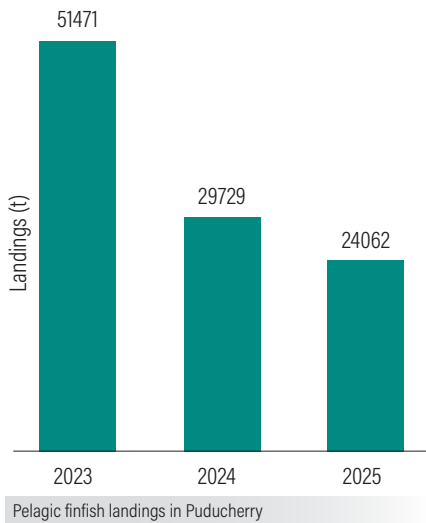
hour) and MTN (69 t; CPUE 0.006 kg/hour). In contrast, ring seines showed higher efficiency, with MRS (2.60 thousand t; CPUE 6.18 kg/unit) and OBRS (93.69 t; CPUE 0.715 kg/unit).



Landing of *Scomberoides commersonianus* at Tharuvaikulam

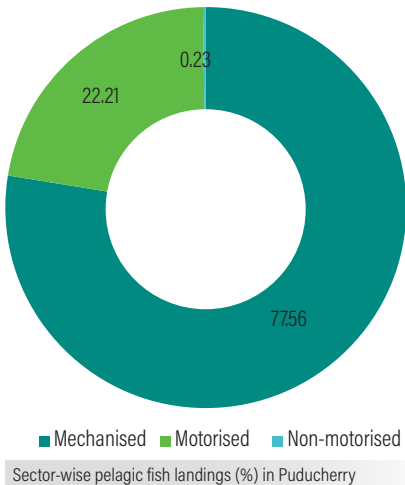
Pelagic finfish landings in Puducherry

Total pelagic fish landings declined from 51.47 thousand t in 2023 to 29.73 thousand t in 2024 (21.74 thousand t). In 2025, landings further decreased to 24.06 thousand t (5.67 thousand t). Overall, pelagic landings declined by 27.41 thousand t during 2023–2025, indicating a consistent downward trend.



Sector-wise pelagic landings

The fishery is predominantly supported by the mechanised sector, which contributed the highest share of landings at 77.56%, followed by the motorised



sector at 22.21%. The non-motorised sector contributed only 0.23%.

Landing of demersal fish resources in Puducherry

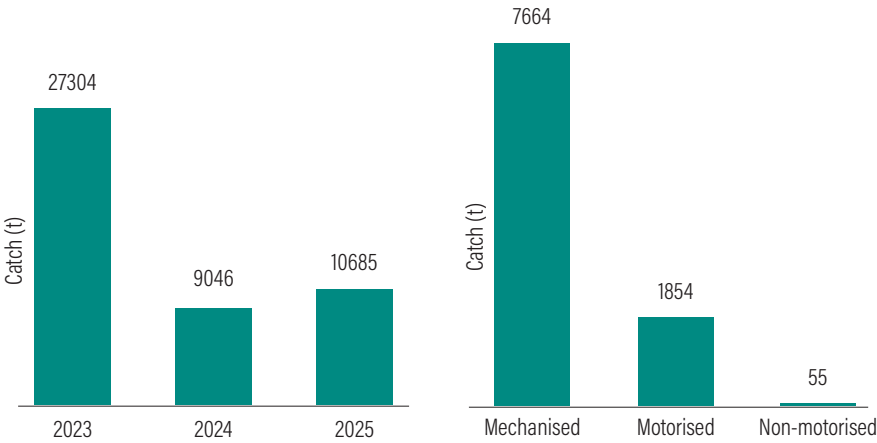
The demersal fish landings increased from 9,046.09 t in 2024 to 10,685.01 t in 2025, representing an increase of 18.12%.

Threadfin breams (*Nemipterus* spp.) recorded the highest landings in 2025 (2.07 thousand t) but declined by 14%. Landings increased for silverbellies (*Leiognathidae*), other perches, croakers (*Sciaenidae*), snappers

(*Lutjanus* spp.), catfishes and pig-face breams (*Lethrinus* spp.), while rock cods and goatfishes (*Upeneus* spp.) declined.

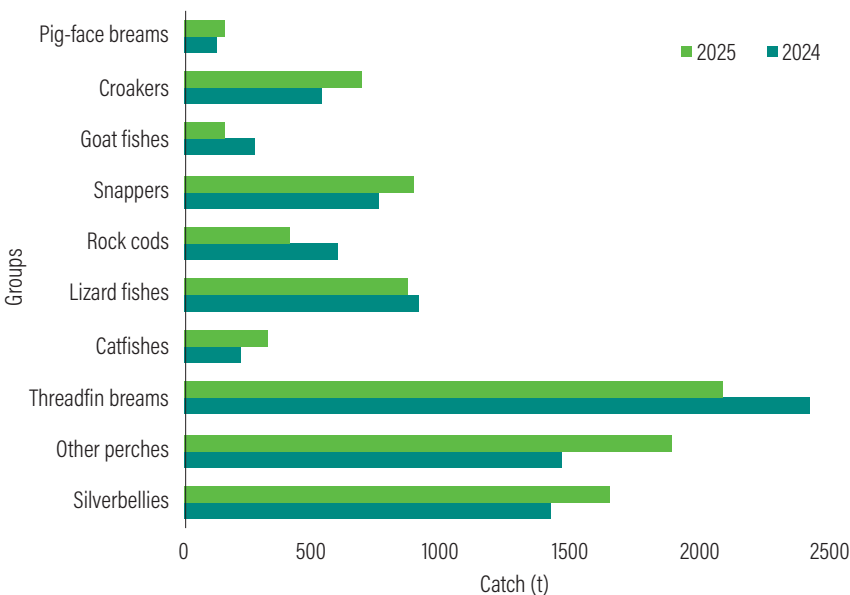
Sector-wise demersal landings in Puducherry

The sector-wise landing of demersal resources showed that the mechanised sector dominated with a catch of 7663.61 t, followed by the motorised sector with 1853.58 t. The non-motorised sector contributed only 55.13 t, indicating a minimum share.



Total landing of demersal resources in Puducherry (t)

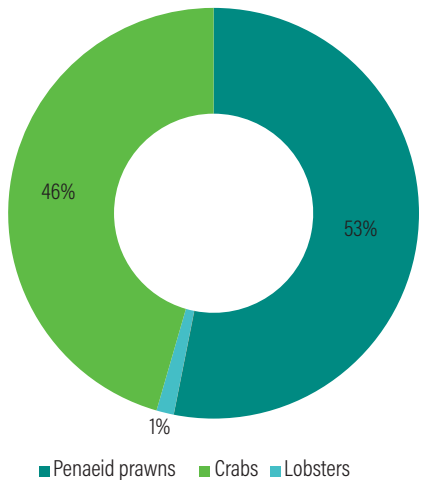
Landing of demersal resources by different sectors in Puducherry during 2025 (t)



Landing of major demersal resources in Puducherry during 2024 and 2025 (t)

Landing of crustacean resources in Puducherry

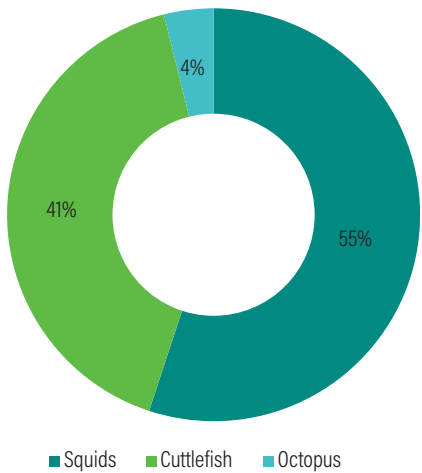
During 2025, the total crustacean landings in Puducherry were 5,304.79 t. Penaeid prawns contributed 2,817.64 t (53.12%), followed by crabs with 2,414.54 t (45.52%). Lobsters accounted for 72.61 t (1.37%).



Share of different resources to the total crustacean landings of Puducherry in 2025 (%)

Cephalopod landings in Puducherry

Total cephalopod landings increased from 5.53 thousand t in 2023 to 9.87 thousand t in 2025. Squids (*Loliginidae*) dominated with 5.43 thousand t (55.1%), followed by cuttlefishes (*Sepiidae*) 4.05 thousand t



Share of different resources to the total cephalopod landings of Puducherry in 2025

(41.1%) and octopuses (Octopodidae) 0.38 thousand t (3.9%). Mechanised trawl nets contributed 73.2% of the landings.

Biology of major fishery resources

A total of ten finfish species and thirteen shellfish species were studied in detail for their biological characteristics, and the results of some major resources are presented in the table below. Studies showed finfish catches were dominated by immature individuals, while invertebrates exhibited high seasonal spawning. Mean sizes were often below MLS, indicating growth overfishing and the need for strict MLS enforcement and seasonal regulations.

Population studies of major finfishes

Gnathanodon speciosus (8.5–103.53 cm) showed allometric growth ($a = 0.0267$, $b = 2.778$) with $L_{\infty} = 103.53$ cm, $K = 0.11/\text{year}$ and $Z = 0.38/\text{year}$; spawning peaked in September–October and May–June, and exploitation ($E = 0.40$) indicated under-exploitation. *Scomberomorus commerson* exhibited higher growth ($L_{\infty} = 199.5$ cm; $K = 0.37/\text{year}$) with $Z = 0.72/\text{year}$ and lower exploitation ($E = 0.16$).



Juveniles of *Uroteuthis singhalensis*

Stock assessment of blue swimmer crab

The blue swimmer crab (*Portunus pelagicus*) dominates portunid landings

in Palk Bay (94.2%; ~6,299 t annually), mainly caught by gillnets, with most processed meat exported to the USA; stock assessments indicate a healthy, sustainably exploited stock ($SPR \approx 0.4$).

Key biological information on major fishery resources from Tamil Nadu coast

Group	Species	Mean length	MLS	Sex ratio	Key biological features
Finfish	<i>Rastrelliger kanagurta</i>	23.1 cm	–	1:1.4	High mature (49%) and gravid (26%)
	<i>Trichiurus lepturus</i>	60.9 cm	–	1:1.3	High immature (43%)
	<i>Scomberomorus commerson</i>	41.9 cm	–	1:1.4	Immature dominant (63.8%)
	<i>Sphyræna putnamae</i>	54.9 cm	–	1:3.1	All maturity stages present
	<i>Sphyræna obtusata</i>	21.8 cm	–	1:2.1	Immature dominant (61.5%)
	<i>Rachycentron canadum</i>	45.3 cm	–	1:1.4	Mixed immature & gravid
Shrimp	<i>Penaeus semisulcatus</i>	15.8 cm	113 mm	0.9	Size near MLS
	<i>Metapenaeus monoceros</i>	12.1 cm	110 mm	4.7	Smaller-sized individuals
Crab	<i>Portunus sanguinolentus</i>	5.3 cm (CW)	70 mm	1.6	Below MLS
	<i>Portunus pelagicus</i>	5.5 cm (CW)	90 mm	1.0	Below MLS
Cephalopod	<i>Sepia pharaonis</i>	11.4 cm (DML)	–	0.1	Moderate size
	<i>Octopus cyanea</i>	13.9 cm	–	–	Large individuals

Sustainable Fisheries Management

Andhra Pradesh

Marine fish landings in Andhra Pradesh were estimated at 1.52 lakh t in 2025, registering a 13% decline from 2024, mainly due to fishing disruptions caused by cyclone *Montha*. Lesser sardines dominated the landings, while Indian mackerel declined sharply. Multi-day trawl nets contributed the highest share, whereas ring seines recorded the highest catch rates. Biological studies examined the size structure and reproductive traits of major finfish and shellfish resources. Environmental monitoring off Visakhapatnam indicated seasonal variability in water quality, and socio-economic analysis highlighted the profitability of mechanised and motorised fisheries and the efficiency of artisanal operations.



Fishing boats at Kakinada canal during fishing ban

Developing an Integrated Assessment Framework to support management decisions for marine fisheries in Andhra Pradesh

Project: FFD/IAF/11

Marine fish landings

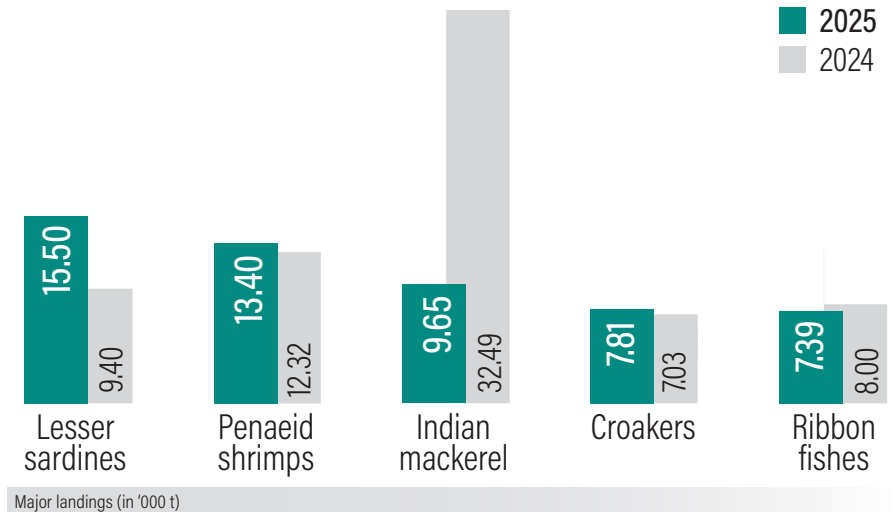
Andhra Pradesh recorded marine fish landings of 1.52 lakh t in 2025, registering a 13% decline compared with 2024 and a 20% decrease from 2023. Fishing operations were temporarily disrupted in late October due to Cyclone *Montha*. Resource-wise, lesser sardines emerged as the leading species, with landings nearly doubling. Penaeid shrimps ranked second with a 9% increase, whereas Indian mackerel declined sharply by 70%, dropping to the third position.

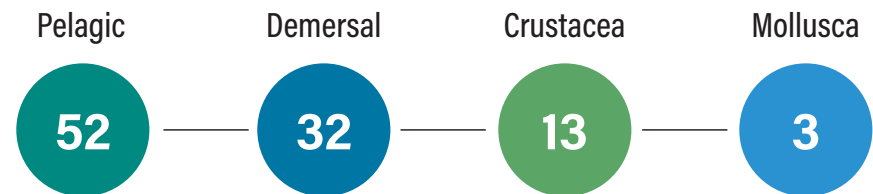
Kakinada contributed the largest share (38%) of Andhra Pradesh's marine fish landings in 2025, followed by Visakhapatnam (21%), highlighting the continued importance of these major fishing hubs.

In terms of fishing gears, multi-day trawl nets dominated the mechanised sector with 0.89 lakh t of landings, marking a 7% increase over the previous year. However, landings by the motorised sector declined by 35%. Notably, the non-motorised sector recorded the highest contribution among mainland states, registering a 49% increase in landings. District-wise, Kakinada accounted for the largest share of total landings (38%), despite a 19% decline, followed by Visakhapatnam with a 21% share.

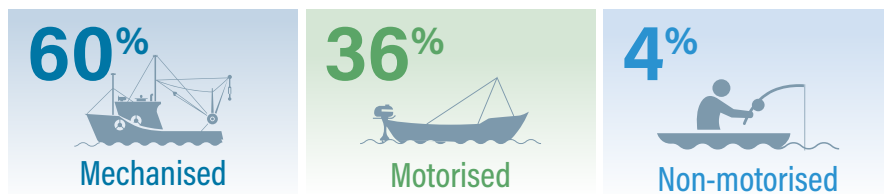


Mackerel landed by trawlers at Visakhapatnam

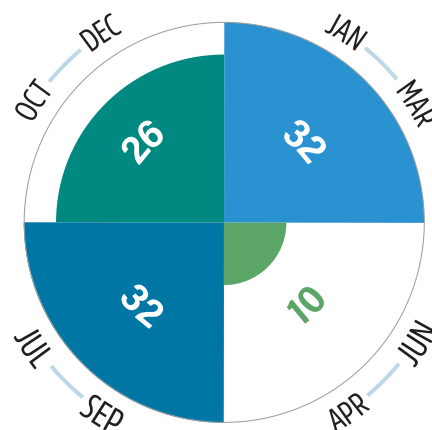




Assemblage (%)

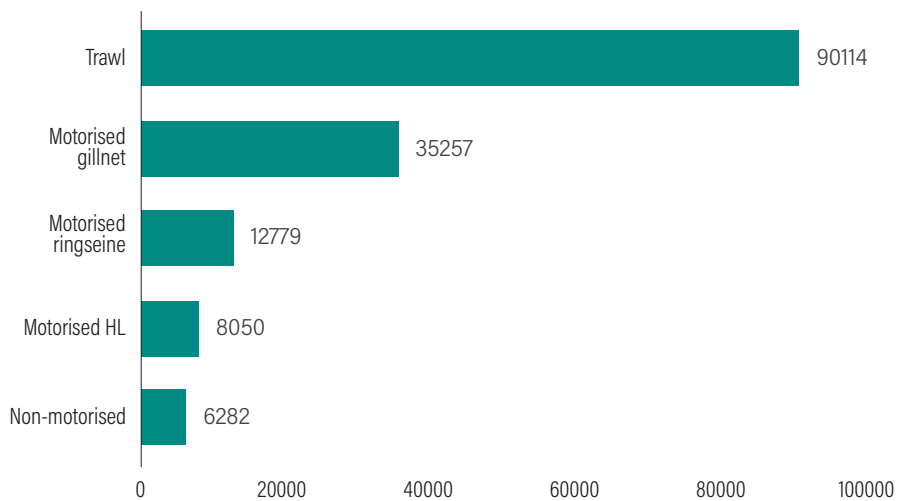


Sector-wise landings (%)



Quarter-wise landings (%)

Within pelagic resources, lesser sardines (19.8%) dominated, followed by Indian mackerel (12.4%), other carangids (10.8%), ribbonfishes (9.5%), and yellowfin tuna (5.0%). Among demersal resources, croakers (17.0%), other perches (13.4%), threadfin breams (11.3%), silverbellies (9.5%), and catfishes (5.5%) were predominant. Major groupers included *Epinephelus coioides*, *E. latifasciatus*, *E. epistictus*, and *Cephalopholis formosa*, while snappers were represented by *Lutjanus indicus*, *L. johnii*, *L. rivulatus*, *L. fulvus*, *L. argentimaculatus*, and *L. lutjanus*. Penaeid prawns contributed 66.0%



Top five gear-wise landings (t) in Andhra Pradesh during 2025



Tuna landings at Kakinada

to crustacean landings, followed by crabs (31.7%) and stomatopods (1.0%). Among molluscs, squids contributed 51.0% and cuttlefishes 49.0% to the state's landings.

Major fishing gears

Multi-day trawlers contributed the highest share of landings (59%), followed by motorised gillnetters (18.4%) and motorised ring seiners (8.4%), with additional contributions from motorised hook and line and non-motorised gears.

Catch rate of single-day trawls was 76.9 kg/h and that of multi-day trawls was 41.3 kg/h in 2025. The highest

CPUE was recorded in ring seines (617 kg/unit), followed by motorised hook and lines (226.4 kg/unit) and motorised gillnets (112.9 kg/unit), while non-motorised gears recorded 80.1 kg/unit.

Multi-day trawlers dominated landings with a 59% share, followed by motorized gillnets and ring seines, the latter achieving the highest catch per unit effort

Biology and stock assessment

Studies on the reproductive biology and diet of major finfish and shellfish resources landed in Andhra Pradesh were continued in 2025.

The marine environment off Visakhapatnam

Water quality monitoring at Yarada, Kailasagiri, and cage sites during

Size range of major finfish species landed in Andhra Pradesh

Species	Length range (mm)	Mean length (mm)	Sex ratio (F:M)
<i>Chirocentrus dorab</i>	334-592	463	2.62
<i>Ariomma indicum</i>	215-644	430	1.03
<i>Rastrelliger kanagurta</i>	136-371	253.5	1.20
<i>Tylosurus crocodilus</i>	516-1180	848	1.5
<i>Selar crumenophthalmus</i>	132-297	214.5	0.5
<i>Stolephorus commersonii</i>	48-128	88	1.6
<i>S. tala</i>	205-682	443.5	0.9
<i>S. tol</i>	298-434	366	1.02
<i>S. commersonnianus</i>	187-885	536	1.2
<i>Strongylura leiura</i>	466-624	545	2.0
<i>Lutjanus indicus</i>	210-410	292.5	0.72
<i>L. johnii</i>	255-415	345.1	0.5
<i>Prichanthus hamrur</i>	178-282	219.3	10.25
<i>Polydactylus sextarius</i>	156-220	185.5	-
<i>Drepane punctata</i>	146-405	235.9	1.25
<i>D. longimana</i>	153-316	203.1	0.86
<i>Psettodes erumei</i>	150-580	293.6	-
<i>Nemipterus japonicus</i>	145-255	205.6	-
<i>Otolithes ruber</i>	265-370	311.8	-
<i>Epinephelus coioides</i>	180-715	398.2	-
<i>E. latifasciatus</i>	175-370	247.5	-
<i>Cephalopholis formosa</i>	180-280	233.0	-



Sole fish landed by motorised gillnetters



Sole fish landed by motorised gillnetters

March–October 2025 indicated clear seasonal and spatial variability. Parameters including salinity, temperature, pH, dissolved oxygen (DO), nutrients, and chlorophyll-a were analysed. Salinity ranged from 28–35 ppt (higher in April–May), temperature from 28–31 °C (peaking in May and August), and pH remained slightly alkaline (7.77–8.30). DO varied between 3.0–4.17 mg/L, with higher surface values, peaking in May and declining in August. Nutrients showed low to moderate concentrations with seasonal variation, while chlorophyll-a ranged from 0.01–2.86 mg/m³, lowest in March and highest in May.



Fishers attending the stakeholder workshop

Socioeconomics

Economic analysis of mechanised multi-day trawlers at Visakhapatnam, Kakinada, and Gilakaladindi (Krishna)

showed average operating costs and gross revenues of ₹2,75,330 and ₹2,80,292 (Kakinada), ₹3,04,259 and ₹3,80,828 (Visakhapatnam), and ₹2,55,508 and ₹3,87,312 (Gilakaladindi), respectively.

Size range of major shellfish species landed in Andhra Pradesh

Species	Length range (mm)	Mean length (mm)	Sex ratio (F:M)
<i>Penaeus indicus</i>	155-210	179.2	1
<i>Metapenaeus monoceros</i>	80-213	133.9	0.9
<i>Solenocera crossicornis</i>	55-131	90.1	1.4
<i>S. melanthera</i>	68-123	82.1	1
<i>Trachypenaeus aspara</i>	59-120	84.57	1
<i>Parapenaeopsis styliifera</i>	55-135	98.65	1.28
<i>P. coromondelica</i>	80-132	100.85	1
<i>P. maxillipedo</i>	65-124	88.74	1.11
<i>Portunus sanguinolentus</i>	63-209	123.78	1.2
<i>P. pelagicus</i>	100-225	146.02	2.04
<i>Charybdis feriatus</i>	62-161	98.42	1.3
<i>C. lucifera</i>	60-120	86.52	
<i>Uroteuthis (Photololigo) duvaucelli</i>	27-106	59.09	1.43
<i>Amphioctopus marginatus</i> *	40-125	85.92	0.6

*Dorsal mantle length (mm)

Economic analysis showed that mechanised trawlers generated higher revenues, whereas non-motorised gillnet operations were more capital-efficient.

For motorised single-day operations at Bavanapadu (Srikakulam), operating costs were ₹10,195 (trammel net) and ₹9,893 (gillnet), with gross revenues of ₹18,750 and ₹16,207, respectively. Non-motorised gillnets had lower operating cost (₹4,264) and revenue (₹8,527), but showed higher efficiency with capital productivity of 0.50 and GVA reaching 100% of gross revenue.

Stakeholder consultation

A stakeholder consultation was held to discuss the marine fishery highlights of the traditional sector in Andhra Pradesh and various challenges faced by this sector. The consultation workshop was funded by NFDB Hyderabad. The meeting was an interactive one, wherein the fishermen were asked to map their major fishing grounds for various resources.



State level small-scale fisheries stakeholders consultation workshop

Sustainable Fisheries Management

Odisha and West Bengal

Odisha recorded 1.31 lakh t of marine fish landings, a 15% decline mainly due to fishing disruptions caused by cyclone *Montha*. Anchovies dominated the catch, while several pelagic and demersal resources declined. Biological and catch-based assessments indicated that about 34% of assessed stocks showed signs of fatigue or decline. West Bengal recorded 2.60 lakh t of landings, registering a 12% increase over 2024. Anchovies dominated the pelagic catch, while croakers and catfishes supported demersal fisheries. Multi-day trawl nets contributed the largest share of landings.



Indian salmon landing at Digha Mohana in West Bengal

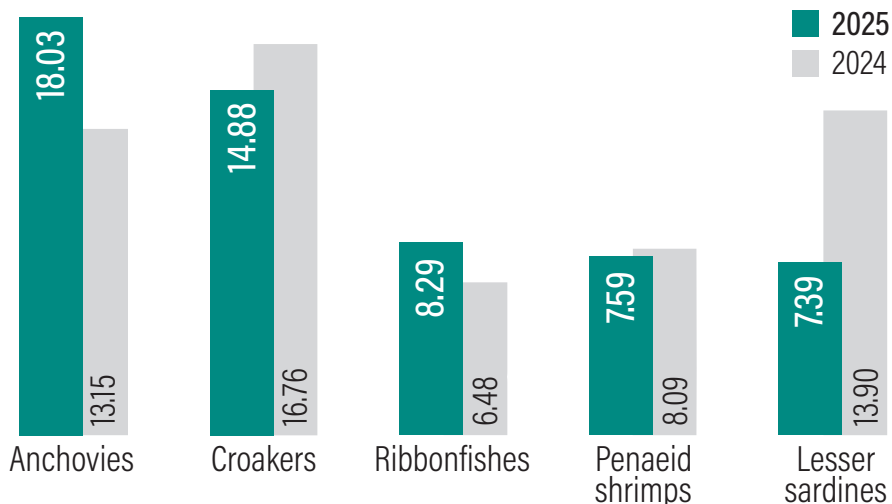
Developing an Integrated Assessment Framework to support management decisions for marine fisheries in Odisha and West Bengal

Project: SFD/IAF/12

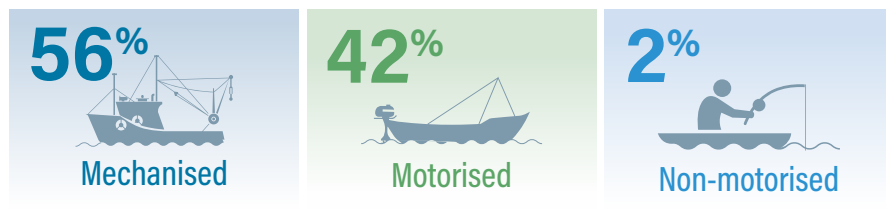
Odisha

Marine fish landings

Odisha recorded an estimated marine fish landing of 1.31 lakh t in 2025, reflecting a 15% decline compared with the previous year. Fishing activities were affected by Cyclone *Montha* in late October, particularly in the southern parts of the State, resulting in reduced fishing days. Resource-wise, anchovies emerged



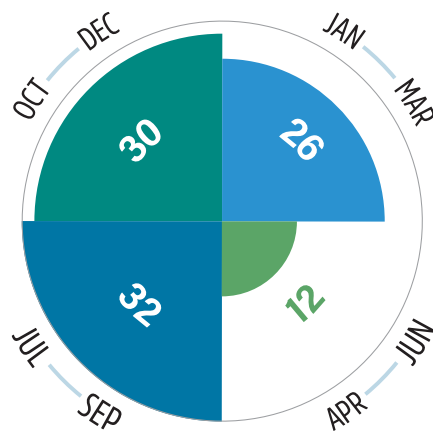
Major landings (in '000 t)



Sector-wise landings (%)



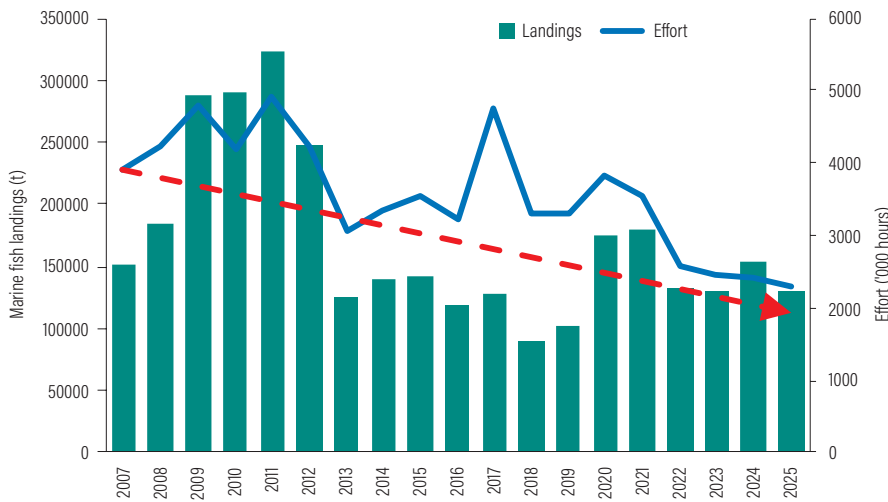
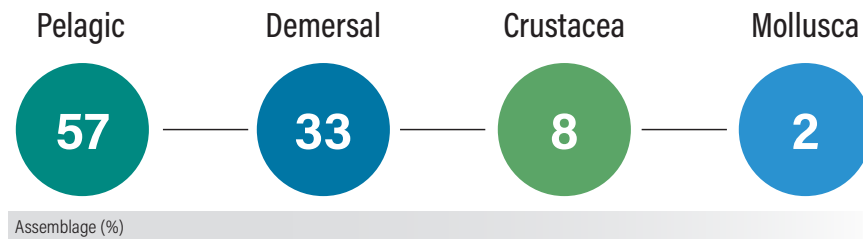
Sardine landing at Paradip in Odisha



Quarter-wise landings (%)

as the leading resource with a 37% increase in landings, reaching a decadal high. In contrast, lesser sardines declined sharply by about 47%, falling from second to fifth position among the landed resources.

Gear-wise analysis indicated that multi-day trawl nets dominated the landings, contributing 52% of the total catch, followed by motorised gillnets (29%) and motorised ring seines



Decadal trends in marine fish landings in Odisha (t)



Ribbonfish landing at Paradip in Odisha

(12%). Seasonally, landings declined across all four quarters. District-wise, Balasore accounted for the highest share of landings (56%), followed by Jagatsinghpur (21%).

Finfish resources

Total finfish landings in Odisha were estimated at 1.17 lakh t in 2025, representing a decline of 15.21% compared with 2024. Pelagic resources accounted for the largest share (59.61%) of the landings but declined by 20.88% from the previous year. Pelagic catches were dominated by clupeids (56.27%), followed by carangids (13.11%), ribbonfishes (11.87%),

Pelagic fisheries in Odisha were largely composed of clupeids, carangids and ribbonfishes, while croakers formed the most dominant component of the demersal catch.

mackerels (7.21%), Bombay duck (6.84%) and seerfishes (3.53%).

Demersal resources contributed 40.39% of the total finfish landings and declined by 5.10% compared with 2024. Croakers were the dominant demersal group (32.08%), followed by catfishes (13.55%), pomfrets (13.23%), perches (12.52%), mullets (9.06%), silverbellies (5.71%), soles (5.05%), threadfins (3.21%), goatfishes (1.99%), eels (1.62%) and sharks (1.53%).

Shellfish resources

Total shellfish landings in Odisha were estimated at 12.88 thousand t in 2025, representing a decline of 11.60% compared with 2024. Crustaceans dominated the shellfish catch, contributing 78.69% (10.13 thousand t) but declining by 14.81% over the previous



Crab landings at Paradip in Odisha



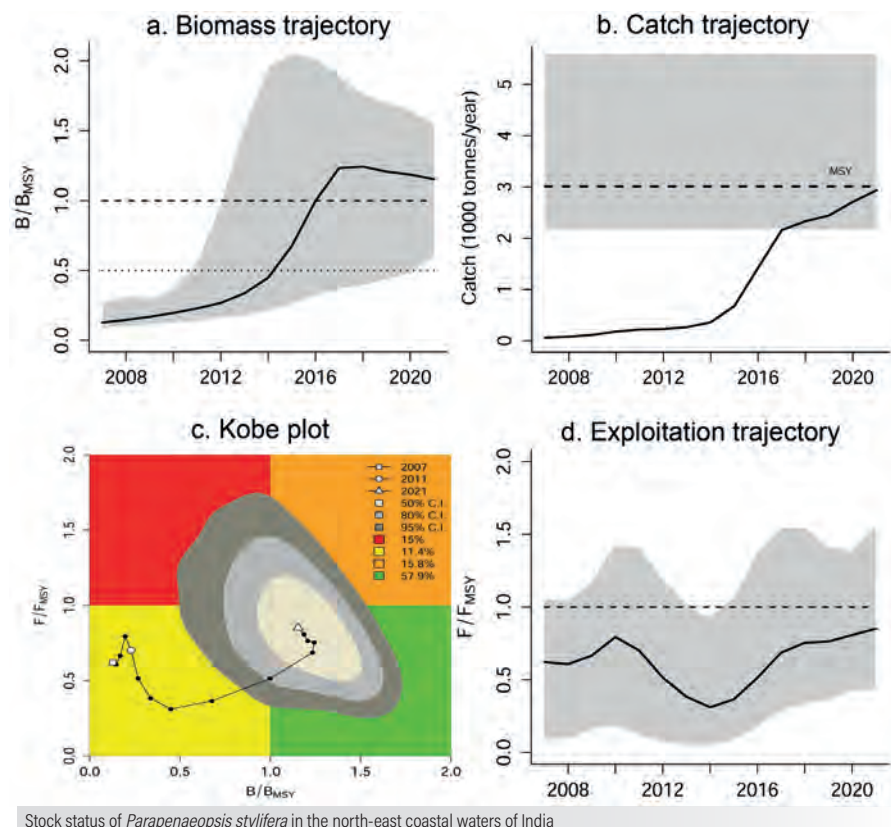
Cuttlefish landings at Paradip in Odisha

year. The crustacean catch was mainly composed of penaeid shrimps (74.85%) and crabs (25.04%), with shrimps largely represented by *Parapenaeopsis* group, *Metapenaeus* group, *Solenocera crassicornis* and *Penaeus* group, while major crab landings comprised *Portunus sanguinolentus*, followed by *Charybdis feriata* and *P. pelagicus*.

Cephalopods contributed 21.31% (2.74 thousand t) to the total shellfish landings, dominated by cuttlefishes (67.86%), followed by squids (28.0%) and octopus (3.77%), with major species including *Sepiella inermis*, *Sepia aculeata*, *Uroteuthis duvaucelii*, *Sepia pharaonis* and *Sepia elliptica*.

Biology and stock assessment

Regular length-based data collection and biological studies were conducted on prioritised commercially important finfish

Stock status of *Parapenaeopsis styliifera* in the north-east coastal waters of India

(10 species) and shellfish (11 species) of Odisha to estimate life-history and exploitation parameters, supporting the development of biological target and limit reference points. Catch-based assessments indicated fatigue or decline in 34% of the assessed stocks (14 of 41 species), including Hilsa, Bombay duck, threadfin breams, Indian mackerel and some high-value shrimps.

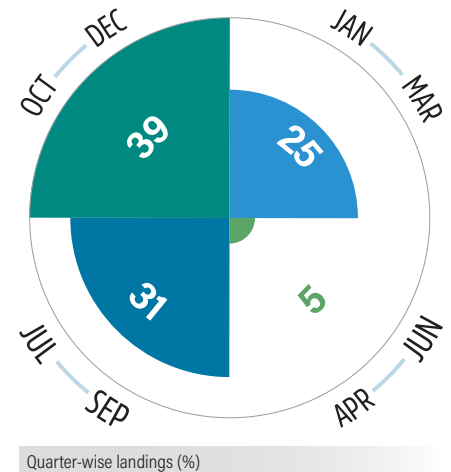
Biological monitoring in Odisha indicated wide variation in maturity size and reproductive status among major finfish and shellfish resources, supporting the development of reference points for stock management.

Biological observations on 21 commercially important species (10 finfish and 11 shellfish) from Odisha during 2025 indicated wide variations in size structure, maturity and sex ratios. Length ranges varied from 3.7–166.3 cm, with mean lengths ranging from 5.3 cm in *Sepiella inermis* to 101.9 cm in *Muraenosox bagio*. The length at first maturity (Lm50) varied between 6.1 cm (*S. inermis*) and 98.2 cm (*Strophiodon sathate*). Most species showed female-biased or near-balanced sex ratios, while the proportion of mature individuals ranged from 33.2% in *Pampus griseus* to 85.4% in *Portunus sanguinolentus*, indicating varying reproductive status among the assessed stocks.

Length-based analysis and a Bayesian Schaefer Model assessed the *Parapenaeopsis styliifera* from northeast India. The species is fast-growing, short-lived (~1.5 years), and early maturing (Lm50 ≈ 8.15 cm at ~0.48 years), with moderate exploitation. Bayesian results showed biomass above MSY ($B/B_{msy} = 1.15$) and fishing pressure below MSY ($F/F_{msy} = 0.85$), indicating a sustainable stock requiring adaptive management.

Socioeconomics

In 2025, mechanised multi-day trawlers in Odisha had an average operating cost of ₹3.17 lakh and gross revenue of ₹3.77 lakh/unit. In Puri district, motorised gears showed moderate returns, while non-motorised single-day gill nets had the lowest costs (₹1,553–2,211) and reasonable revenues (₹3,106–4,421). Overall, non-motorised gill nets were the most capital-efficient, with a low operating ratio (0.5) and GVA equal to 100% of gross revenue.

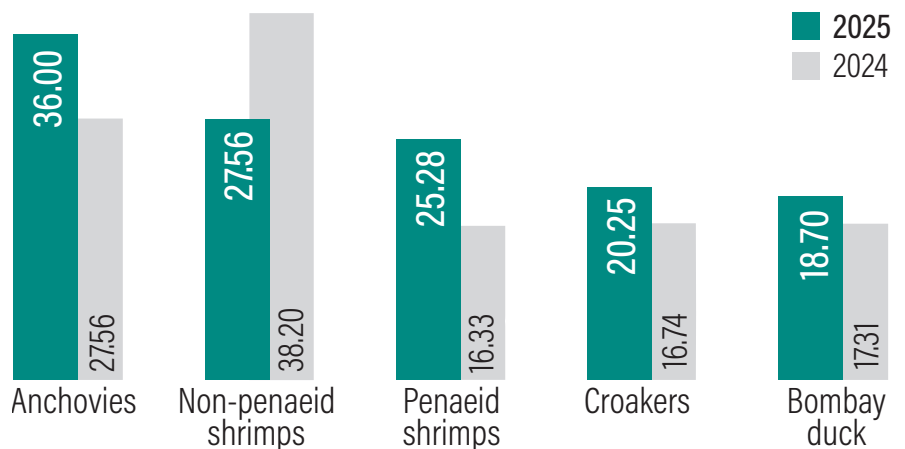


West Bengal

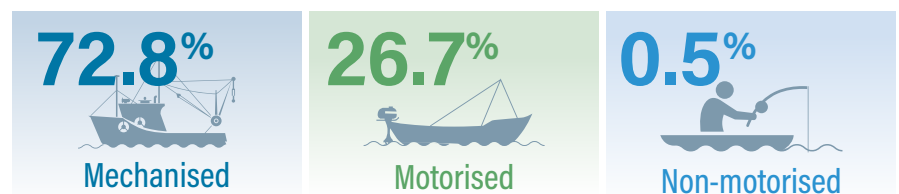
Marine fish landings

West Bengal recorded an estimated marine fish landing of 2.60 lakh t

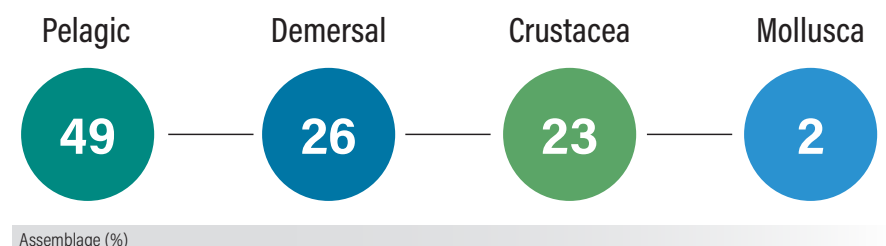
in 2025, contributing about 7% to the national total and registering a 12% increase over 2024 and 51% over 2023. Most major resources showed increasing trends, except non-penaeid shrimps and



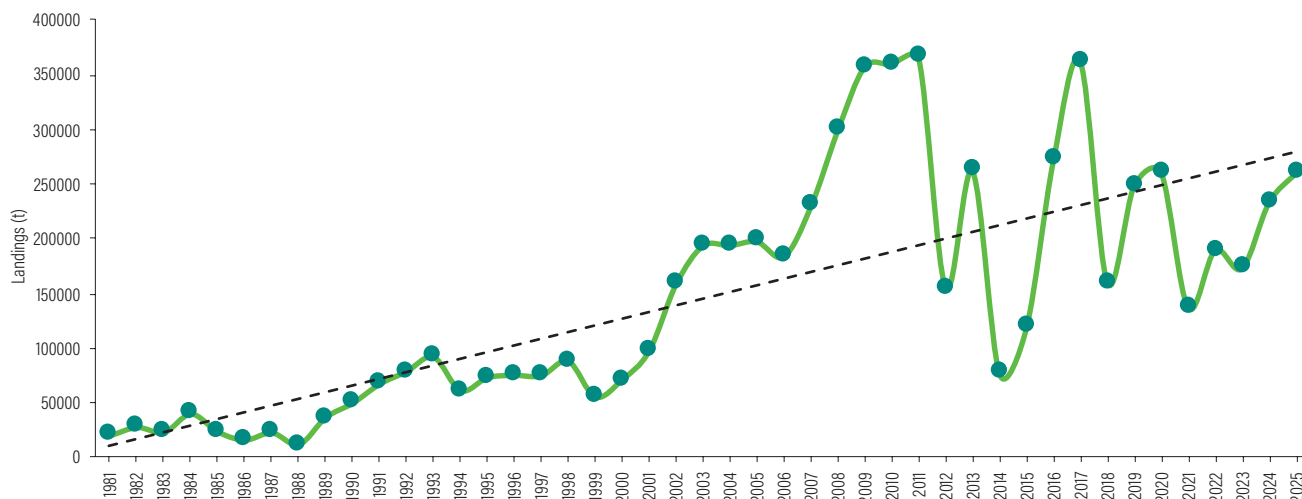
Major landings (in '000 t)



Sector-wise landings (%)



Assemblage (%)



Decadal trends in marine fish landings in West Bengal (t)

Tenualosa ilisha, which declined, while anchovies emerged as the dominant resource.

Multi-day trawl nets accounted for the largest share of landings (59%), with nearly a two-fold increase in unit operations. Seasonally, landings declined during the first two quarters but recovered strongly in the third

In West Bengal, South 24 Parganas accounted for the largest share of marine fish landings (67%), followed by Purba Medinipur (33%).

and fourth quarters. District-wise, South 24 Parganas contributed the major share (67%), followed by Purba Medinipur (33%).

Finfish resources

Total finfish landings were estimated at 1.95 lakh t, accounting for about 75% of the State's total marine fish catch and representing a 15% increase compared with the previous year's landing of 1.69 lakh t.



Hilsa landing at Digha Mohana in West Bengal



Cephalopod landing at Digha Mohana in West Bengal

Pelagic resources

In 2025, pelagic fish landings were estimated at 1.25 lakh t, accounting for about 48% of the State's total marine fish landings and registering a 12%

increase compared with 1.12 lakh t in the previous year. Anchovies dominated the pelagic catch (28.7%), followed by Bombay duck (14.9%), other clupeids (14.7%), ribbonfishes (11.2%), *Tenualosa ilisha* (8.1%) and lesser sardines (7.7%).

Demersal resources

In 2025, demersal fish landings were estimated at 0.68 lakh t, accounting for about 26% of the State's total marine fish landings and registering a 19.9% increase compared with 0.57 lakh t in the previous year. Croakers dominated the demersal catch (29.8%), followed by catfishes (21.7%), silver pomfrets (11.6%), other perches (8.5%), threadfins (7.1%), soles (6.5%), Chinese pomfret (4.5%) and black pomfret (3.7%).

Shellfish resources

Total shellfish landings were estimated at 0.66 lakh t, accounting for about 25% of the State's total marine fish catch and representing a 2% increase compared with 0.64 lakh t in the previous year.

Cephalopod landings along the West Bengal coast increased sharply in 2025, dominated by cuttlefishes and squids, with *Sepiella inermis* and *Uroteuthis duvaucelii* among the major contributors.

Crustacean resources

In 2025, crustacean landings were estimated at 0.61 lakh t, accounting for about 24% of the State's shellfish landings and showing a slight decline from the previous year. Non-penaeid shrimps dominated the catch (45%), followed by penaeid shrimps (41.2%) and crabs (13.2%), while stomatopods and lobsters contributed less than 1% each.

Molluscan resources

In 2025, cephalopod landings along the West Bengal coast were estimated at 4,390.3 t, accounting for about 2% of the



Black pomfret landings at Didha Mohana, West Bengal

State's shellfish landings and registering a 49.8% increase compared with 2,931 t in the previous year. Cuttlefishes dominated the catch (60.7%), followed by squids (38.1%) and octopuses (1.2%), with major species including *Sepiella inermis*, *Uroteuthis duvaucelii*, *Sepia aculeata*, *Sepia pharaonis* and *Sepia brevimana*.

Biology and stock assessment

Regular length-frequency sampling and biological investigations were

conducted on 26 finfish and shellfish species landed along the West Bengal coast to estimate life-history traits, exploitation parameters, reproductive biology and feeding habits. Length-based observations of 31 commercially important species during 2025 indicated wide size variation, ranging from 1.6 cm in *Sepiella inermis* to 173 cm in *Rachycentron canadum*. Mean lengths ranged from 5.1 cm (*S. inermis*) to 88.7 cm (*Tylosurus crocodilus*), with key pelagic, demersal and shellfish resources

such as *Tenualosa ilisha*, *Pterotolithus maculatus*, *Marsupenaeus japonicus* and *Sepia pharaonis* showing moderate size structures in the landings.

Socioeconomics

The economic performance of major fishing methods in West Bengal was assessed across mechanised (trawlers, gill netters), motorised (gill netters, bag netters), and non-motorised (shore seiners) sectors.

Economic performance of the marine fisheries of West Bengal during 2025

No.	Indicators	Mechanised		Motorised	Non-motorised	
		Trawl net	Gill net	Gill net	Bag net	Shore seine
1	Net operating income (₹)	67298	55196	874	4997	4744
2	Capital productivity	0.22	0.72	0.88	0.67	0.59
3	Labor productivity (kg)	174.7	57.8	16.14	50	9.48
4	Input-output ratio	0.47	0.36	0.54	0.25	0.07
5	Gross value added (GVA ₹)	147187	117337	2674	10795	10100
6	GVA as % of gross revenue	48.45	60.44	33.85	69.62	87.63

Marine Fisheries Census 2025

The Marine Fisheries Census 2025, implemented by ICAR-CMFRI and FSI with funding support from the Department of Fisheries, is the fifth national census documenting India's marine fisheries sector. Conducted across nine maritime States and four Union Territories using digital applications, it captured detailed information on fisher households, including headcounts, , fishing assets, infrastructure, and welfare coverage, providing a critical database for fisheries management and Blue Economy planning for the Government of India.



Enumeration in progress in Andhra Pradesh

Marine Fisheries Census 2025

The Marine Fisheries Census 2025 (MFC 2025) is the fifth national census of India's marine fisheries sector, jointly implemented by the ICAR-CMFRI, Kochi, and the Fishery Survey of India (FSI), Mumbai, with financial support from the Department of Fisheries (DoF), Government of India. The census covered all nine maritime States and four Union Territories, including the Andaman & Nicobar Islands and Lakshadweep. Field enumeration was carried out during the period 3 November 2025 to 31 January 2026.

Though conducted once every five years, the MFC 2025 represents the most comprehensive national exercise for compiling an authentic and updated database on India's marine fisheries sector. The MFC 2025 marks a significant digital transition, moving from conventional paper-based enumeration to a digital,



Launch workshop of the 5th MFC 2025 at ICAR-CMFRI, Kochi

real-time, technology-enabled data collection system.

Launched on 31 October 2025, the MFC 2025 enumeration covered all marine fisher households (including the head count of individual family members), fishing crafts, fishing gears, and associated fisheries infrastructure located in marine fishing villages along the Indian

coastline and island territories. The exercise also included mapping of major fisheries infrastructure, such as fishing harbours, fish landing centres, wholesale markets, boat-building and repair yards, ice plants, cold storages, fish-processing units, peeling sheds, and fish meal plants in the coastal

The Marine Fisheries Census 2025 established a robust evidence base to guide sustainable fisheries management along India's coast, thereby contributing to national priorities under the Blue Economy framework.



Enumeration in progress in Odisha

districts. In addition, information was collected on Self-Help Groups (SHGs), Fish Farmer Producer Organisations (FFPOs), and general village amenities, including roads, transport facilities, educational institutions, and health services.

Further, the census captured household-level information on the coverage of major Central Government schemes, including the Pradhan Mantri Matsya Sampada Yojana (PMMSY) and other welfare programmes benefiting marine fishers.

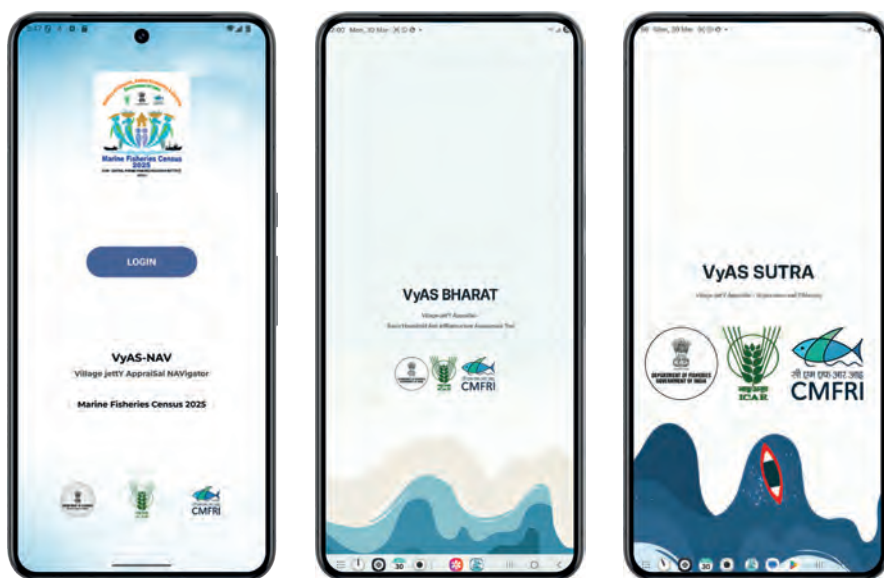


Marine Fisheries Census 2025 training workshop held at Kochi

The data generated through the MFC 2025 will provide a critical baseline for evidence-based policy formulation, sustainable fisheries management, and livelihood development, and will support national initiatives under the Blue Economy framework of the Government of India.

Digital applications powering MFC 2025

To ensure comprehensive, accurate, and efficient data collection, three specialised mobile applications, VyAS-NAV, VyAS-BHARAT, and VyAS-SUTRA, were developed by ICAR-CMFRI and operationalised. These platforms were supported by a series of web-based dashboards for supervisory oversight and real-time data validation. VyAS-NAV (Village-Jetty Appraisal Navigator) was deployed during the preparatory phase to verify and validate marine fishing villages. VyAS-BHARAT (Basic Household and Infrastructure Assessment Tool) served as the core application during the enumeration phase for collecting detailed household



Snapshots of MFC 2025 mobile applications developed at ICAR-CMFRI

and infrastructure data. The application includes nine schedules covering demographics, livelihood profiles, fishing crafts and gears, and community infrastructure. It is developed to function offline in areas with limited network connectivity and incorporates real-time validation features to minimise data entry errors. All records were geo-referenced using GPS coordinates to ensure accurate location tracking, including remote coastal and island communities.

VyAS-SUTRA (Supervision and Tracking Application) served as a real-time monitoring and quality assurance platform for field-level coordinators. It enabled supervisors to manage enumerator assignments, monitor data submissions, verify approved records, and communicate directly with enumerators through

an integrated annotation and feedback system. Complementing these mobile applications, multi-tier web dashboards were developed for District Level Coordinators (DLCs), State Level Coordinators (SLCs), Regional Level Coordinators (RLCs), data analysts, the National Coordinator, and officials of the Department of Fisheries to facilitate effective supervision of the enumeration process. Each user was given defined access rights, enabling hierarchical supervision, real-time progress monitoring, and timely resolution of issues across all levels of census management.

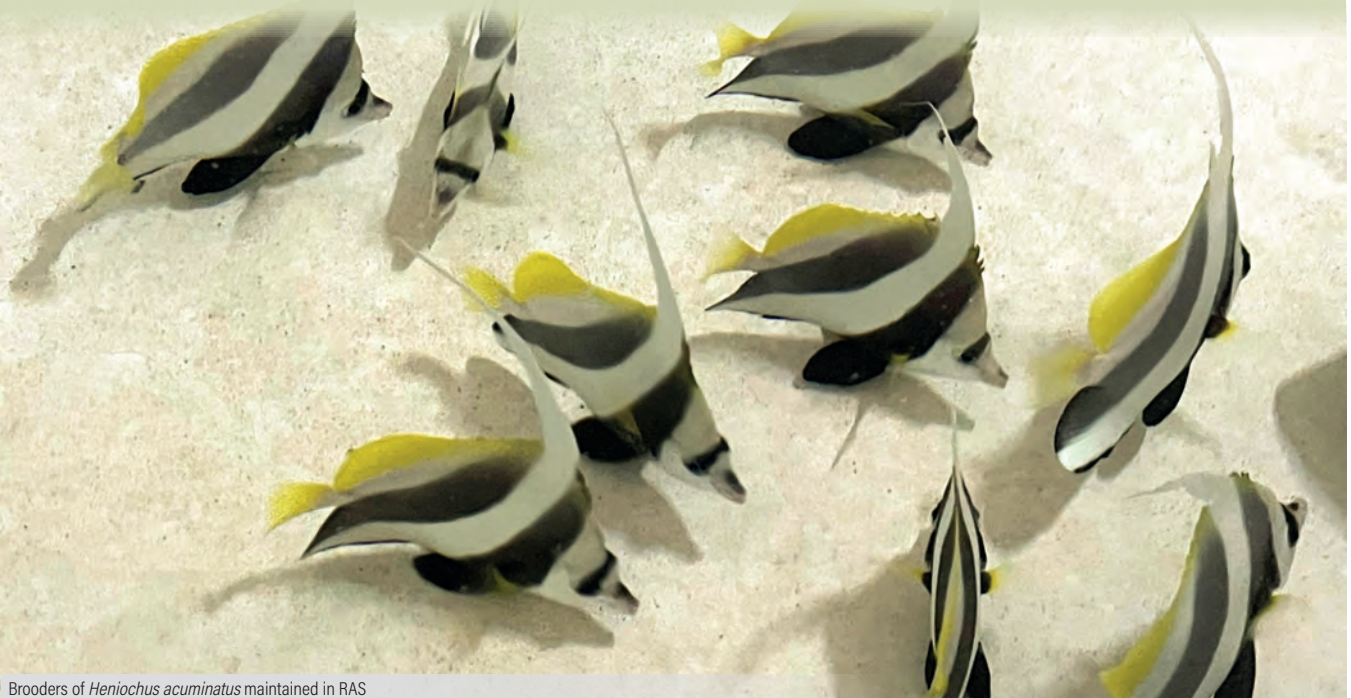
The post-enumeration phase of the MFC 2025 will focus primarily on validation, scrutiny, and analysis of the enumerated data, followed by the preparation and publication of reports.

Transitioning fully to digital enumeration, the census utilised specialised mobile applications and real-time dashboards, ensuring accurate, geo-referenced data collection.

Mariculture

Broodstock Development and Seed Production

Research on broodstock development and seed production achieved significant advancements in broodstock development, captive breeding, and seed production of finfish, shellfish, ornamental species, and invertebrates. Broodstock of 13 food fish and 27 ornamental species and invertebrates have been maintained. Physiochemical, nutritional, environmental and biological interventions resulted in the successful captive breeding of multiple species, including trevallies, ornamental fishes, gastropods and mangrove clam, besides spore-based seaweed seedling production. Innovations such as upweller nursery systems enabled large-scale bivalve spat production, while live feed, transport, and seed quality protocols were refined. These efforts strengthened hatchery seed supply technology potential, supported stock enhancement, and promoted scalable mariculture technologies.



Brooders of *Heniochus acuminatus* maintained in RAS

Captive breeding and seed production of finfish, shellfish, other invertebrates and seaweeds

Project: MD/CBR/18

Broodstock of 13 commercially important food fish species (Indian and silver pompano, cobia, orange-spotted grouper, John's snapper, emperors, seabreams, spinefoot, grunter, and trevallies) are being maintained across ICAR-CMFRI centres, along with 27 ornamental species, bivalves, gastropods, and other invertebrates. Breeding and seed production have been standardised/ upscaled for nine food fish species, 20 ornamental species, and three bivalves. Key

Captive breeding and seed production standardised/ upscaled for nine food fish species, 20 ornamental fish species, and three bivalve species.

microalgae, rotifers and copepods are being cultured for live feed and regularly supplied to stakeholders. Major advances in 2025 included the captive breeding of six ornamental fish species, a breakthrough in mangrove clam breeding, the development of an upweller-based bivalve nursery system, the initiation of pearl oyster broodstock, and the captive breeding of gastropods.

Food fish

Big eye trevally

Broodstock development of big eye trevally (*Caranx sexfasciatus*) using sub-adults collected from estuaries has been progressing. Samples of an



Cannulation of big eye trevally to assess gonad maturity

initial weight range of 40–50 g were stocked in cages and fed on trash fish and commercial pellet feeds at 5–6% of body weight per day. The fish attained a size of 1.5–2.0 kg within 15 months. Ovarian biopsy through cannulation revealed oocyte growth in captivity.



Distribution of seeds of giant trevally to cage farmers

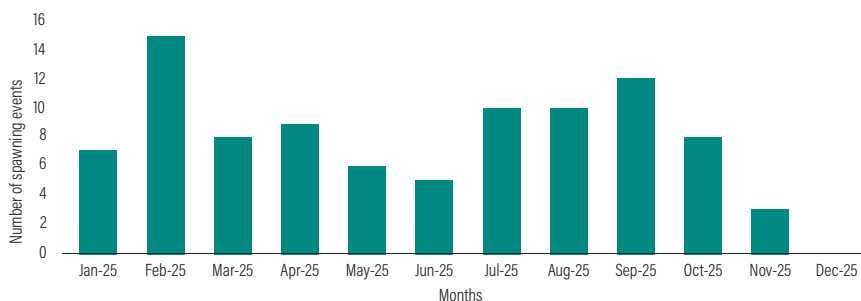
Giant trevally

Following the successful captive breeding of giant trevally (*Caranx ignobilis*), a large number of broodfish were conditioned by gradual transfer from cages maintained in the estuary to a recirculatory aquaculture system (RAS) having 30–34 ppt salinity at a sex ratio of 1:1 (female: male). Induced spawning has been achieved year-round using the synthetic GnRH analogue. Hatchery-produced seeds were supplied to farmer groups in Thiruvananthapuram and Kollam districts in Kerala to promote cage farming of the species.

Golden trevally

Developed and validated a protocol for captive breeding of golden trevally (*Gnathanodon speciosus*). Mature broodstock maintained at a sex ratio of 1:2 (female: male) were successfully induced to spawn 93 times during the year. Seeds of the species are under grow-out in

Golden trevally captive breeding protocol validated; spawning induced 93 times in one year and seeds supplied to stakeholders



Monthly spawning events of golden trevally

cages, and batches of juveniles have been supplied to private aquaria in Bangalore, Mysore, Indore and Chennai for live display.

Ornamental fish

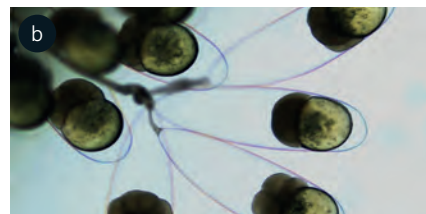
Protocols were developed for seed production of ornamental fish (lemon damsel- *Pomacentrus moluccensis* and clown goby- *Gobiodon okinawae*), resulting in consistent production of high-quality seeds. Seeds produced under this programme were supplied to selected entrepreneurs.

Achieved successful captive breeding and seed production of royal dottyback (*Pictichromis paccagnellorum*) at the Vizhinjam Regional Centre, ICAR-CMFRI, through environment and feed manipulations. In each batch, at least 15 spawnings were recorded. Spawned eggs hatched within 76–82 hours. Achieved a final survival range of 3–5%. The juveniles attained sexual maturity at 180–200 days, and F1 broodstocks were developed for a sustainable captive breeding line.

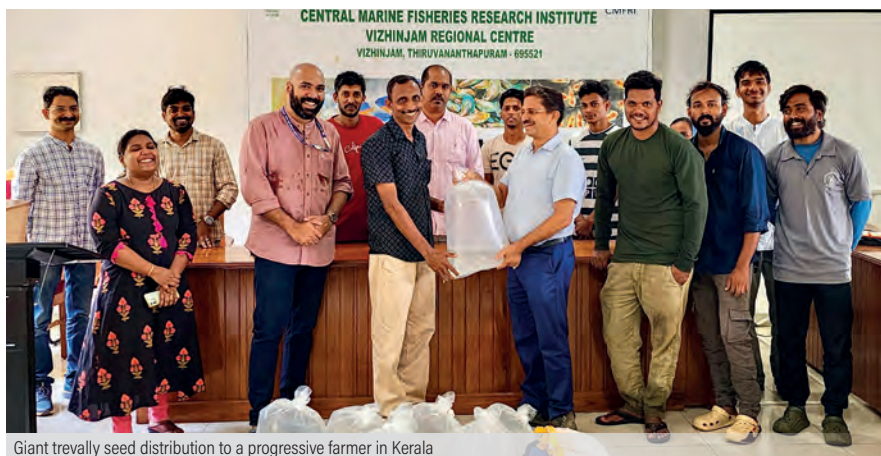


F1 generation of hatchery produced royal dottyback

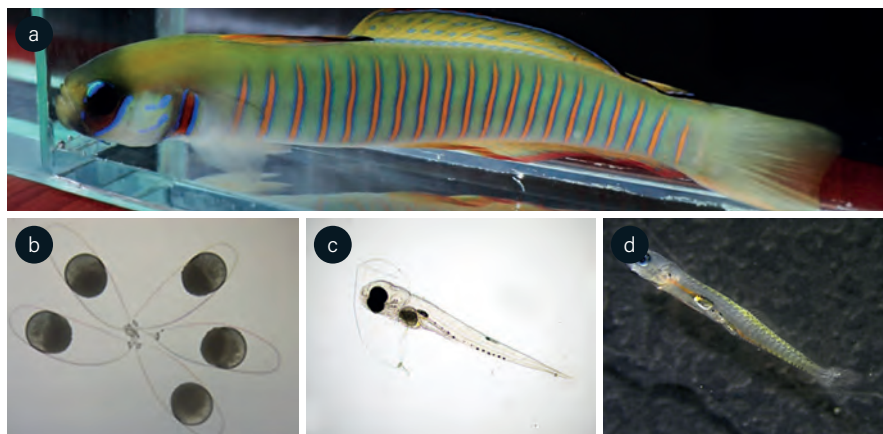
Broodfish of the bluefin watchman goby (*Cryptocentrus fasciatus*) reared in 250 l FRP tanks at the Vizhinjam Regional Centre of ICAR-CMFRI, could be spawned naturally through environmental and feed manipulations. The eggs hatched after 3 days, and larvae were reared on copepod and *Artemia* nauplii. Then weaned to inert feed (300–400 µm size), completing larval metamorphosis by 45 days post-hatch.



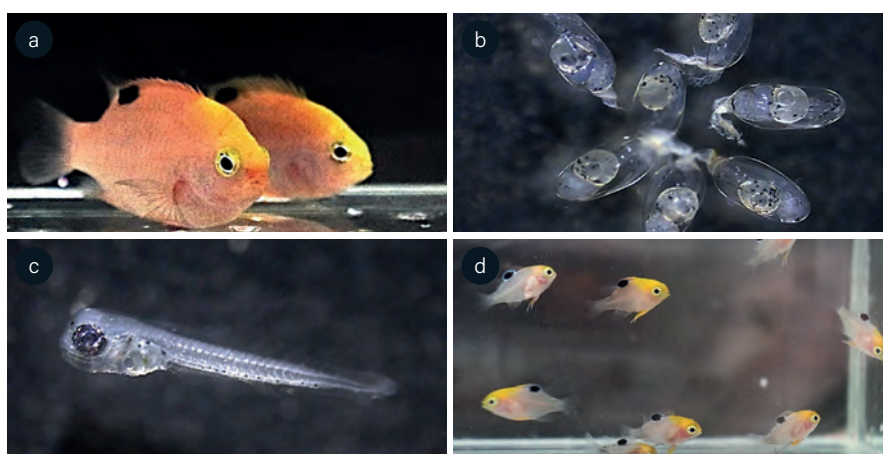
Bluefin watchman goby (a. brooder, b. fertilised eggs, c. 40 DPH fry, d. 90 DPH fry)



Giant trevally seed distribution to a progressive farmer in Kerala



Zebra dart goby (a. brooder, b. fertilised eggs, c. 1 DPH fry, d. 50 DPH fry)



Talbot's damselfish (a. brooders, b. fertilised eggs, c. 5 HPH fry, d. 60 DPH juveniles)

The zebra dart goby (*Ptereleotris zebra*) was bred in captivity at the Vizhinjam Regional Centre of ICAR-CMFRI through environment and feed manipulations. Broodstock measuring 12.0–13.5 cm TL spawned demersal, elliptical eggs, attached to the substrate by filaments. Larval rearing was carried out using a combination of *Parvocalanus crassirostris* copepod nauplii and phytoplankton. The larvae metamorphosed to juveniles at 50 days post-hatch.

Successfully bred the talbot's damselfish, using broodstock developed from sub-adults reared in 500 l circular HDPE tanks. After 4 months of environment and feed manipulations, the fish (4.4–5.8 cm TL) spawned, attaching eggs

on substratum provided. The eggs hatched in 72–75 hours. Hatchlings ($2003.37 \pm 103.31 \mu\text{m}$ TL) were fed on copepod (*Parvocalanus crassirostris*). Juveniles are being maintained for captive maturation.

Pennant coralfish (*Heniochus acuminatus*) (12 ± 0.53 cm and 51.5 ± 3.69 g) collected off the Karwar were reared in a 5.0 t RAS at the Karwar Regional Station of ICAR-CMFRI. The fish were fed on chopped oyster meat at 5% biomass/day. After 60 days, they reached 14.3 ± 1.37 cm and 113.6 ± 29.04 g (weight gain of 119.9 %, SGR 1.34 %, and 93.33 % survival). The fish displayed territorial behaviour and bright colouration. Gonad maturation is being monitored through cannulation for captive breeding.



Cannulation of *H. acuminatus*

Bivalves and gastropods

Induced breeding of the mangrove clam, *Geloina erosa* (*G. expansa*), was accomplished with captive larval rearing at the Mariculture Facility at Njarakkal, Kochi. Achieved complete embryogenesis, larval development and successful spat settlement rate of $\sim 20/\text{cm}^2$ from the 18th day post-spawning. This breakthrough

Captive breeding and larval rearing of *Geloina erosa* (*G. expansa*), achieved with spat settlement from day 18 post-spawning; upweller nursery enabled 1–1.5 lakh spat per silo and growth from 2–3 mm to 8–10 mm in 45 days, producing 1.2 million *Perna viridis* spat and 0.2 million *Crassostrea madrasensis* spat.



Captive breeding of mangrove clam (a. broodstock, b. spawning induction, c. 'D' veliger stage, d. settled spat)

represents one of the very few documented instances globally of captive spat production of mangrove clams. Ongoing efforts are focused

Upgraded infrastructure produced millions of bivalves, while sea ranching 3 million clams achieved 80% survival, supporting livelihoods of over 4,000 fishers in Kerala

on standardising larval rearing and nursery protocols to enable scalable hatchery seed production.



Field upweller system—modular design

A novel cylindro-conical silo-based field upweller system was fabricated and validated, enabling mass-scale bivalve spat rearing. Each silo accommodated 1–1.5 lakh spat, supporting their growth from 2–3 mm to 8–10 mm within 45 days. Using this system, 1.2 million spat of green mussel (*Perna viridis*) and 0.2 million cultchless spat of the oyster, *Crassostrea madrasensis*, were produced, demonstrating its effectiveness for large-scale seed production.



Captive breeding of *Turbinella pyrum* (a. egg laying, b. 90 days old, c. 150 days old)

At the Tuticorin Centre of ICAR-CMFRI, broodstock development of the pearl oyster (*Pinctada fucata*) is progressing by maintaining ~200 adults, alongside successful captive breeding of ornamental gastropods for conservation. Out of the 13 gastropod species being maintained, captive breeding was achieved for *Turbinella pyrum* and *Vologalea cochlidium*, with juveniles being reared, while in *Pleuroploca trapezium*, *Lambis lambis*, *Cypraea tigris*, and *Chicoreus ramosus*, the hatched larvae attained the veliger stage, but suffered high mortality.

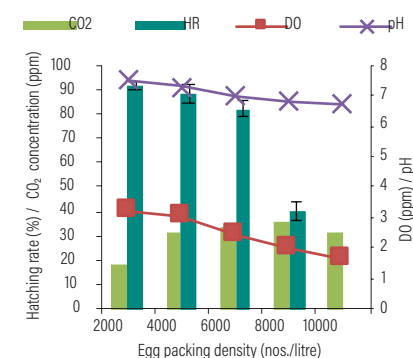

Black sea urchin, *Stomopneustes variolaris*

Sea urchin

Black sea urchin, *Stomopneustes variolaris*, is being maintained at the mariculture facility, Njarakkal, for captive breeding trials. The species has a high market demand for its nutritionally rich gonads (*uni*) due to the presence of valuable bioactive compounds with pharmaceutical applications.

Egg packing and transport

Egg packing density and transport duration experiments conducted to support satellite hatchery operations, involving fertilised eggs of Indian pompano, by transporting for 6–8 hours at varying densities, showed optimal survival and post-transport viability at 2,000–6,000 egg/l. For John's snapper (*Lutjanus johnii*), the eggs packed at 17,500/l density and evaluated at 1.5 hour intervals indicated an optimal transport duration of 4.5–6 hours.



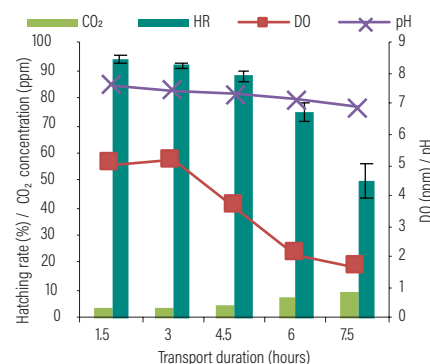
Egg hatching rate and water quality (a. Indian pompano, b. John's snapper)

Live feed screening

Screening for bacteria and viruses in live feeds revealed the highest bacterial load in rotifers (1.8×10^{15} cfu/g) compared to microalgae (0.28×10^{12} cfu/g). The predominant vibrios

Black sea urchinis being maintained in captivity achieved sexual maturity for breeding trials. The species has a high market demand for its nutritionally rich gonads.

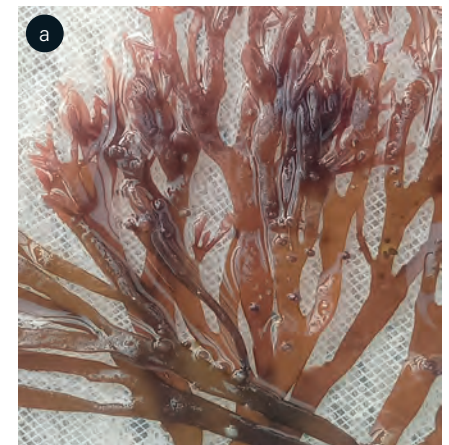
(*Vibrio harveyi*, *V. alginolyticus*) showed differential antibiotic sensitivity (*V. harveyi*: ofloxacin, ciprofloxacin; *V. alginolyticus*:



norfloxacin, levofloxacin), though 92% of isolates were antibiotic-resistant, including multidrug resistance (18% to 4 drugs; 12% to 8; 8% to 6; 3–2% to 5), while 2% were fully susceptible. The microbial consortium showed stronger antagonism against *V. alginolyticus* than against *V. harveyi*.

Spore-based seaweed plantlet production

Fragments of the seaweed, *Gracilaria corticata*, were placed in a mosquito net suspended in FRP tank containing filtered seawater. A fine-mesh PVC frame was positioned below as a substratum for spore settlement. Controlled water flow, temperature, and light conditions facilitated spore release, attachment, and germination. Following successful attachment, the seeded substrates were transferred to larger rearing tanks, where the growth and development of the plantlets are continuously monitored.


Gracilaria corticata (a. cystocarpic thallus, b. seeds released from the spore)



Green mussel spat settled on meshed ring nets in the nursery

Development of pilot-scale open sea eco mussel farms

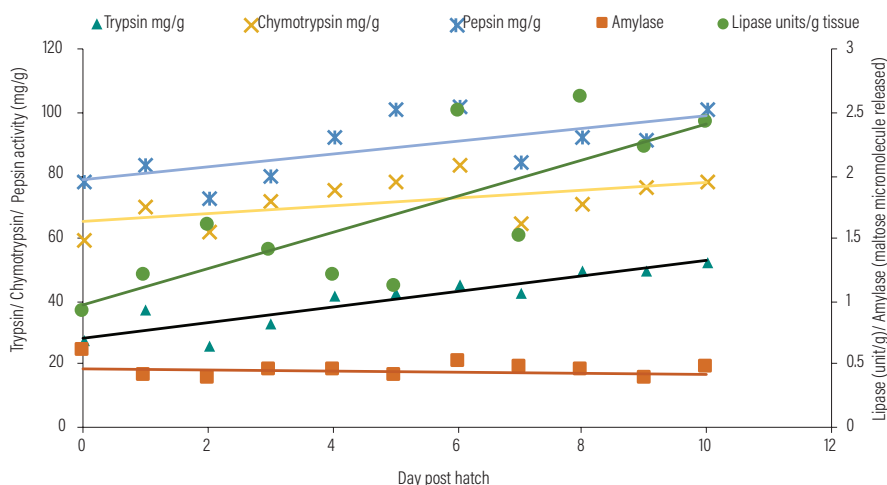
Project: PMMSY

Hatchery production of bivalve seeds has been strengthened through key infrastructure upgrades, producing over 36 million larvae and 2.2 million spat, including ~0.3 million mussel seeds supplied to farmers in Maharashtra. Sea ranching of three million short-neck clam seeds in Ashtamudi Lake, Kerala, achieved ~80% survival and reached marketable size in seven months, supporting nearly 4,000 fisher livelihoods.

Evaluation of crowding and transportation stress

Project: MD/CTS/20

Transport of juvenile cobia up to 28 hours showed 100% survival, but resulted in progressive water-quality deterioration, causing marked increases in stress biomarkers (serum cortisol, gill antioxidant activity, and liver enzymes) and cumulative gill damage. Application of eugenol anaesthesia (20 µl/l) reduced endocrine and oxidative stress, lowered liver enzyme activity, and prevented gill histological and ultrastructural damage. This demonstrated the effectiveness of eugenol anaesthesia in mitigating transport-induced stress.



Digestive ontogeny of Indian pompano

Development of seed quality indices

Project MD/LQI/22

To develop seed quality indices for farmed species, morphometric parameters of eggs of Indian pompano were evaluated for their association with egg viability and larval performance. Among these, only the ratio of maximum and minimum diameter of lipid vesicle and the lipid vesicle shape coefficient showed significant correlation with larval survival. Digestive ontogeny revealed presence of all major digestive enzymes in larvae from the day of hatching, with maximum amylase activity. Levels of other enzymes increased with the development of larvae. Lipase and

pepsin displayed an alternating activity pattern, suggesting coordinated regulation of lipid and protein digestion during early larval growth.

Sea ranching of green tiger shrimp in Palk Bay and the Gulf of Mannar

Project: PMMSY

The Mandapam Regional Centre of ICAR-CMFRI conducted sea ranching of hatchery-produced green tiger shrimp (*Penaeus semisulcatus*) in the Gulf of Mannar and Palk Bay to replenish natural stocks and enhance catch, supporting fishers' livelihoods. In 2025, a total of 24.7 million PL 15–20 were ranching in the Gulf of Mannar and Palk Bay regions.



Sea ranching of green tiger shrimp in Palk Bay

Mariculture **Growout Technologies**

The programme promoted scalable mariculture practices through field demonstrations and system innovations. Integrated approaches such as IMTA, polyculture, and seaweed–lobster farming improved productivity, nutrient management, and biofouling control. Optimised nursery and feeding strategies enhanced the survival and growth of key species, while cage farming, mussel culture, shrimp farming trials, and seaweed farming demonstrated strong livelihood potential. These interventions strengthened farmer adoption, improved production efficiency, and supported developing climate-resilient coastal aquaculture systems



A harvest from polyculture of maze rabbit fish and pompano in cage

Translational mariculture grow-out technologies

Project: MD/MGT/19

The major activities taken up under translational mariculture, to promote sustainability in marine farming, were the integration of seaweed with spiny lobster cage culture, polyculture systems for biofouling control,

Spiny lobster cage farming integrated with seaweed reduced habitat nutrient enrichment by absorbing nitrogen released by lobsters' excrement and leftovers.

optimised nursery rearing for John's snapper, successful cage culture of golden trevally, seaweed farming and demonstration programs for coastal communities.

Seaweed integration in spiny lobster cage culture

A field study on spiny lobster (*Panulirus polyphagus*) cage farming along the Saurashtra coast, involved six cages stocked with 300 juveniles each, which were fed fresh trash fish at 8% of body weight. Proximate analysis showed minimal nitrogen and phosphorus retention in lobster biomass, risking habitat nutrient enrichment. Integrating *Kappaphycus alvarezii* with cage culture helped absorb 170 g of nitrogen/day/cage, supporting Integrated Multi-Trophic Aquaculture (IMTA) as a sustainable strategy.

Innovative polyculture and biofouling control in marine cages

Polyculture trials in marine cages combined species with



Harvest from seaweed-integrated spiny lobster cage culture

complementary feeding habits to enhance production efficiency and reduce biofouling. Maze rabbitfish (*Siganus vermiculatus*), a herbivorous bottom feeder, helps control cage fouling, while silver pompano (*Trachinotus blochii*), a pelagic feeder, utilises the water column. An on-farm demonstration at ICAR-CMFRI,

Karwar, tested these species in 3 m diameter circular cages, stocked at 15 fingerlings/m³, with a 40% crude protein and 10% lipid feed. After six months, maze rabbitfish reached 19-21 cm (155-180 g), and silver pompano grew to 28-31 cm (360-410 g), with survival rates of 84%-89%. A 1:1 stocking ratio was optimal. The harvest



Harvest of maze rabbit fish and silver pompano from sea cage at Karwar

Integrating maze rabbitfish with silver pompano in cage farming improved production and controlled biofouling by 65% without affecting growth, providing additional harvestable biomass.

yielded 140 kg of rabbitfish and 175 kg of pompano, sold live in Mumbai, demonstrating the polyculture approach's commercial viability.

Fouling reduction in marine cages

Field trials conducted at Kollam evaluated the use of streaked spinefoot (*Siganus javus*) as a biological control agent for biofouling in marine cage systems, in combination with silver pompano. Spinefoot were stocked at a density of 5 Nos./m³, alongside pompano at 20 Nos./m³. After six months of culture, no marked biofouling was recorded in the experimental cages. Biofouling accumulation on the inner nets of control cages (without *S. javus*) reached 1655.8±264.5 g/m², whereas cages integrated with streaked spinefoot recorded significantly lower values of 574.0±180.6 g/m². Importantly, the inclusion of spinefoot did not adversely affect the growth performance of silver pompano, while simultaneously providing an additional harvestable component, thereby enhancing system efficiency and offering supplementary income to farmers.

Optimisation of John's snapper nursery rearing

To overcome 100% mortality in previous trials due to parasitic infestations and cannibalism, standardised nursery rearing protocols for John's snapper (*Lutjanus*



Cage farmed streaked spinefoot and silver pompano

argentimaculatus) were developed. Feeding strategies were adjusted to allocate 50% of the daily ration in the evening to reduce cannibalism, and parasite management was implemented through weekly freshwater baths. Fortnightly size

grading reduced growth variability and aggressive interactions. These measures led to a survival rate of 96.5% and an increase in mean body weight from 1.1 g to 28.2 g over four months, significantly improving seed survival and growth.



John's snapper nursery rearing

Golden trevally cage culture

Golden trevally fingerlings with an initial mean weight of approximately 15 g were transitioned from indoor nursery tanks to open sea cages for grow-out. During the initial phase, the fish showed poor acceptance of formulated feeds; however, successful acclimatisation was achieved by mixing the pellets with minced fish meat and soaking the feed, gradually conditioning the stock to a pelagic feeding habit. This feeding strategy facilitated adaptation to artificial diets, and after one year of cage culture, the fish attained an average harvest size of 925 g, demonstrating the species' suitability for marine cage farming under managed conditions.



Golden trevally cage culture

Sea cage demonstrations

Sea cage demonstration programmes were implemented by the ICAR-CMFRI Mandapam Regional Centre across 12 locations in Palk Bay and the Gulf of Mannar to promote marine cage farming among coastal communities. The initiatives included two cages stocked with cobia (*Rachycentron canadum*), three cages with silver pompano (*Trachinotus blochii*), and seven cages with Asian seabass (*Lates calcarifer*). Comprehensive technical support was provided throughout the

Sea cage demonstrations in Palk Bay and the Gulf of Mannar promoted sustainable marine cage farming, with local farmer adoption supported by technical guidance.

programme, covering site selection, cage mooring, routine health monitoring, and guidance on sourcing high-quality seed. These interventions

facilitated the smooth adoption of cage culture practices by farmers and strengthened local capacity for sustainable mariculture development.

Capture-based aquaculture

Capture-based aquaculture (CBA) trials at Pazhaverkadu evaluated the culture potential of wild-caught mangrove red snapper (*L. argentimaculatus*) in sea cages, with active involvement from the Irula tribal community. A total of 500 juveniles, with an initial mean weight of 49.6 g, were stocked and fed chopped trash fish. Over eleven



Demonstration of sea-cage farming of cobia



Fish fingerling collection from the wild

months, the stock showed a specific growth rate of 0.762% per day and a survival rate of 66.4%. These results highlight CBA as a viable livelihood option while promoting responsible fishing and community-based resource management.

Green mussel farming

A grow-out trial on green mussel (*Perna viridis*) was conducted at Thankassery Bay, Kollam, using hatchery-produced seed to assess raft-based culture systems. Initiated in October 2024, 1,000 individuals per metre were stocked and protected with predator-exclusion nets. Over



Stocking of PL of green tiger shrimp in a pond for demonstration



Harvested green mussel



Ulva lactuca farmed in land-based tanks

the culture period, mussels grew from a mean shell length of 10.7 mm to 86 mm by August 2025, with an average body weight of 32 g and a mean production of 14.6 kg per unit. These results demonstrate the feasibility and scalability of raft-based farming systems, highlighting their potential for coastal livelihood programmes.

Farming of green tiger shrimp

Despite the high demand, commercial farming of green tiger shrimp (*Penaeus semisulcatus*) is constrained by low survival rates and

cannibalism. A demonstration at the Marine Farm Complex in Mandapam stocked 50,000 post-larvae (PL) in modified ponds. The study aims to standardise water quality and feeding protocols to mitigate cannibalism and provide a roadmap for coastal shrimp diversification.

Seaweed farming in tanks

In Tamil Nadu, *Ulva lactuca* was cultured in 300 I FRP tanks using a tube net system. A three-fold biomass increase was achieved over 60 days, demonstrating its potential for controlled farming for human consumption.

Seaweed farming in coastal ponds

Trials for *Ulva lactuca* were conducted in prepared coastal ponds in Calicut, Kerala, maintained at 20, 25, and 35

Seaweed farming trials in coastal areas, ponds, and tanks across Gujarat, Kerala, and Tamil Nadu demonstrated significant biomass increase.

Coastal pond-based farming of *U. lactuca*

ppt salinity. Initially stocked with 2.5 kg of *U. lactuca*, biomass increased to 4.16 kg, 5.17 kg, and 6.50 kg, respectively, after 20 days of growth in different salinities maintained, demonstrating that higher salinity promoted growth.

IMTA for sustainable coastal livelihoods

Project: NFDB-PMMSY

IMTA units, comprising two finfish cages (6 × 3 × 2 m), two green mussel rafts (20 × 10 feet), and two seaweed rafts (10 × 10 feet), were established at four estuarine locations in Udupi and Dakshina Kannada in Karnataka. Each finfish cage was stocked with 1,500

silver pompano juveniles, mussel rafts held 150 seeded ropes, and seaweed rafts planted with *Kappaphycus alvarezii*. After 140 days, finfish production averaged 480 kg/cage (₹425/kg), mussel yield was 2.75 kg/rope (₹150/kg), and *K. alvarezii* grew four-fold in 65 days, producing 8 kg/rope. The trials are continuing.

Seaweed farming along Kori, Padala creeks, and Gulf of Kutch, Gujarat coast

Project: DoF PMMSY

ICAR-CMFRI is promoting seaweed farming along the Indo-Pak border.



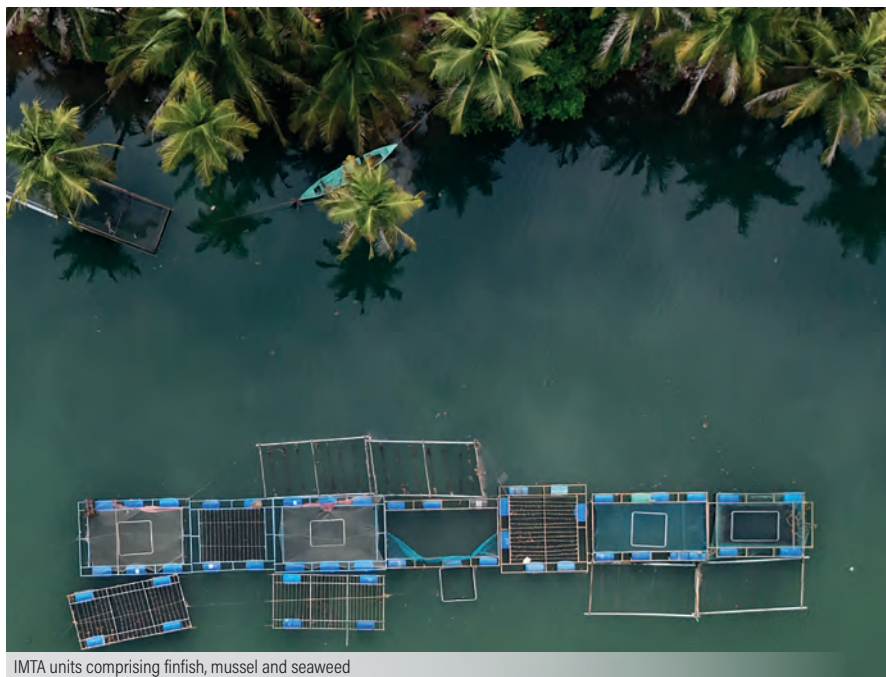
Harvest of farmed seaweed from Kori Creek

In the second project phase, 1,200 HDPE monoline and net-tube rafts were deployed at sites like Kori Creek and Jakhau. *K. alvarezii* yielded 250-300 kg per raft, with a 7-9-fold biomass increase, proving the system's success in Kutch's coastal environment. A total of 19.8 t of wet seaweed was harvested. Training programs engaged 250 stakeholders, including women, fostering sustainable farming.

Socio-economic impact of mariculture technology interventions

Project: MD/MTI/31

A study across Kerala, Karnataka, Goa, Tamil Nadu, and Andhra Pradesh profiled cage aquaculture farmers, revealing a predominantly male sector (75.9%), with most farmers aged 35–50 years and highly educated (98.6%). Fishing was the main occupation for nearly half, with cage farming often secondary (56.1%). Most farmers (83%) showed interest in FFPOs, and 44.3% operated a single cage due to financial and climate constraints. Cage farming was mainly under single ownership (76.4%). Institutional support, primarily from ICAR-CMFRI and state agencies, drove adoption (84.4%). Asian seabass dominated production (90.6%), with other species like pearl spot and cobia.



IMTA units comprising finfish, mussel and seaweed

Mariculture

All India Network Project on Mariculture

The All India Network Project on Mariculture achieved significant progress in advancing sustainable mariculture through multi-state interventions in finfish cage farming, captive breeding, seed production, seaweed cultivation, and stakeholder capacity building. Demonstrations of rabbitfish, seabass, and Indian pompano farming showed good growth and survival, while standardised breeding protocols improved seed availability. Innovative approaches, such as IMTA, large offshore cages, and HDPE raft-based seaweed farming, have enhanced productivity and climate resilience. The project strengthened technology adoption, supported coastal livelihoods, and contributed to India's Blue Economy objectives.



Grow-out trial in large cage (15 m diameter) off Visakhapatnam

Activities under the AINP-Mariculture

During the reporting period, targeted interventions were implemented under the All India Network Project (AINP) on Mariculture, with a major focus on strengthening marine finfish cage farming, refining captive breeding and seed production technologies, and expanding seaweed farming innovations. The year's programme integrated applied research, technology validation, beneficiary demonstrations, capacity building, and private-sector technology transfer. These activities collectively supported sustainable coastal livelihoods, improved seed availability of high-value mariculture candidates, and contributed to India's blue economy objectives.

Farming demonstrations of marine finfishes

Cage farming of maze rabbitfish (Karnataka)

A beneficiary-oriented cage farming demonstration of maze rabbitfish (*Siganus vermiculatus*) was undertaken

Cage farming demonstrations of maze rabbitfish (*Siganus vermiculatus*), Asian seabass (*Lates calcarifer*), Indian pompano (*Trachinotus mookalee*) and silver pompano were conducted across Karnataka, Andhra Pradesh, Kerala, Tamil Nadu and West Bengal.

in the Sharavati estuary of Uttara Kannada. Culture was carried out in cage units of 6 m × 3 m × 3 m stocked with hatchery-produced

fingerlings. Fish were fed a commercial diet containing 32% crude protein and 8% crude fat, provided in two rations daily. Performance recorded a mean total length of 18 ± 0.86 cm, a mean body weight of 180 ± 11.25 g, and survival of 85% in a cycle. The successful demonstration generated strong interest among local fisherfolk for the adoption of rabbitfish mariculture.

Farming technology dissemination of Indian pompano (Andhra Pradesh)

The standardised technology for coastal pond farming of Indian pompano (*Trachinotus mookalee*) was disseminated across multiple coastal districts of Andhra Pradesh.



Harvest of Indian pompano



Harvest of maze rabbitfish by beneficiaries



Approximately 60 acres of pond area were stocked under stakeholder adoption through NFDB-supported sites and private farmers/hatcheries. Beneficiaries included sites at Losari (West Godavari), Amalapuram (Konaseema), Akiveedu (West Godavari), Nagayalanka (Krishna District), and Nelluru through

Captive breeding protocols were standardised for Indian pompano and John's snapper, recording 49 and 85 spawning events, respectively, during the year.

stakeholders. The adoption demonstrated scalability and growing stakeholder confidence in marine finfish pond culture.

Demonstration farming of silver pompano (Kerala)

Demonstration farming of silver pompano was initiated in Kerala with beneficiary participation at Cherai and Munambam, facilitating technology outreach and diversification of cage mariculture options in the State.

Participatory seabass cage farming (Tamil nadu)

Participatory cage farming of seabass was implemented at Munaikadu (Palk Bay, Mandapam) and Vedhalai (Gulf of Mannar). A total of 15 HDPE cages (6 m diameter) were stocked with 1,500 seabass fingerlings per cage (initial weight ~20 g). Fingerlings were initially reared in nursery tanks with pellet feed; after transfer to cages, feeding continued with pellets and was later shifted to chopped low-value fish at Seeds were procured by the farmers from private hatcheries in Andhra

Pradesh. Technical support on feeding practices and health management was provided by Mandapam Regional Centre, ICAR-CMFRI. The fish attained a market size of 800–1,000 g within nine months, demonstrating the potential for livelihoods in cage mariculture.

IMTA demonstration: spiny lobsters with native seaweed (Tamil Nadu)

An Integrated Multi-Trophic Aquaculture (IMTA) demonstration integrating spiny lobsters (*Panulirus homarus*, *P. ornatus*, *P. polyphagus*) with native seaweed (*Gracilaria edulis*) was initiated at Vedhalai in participatory mode. A total of 600 juvenile lobsters (50–70 g) were stocked in a 6 m cage,

integrated with 16 seaweed rafts stocked at 60 kg per raft. The culture is in progress and aims to develop ecologically efficient mariculture models by integrating extractive components with fed species.

Cage culture of Asian seabass in Sundarbans (West Bengal)

Marine cage farming of Asian seabass (*Lates calcarifer*) was successfully implemented at Banshtala Ghat, Kalnagini Creek, South 24 Parganas. The programme demonstrated the feasibility of cage-based grow-out in estuarine creek environments and served as a model for climate-resilient mariculture practices in the Sundarbans.



Participatory cage farming in the Gulf of Mannar



Marine cage farming in South 24 Parganas, West Bengal

Community-led cage farming initiative in Sundarbans

With technical support from the AINP–Mariculture team, fishermen from G-Plot, Patharpratima, formed the Daspur Cage Fishery Committee (DCFC) and implemented seabass cage farming in two octagonal cages, later expanding with a rectangular cage in Curzon Creek. The initiative demonstrated cage farming using natural feed as a climate-resilient livelihood option. Based on encouraging results, DCFC proposed expansion in cage numbers and stocking density during the next cycle to improve financial viability.

Large-diameter cage feasibility testing

A feasibility study on 15 m diameter sea cages using four-point mooring revealed structural weaknesses, mooring instability, and ballast-related net folding, which caused fish mortality. Design refinements included a reinforced three-pipe (140 mm) frame, a shift to single-point mooring with a two-ton anchor, and improved ballast using 28 mm steel wire ropes within PN-12 HDPE pipes. The modified cage remained stable at wind speeds above 50 km/h. Nursery-reared Indian pompano fingerlings (26 g; 20/m³) reached 198 g within five months, confirming suitability for exposed-sea farming.

Seed production of marine finfishes

Broodstock development of dolphinfish (*Coryphaena hippurus*)

Broodstock development of dolphinfish is underway to standardise captive maturation and assess seed

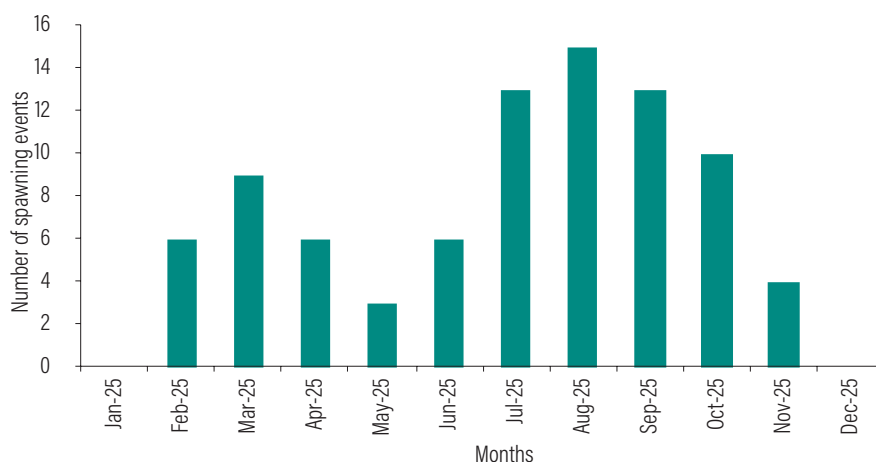


Trials underway with 15 m diameter large cages

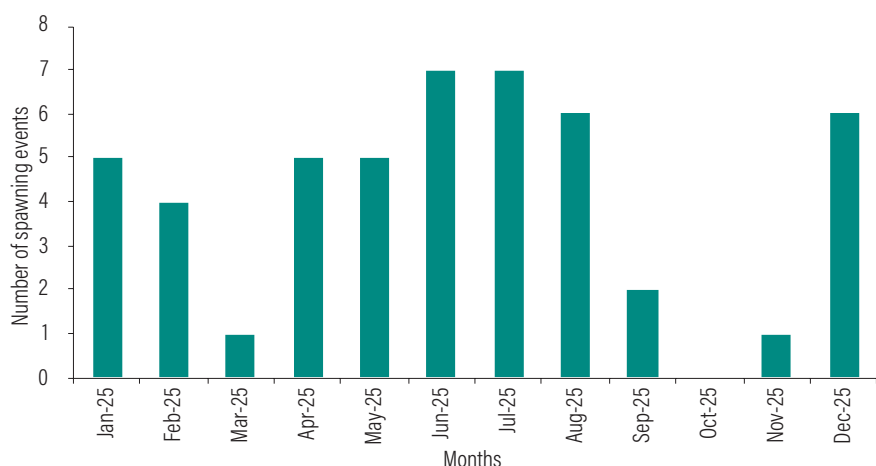
production potential. Sub-adults were selectively collected and acclimatised in sea cages and land-based tanks, with continuous monitoring of water quality, health and growth to optimise spawning protocols.

Standardisation of captive breeding protocols

Captive breeding protocols were standardised to enhance seed availability.



Monthly variation in spawning events of John's snapper maintained in captivity



Monthly variation in spawning events of Indian pompano maintained in captivity



F1 generation broodstock of maze rabbitfish

F1 generation broodstock of maze rabbitfish

g), and 40 brooders were transferred to a 10-tonne RAS. Nutrient-enriched diets enhanced maturation, and LHRH-a induction produced ~1.54 lakh eggs per fish. Larval rearing with copepods and enriched rotifers achieved 12–14% survival at 45 dph, advancing hatchery-scale seed production.

Captive breeding of maze rabbittfish using F₁ broodstock

Hatchery-produced F₁ maze rabbitfish were cage-reared for 20 months (335.8

Indian pompano seed production technology, including live feed production systems, was transferred to Sri Vybhav Hatcheries, Dhanavaipeta,

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Sri Vybhav Hatchery, Dhanavaipeta, Tuni coast, Kakinada

Tuni Coast, Kakinada. Hatchery personnel were trained in live feed and finfish seed production protocols, strengthening public-private partnerships and enabling scaling-up of marine finfish hatchery operations in Andhra Pradesh.

Water budgeting

A water volume optimisation trial for indoor nursery rearing of Indian pompano (100 fingerlings; 5 g) was conducted in 1 m³ FRP tanks with four treatments (800–200 l). Best growth occurred at 800 l (21.5 g final weight; SGR 1.66%; FCR 2.1), while performance declined at 200 l. Survival was 100% in all treatments. Higher water volumes ensured better water quality and improved nursery efficiency.

Seaweed farming

Seaweed cultivation trials and raft fabrication

Red seaweed cultivation trials in the Andaman Islands were conducted using rope-net and tube-net (pouch) systems. Tube-net systems performed better, with improved attachment, early establishment and stable growth. A total of 72 rafts were fabricated; however, 30 rafts were damaged due to cyclone- and rainfall-related

impacts. Biomass performance of *Gracilaria edulis* and *Acanthophora spicifera* recorded consistent gains, with a 5-6 fold biomass increase during 30-60 day intervals.

Dual extraction method

A dual process was standardised to extract high-quality agar and a value-added hydrophilic fraction

from *Gracilaria edulis*. Process and design patents were filed to support innovation and value-chain development.

HDPE raft technology for open-sea seaweed farming

Indigenous HDPE rafts (3 m × 3 m) were developed for exposed coastal



View of rafts at Chidiyatapu, Andaman Islands

Stocking of *Kappaphycus* planting materials

Biomass of planting materials in a single knot planting configuration

Harvested seaweed (*K. alvarezii*)

farming and deployed at five sites in Kutch (100 units). Designed with butt-fusion welding and foam-filled buoyancy, they supported efficient cultivation of *Kappaphycus alvarezii*. Production reached ~25 t (wet weight), with yields up to 380 kg per raft, expanding Gujarat's seaweed farming potential to ~15,800 ha.

Pond-based farming of *Kappaphycus alvarezii*

A 49-day pilot trial of pond-based *Kappaphycus alvarezii* farming was conducted in a 0.5-acre saline pond at Mandapam using 360 kg seed biomass (monoline method). Nutrient supplementation corrected yellowing, and harvest reached ~648 kg. The trial confirmed feasibility, with scope for improved salinity management and biofouling control.

Training, awareness and manpower development

ICAR-CMFRI, Karwar, trained technicians on maze rabbitfish

breeding and farming, while the Faculty of Fisheries, WBUAFS, conducted Asian seabass mariculture programmes at Kakdwip, Sagar Island and Patharpratima.



Hands-on training on hatchery production of rabbit fish

Mariculture

All India Network Project on Ornamental Fish Breeding and Culture

The All India Network Project on Ornamental Fish Breeding and Culture, led by ICAR-CMFRI in collaboration with national institutes and universities, focused on standardising captive breeding technologies for marine, freshwater, brackish water and cold-water ornamental species. Significant achievements in the ICAR-CMFRI component in 2025 include successful breeding and larval rearing of clownfishes, dottyback, gobies and damselfishes, development of live-feed protocols, and establishment of broodstock facilities. The project contributes to species diversification, sustainable hatchery production and strengthening ornamental fisheries in India.



Hatchery produced juveniles of domino clown fish

Activities under the AINP- Ornamental Fish Breeding and Culture

The research activities under the All India Network Project on Ornamental Fish Breeding and Culture (AINP-OFBC) were carried out through seven ICAR institutes (CMFRI, CIBA, CIFA, CICFR, CIFRI, CIFE and NBFGR) along with two universities (KUFOS and TNJFU). The CMFRI serves as the lead institute for the project.

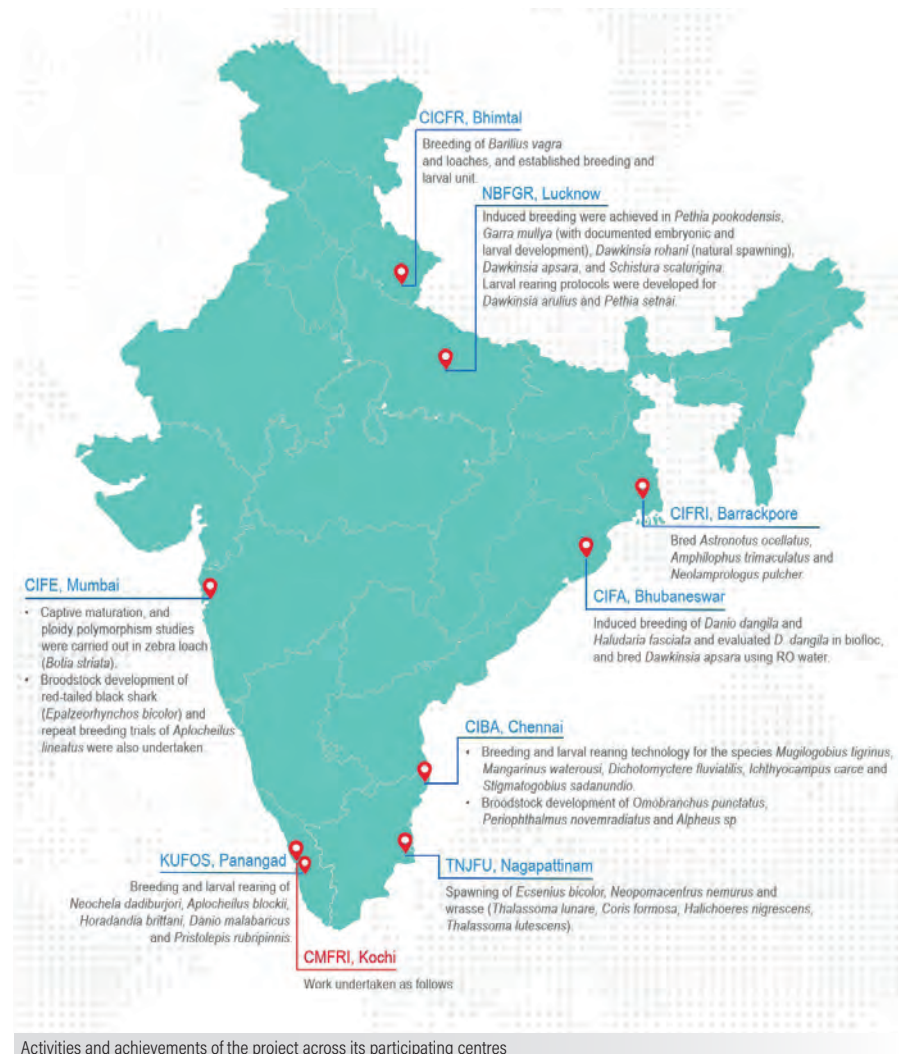
Activities and achievements of ICAR-CMFRI

Captive breeding of domino clownfish

The domino clownfish is a designer variant developed through selective breeding of the black and white Darwin form of *Amphiprion ocellaris*, characterised by a jet-black body with contrasting white bands. Standardised protocols encompassing courtship behaviour, broodstock development, selective breeding, embryonic development, larval rearing and grow-out were established for mass production under captive conditions. Sub-adult double-dot domino broodstock (60-100 mm TL) were stocked in 500 l glass aquaria

Species-specific breeding and larval rearing protocols were standardised, enabling scalable ornamental fish hatchery production.

maintained at 28-29 °C to facilitate pair formation, and after six months, seven breeding pairs (females 90-100 mm TL; males 50-70 mm TL) were successfully formed and transferred

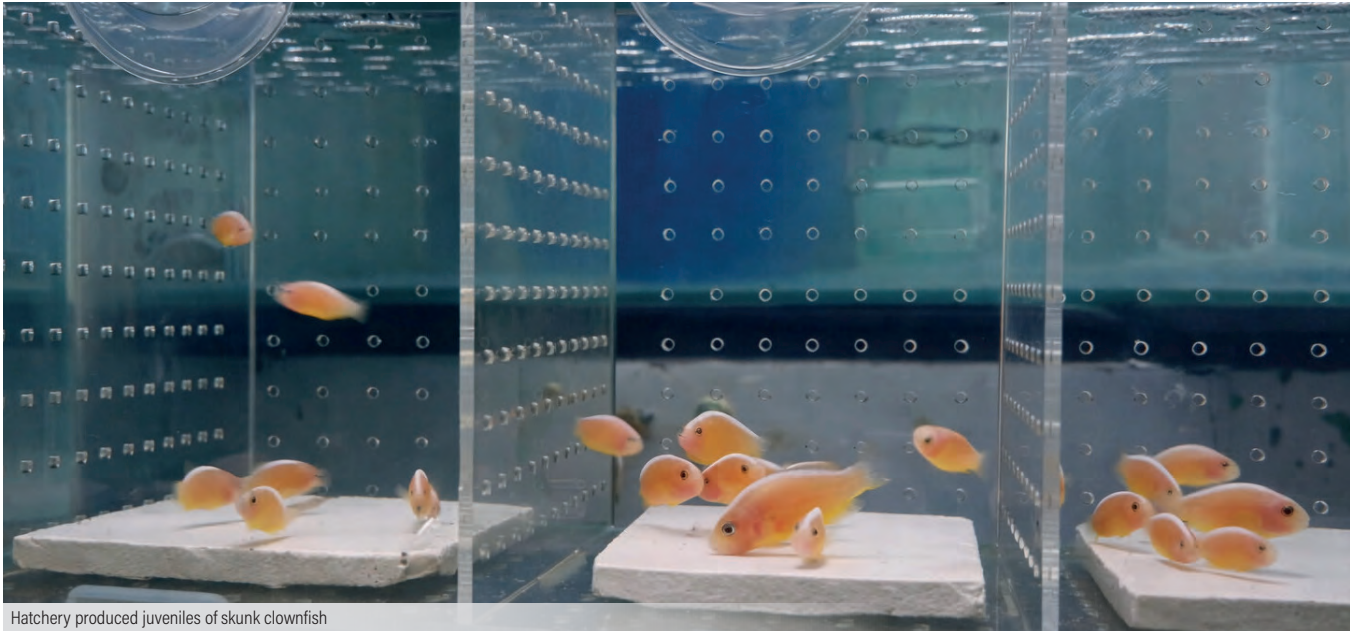


to 250 l breeding tanks under a 14:10 hour light and dark photoperiod, with water quality parameters maintained within optimal limits and monitored daily. Broodstock were fed minced squid, shrimp, mussel meat, raw fish eggs (5% body weight, six feedings/day) and live cladoceran (*Diaphanosoma celebensis*), and spawning commenced after six months of conditioning, yielding 300-400 eggs/pair/month. Eggs hatched within 144 hours at 28 ± 1 °C, with males exhibiting active egg-guarding behaviour, and newly hatched larvae measured 1.5 ± 0.1 mm; metamorphosis was completed between 25-30 days post-hatch, and juveniles exhibited variable banding patterns, attaining an average length of 28.82 mm TL and weight of 0.36 g in 45 days, indicating

strong potential for commercial hatchery production.

Captive breeding of skunk clownfish

Captive breeding protocols were successfully standardised for *Amphiprion akallopisos*, with broodstock maintained at 27 ± 1 °C and 30 ± 1 ppt salinity and fed on fish eggs and artificial diets. Spawning occurred within 1-2 months of conditioning, with females depositing 200-500 eggs every 9-15 days on earthen pots. Eggs (1.8-2.0 mm dia.) hatched after 168 hours under dark conditions with 98% hatching success, and pronounced parental care, particularly by males. Larvae (3-4 mm)



Hatchery produced juveniles of skunk clownfish

were reared using a sequential live-feeding protocol comprising rotifers (*Brachionus rotundiformis* and *B. plicatilis*), copepods (*Oithona brevicornis*, *Apocyclops panamensis*, *Euterpina acutifrons*), cladoceran (*Diaphanosoma celebensis*) and

microalgae (*Nannochloropsis oculata*). The larval phase lasted ≈ 20 days with 95% survival. Juveniles attained 2.7 cm TL and 0.3 g weight by 60 days and reached marketable size within 5-6 months, demonstrating the feasibility of sustainable hatchery-based production.

Optimised live-feeding regimes improved larval survival and growth across multiple species.



A pair of sunrise dottyback guarding the egg clutch

Captive breeding of sunrise dottyback

Captive breeding of the sunrise dottyback, *Pseudochromis flavivertex*, was achieved under controlled conditions (26-28 °C; 29-32 ppt salinity), and spawning initiated within 1-2 months and 500-600 eggs were produced every 9-12 days. Eggs hatched after 96 hours under dark conditions with 95% hatching success, and both parents, particularly males, exhibited active egg-guarding behaviour. Larvae were reared through live feeding using rotifers, copepods, cladocerans and microalgae. Newly hatched larvae by the 8th day post-hatch exhibited a characteristic L-shape with slight yellow pigmentation on the dorsal region and snout. The larval phase extended up to 40 days with 95% survival, and further studies are in progress at Kochi.



A brooder of blue band goby

Captive breeding of blue band goby

Successful captive breeding and larval rearing were achieved for blue band goby, *Valenciennaea strigata*, a monogamous species characterised by a yellow-gold head and a blue longitudinal stripe, with larvae successfully reared up to 40 days

post-hatch, indicating strong potential for hatchery-based production.

Captive breeding of scissortail goby

Breeding protocols were developed for scissortail goby, *Ptereleotris evides*, a reef-associated species



A brooder of scissortail goby

recognised by its distinct forked caudal fin, contributing to the diversification of goby culture in ornamental aquaculture.

Breeding and larval rearing of alleni damsel

Breeding behaviour and embryonic development were documented in alleni damsel, *Pomacentrus alleni*, which produced 500-600 adhesive eggs per clutch with hatching occurring within 72-75 hours.

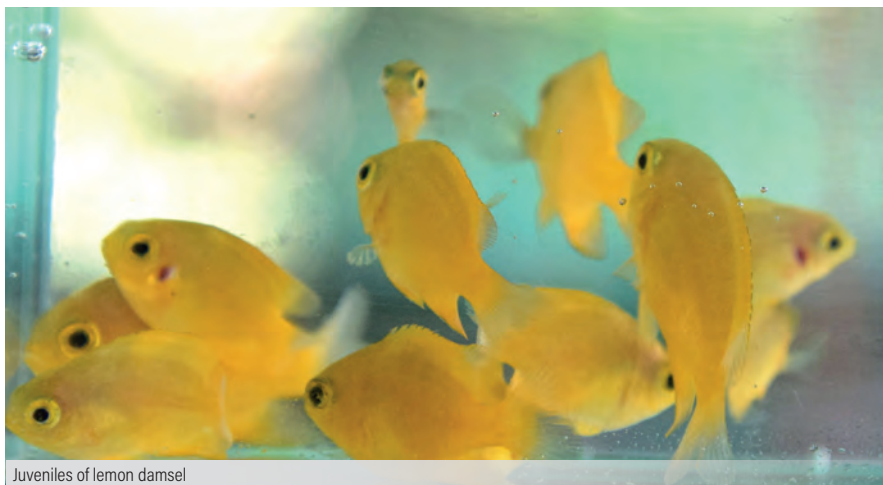
Dedicated facilities and induction trials supported species diversification and future research expansion.

Reproductive performance of lemon damsel

Investigations on the reproductive performance of lemon damsel, *Chrysiptera hemicyanea*, recorded year-round spawning ($44 \pm 9/\text{year}$ at 27.6°C). Tank colour influenced larval survival, with deep yellow tanks yielding higher survival (~12%) compared to white or blue tanks and further work ongoing at Vizhinjam.

Broodstock holding facility and induction trials

A broodstock facility with ten 2t FRP tanks with running, UV-treated seawater was established at Mandapam RC. Sub-adult squirrelfish, lionfish, butterflyfish and sailfin tang were collected for development and conditioning. Feeding and gonadal studies were conducted. Hormonal induction (Buserelin, $2.5 \mu\text{g/kg}$) was attempted in squirrelfish, but spawning was not achieved; refinement trials are continuing.



Juveniles of lemon damsel

Fish Nutrition

Research on fish nutrition achieved significant advancements through nutrigenomic approaches, feed innovation, and metabolic studies. A novel *Rhodotorula* sp. from mangroves was identified as a promising probiotic with high nutritional and antibacterial properties. Molecular characterisation of key genes provided markers for diet optimisation and improved metabolic efficiency. Experimental studies highlighted the role of salinity and dietary additives in regulating metabolism, oxidative stress, and lipid dynamics. Nutritional requirements of key species and the nutritional value of gastropods were also evaluated, supporting improved feed formulation, health management, and sustainable mariculture productivity.



Marine fish and shellfish nutrition research with nutrigenomic approach

Project: MBFNHD/NGA/24

Rhodotorula sp. as a potential mariculture feed probiotic

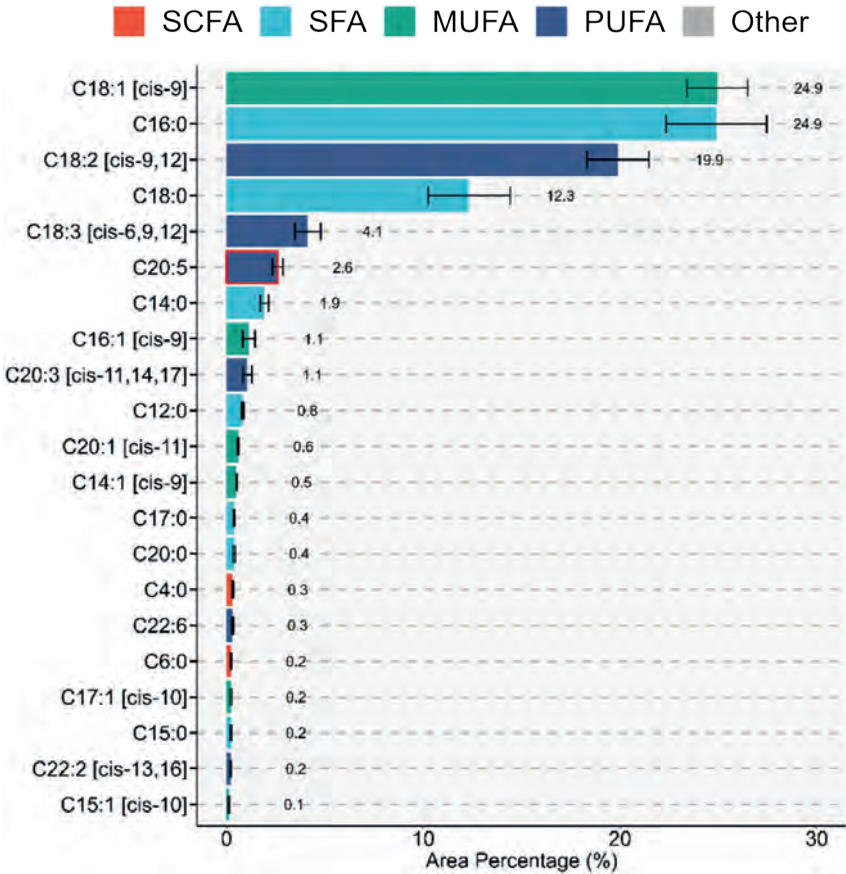
A comprehensive polyphasic evaluation was conducted on a novel pigment-producing *Rhodotorula* sp. isolated from the mangrove ecosystems of Kochi, southern India, to assess its potential as a feed probiotic in mariculture. The isolate exhibited stable growth with a dry biomass yield of approximately 0.73 g/l in YEPD medium and

Nutritional profiling of *Rhodotorula* sp showed 28.21% PUFA, dominated by linoleic acid (19.9%) and α -linolenic acid (4.1%), with a high lysine content of 61.86 g/kg dry weight.

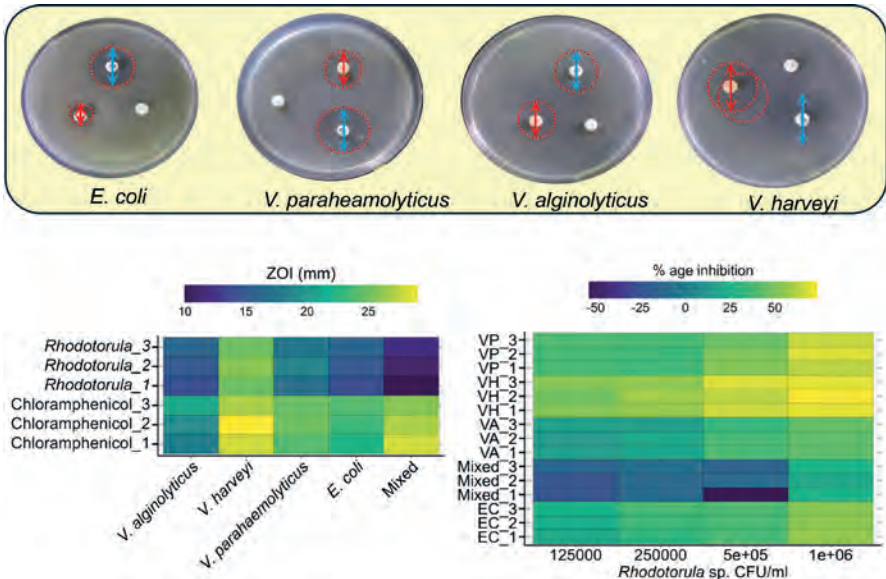
produced significant levels of carotenoid pigments (398.7 μ g/g dry weight; 1681.56 μ g/l culture). Nutritional profiling revealed a high polyunsaturated fatty acid content (28.21%), predominantly linoleic acid (19.9%) and α -linolenic acid (4.1%), along with a notably high lysine concentration (61.86 g/kg dry weight). MUFAs (particularly C18:1 and C16:0) dominated the profile, with notable contributions from PUFAs such as C18:2 and C18:3. Trace levels of SCFAs and other minor fatty acids are also detected. Fatty acid classes are colour-coded as SCFA, SFA, MUFA, PUFA, and other components for clarity. The strain maintained viability under simulated intestinal conditions, though a significant reduction was

observed in simulated gastric fluid after 80 minutes. Antibacterial activity against key pathogens, including *Vibrio* spp. and *Escherichia coli*,

was demonstrated. Overall, broad functional properties of the strain were ascertained in the study for future use as a probiotic in mariculture.



Fatty acid composition of *Rhodotorula* sp. biomass



Antibacterial activity against key pathogens. (a) Representative agar diffusion plates showing zones of inhibition blue arrow: chloramphenicol controls, red arrow: *Rhodotorula* extract, (b) Heatmap visualising ZOI values (mm) and (c) Inhibition efficiency (%) across varying concentrations of *Rhodotorula* sp. (CFU/ml)

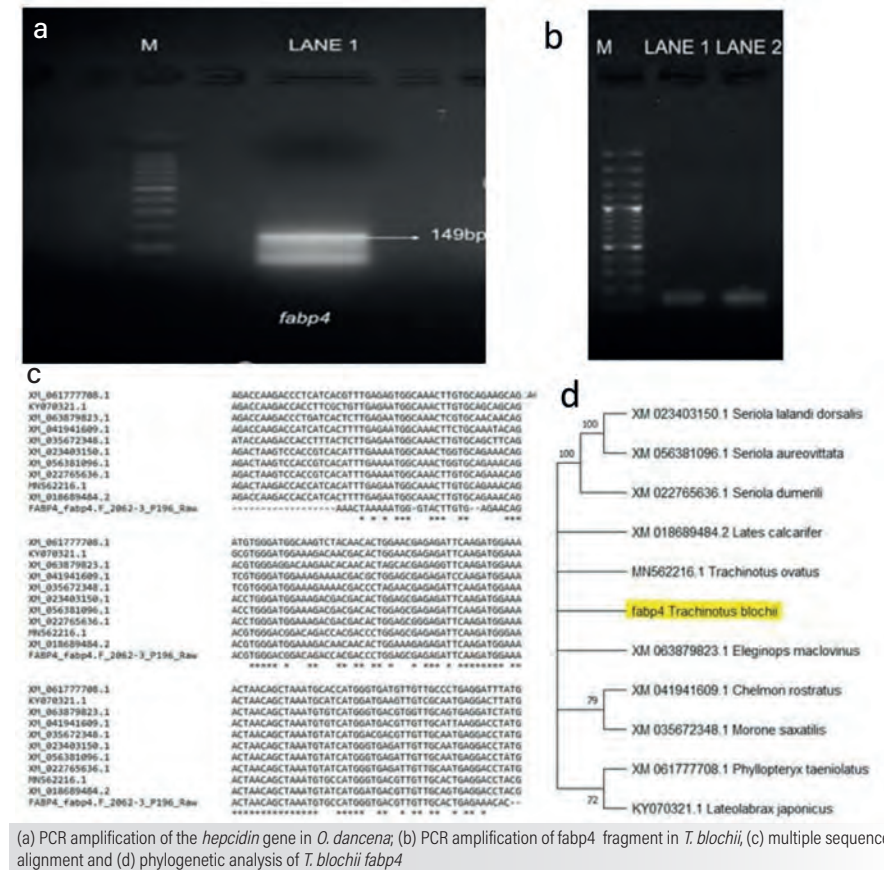
Molecular characterisation of nutritionally important genes

The antimicrobial hepcidin gene was partially characterised in *Oryzias dancena*, an emerging marine model fish, to identify its responsiveness to different dietary interventions. Gene sequencing, in silico analysis, and expression profiling were undertaken to establish hepcidin as a nutritionally regulated immune marker. The outcomes of this study provide a molecular basis for utilising hepcidin as a target gene to evaluate and optimise dietary formulations aimed at enhancing innate immunity and health management in aquaculture species. The *fabp4* (fatty acid-binding protein 4) gene was identified and partially characterised in silver pompano (*Trachinotus blochii*). The generated molecular information provides a foundational framework for utilising *fabp4* as a nutritionally responsive marker gene to assess and optimise dietary lipid formulations aimed at improving growth performance, metabolic health, and feed efficiency in mariculture species.

Partial characterisation and expression profiling of Hepcidin gene in *Oryzias dancena* indicated its usefulness as a nutritionally responsive immune marker for diet optimisation.

Metabolic and lipid adaptations in *Oryzias dancena*

Experiments were conducted to understand the effects of environmental salinity on hepatic metabolism, enzymatic responses, lipid regulation,



and muscle fatty acid composition in the euryhaline marine medaka, *O. dancena*. Fish were reared under hypoosmotic (5 ppt), near-isoosmotic (23 ppt), and hyperosmotic (35 ppt) salinity conditions for 45 days. Distinct salinity-dependent physiological and metabolic responses were observed. Hepatic histological analysis revealed pronounced vacuolization and steatosis under both low and high salinity, indicating increased metabolic stress. In contrast, fish maintained at near-isoosmotic salinity exhibited relatively normal hepatic architecture. Whole-body digestive and antioxidant enzyme activities showed significant modulation with salinity, with elevated protease and superoxide dismutase activities under low salinity, while lipase activity was highest at near-isoosmotic conditions, suggesting improved lipid utilisation.

At the molecular level, expression of the osmoregulatory gene Na^+/K^+ -ATPase (*nka*) was significantly upregulated at both salinity extremes,

reflecting increased energy expenditure for osmoregulation. In contrast, key genes involved in mitochondrial lipid oxidation (*ppar- δ* and *cpt1*) were maximally expressed at near-isoosmotic salinity, indicating enhanced metabolic efficiency. Muscle fatty acid composition remained largely stable across treatments; however, a significant reduction in docosahexaenoic acid (DHA) was recorded under hyperosmotic conditions, suggesting selective sensitivity of this essential fatty acid to salinity stress. Overall, the study demonstrated that near-isoosmotic salinity supports optimal metabolic homeostasis in *O. dancena*, while salinity extremes impose higher osmoregulatory and metabolic costs.

Naringenin-mediated reduction of oxidative stress and hepatic lipid

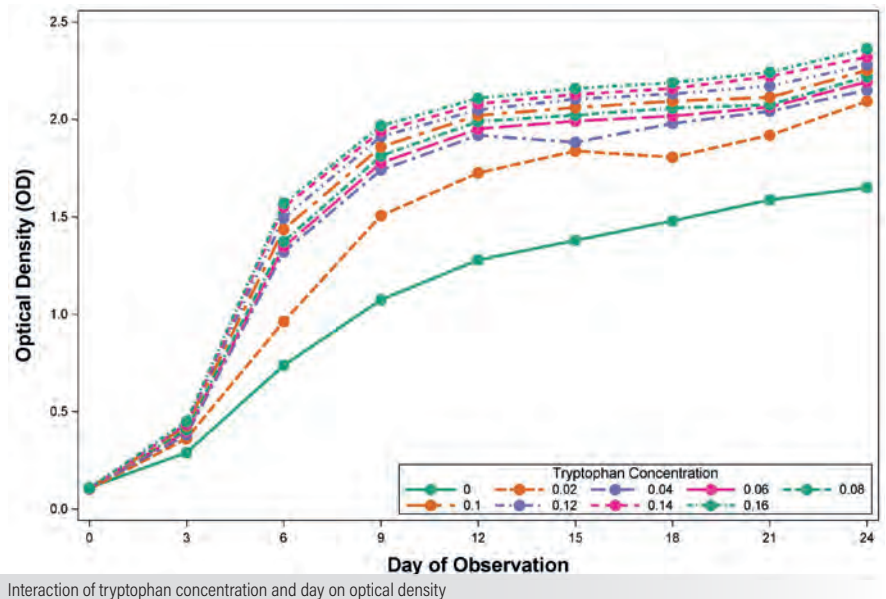
A controlled feeding experiment was conducted to evaluate the protective

effects of dietary naringenin against high-fat diet (HFD)-induced oxidative stress and lipid metabolic disturbances in the marine model fish *O. dancena*. Fish were fed a normal-fat diet (8% lipid), a high-fat diet (15% lipid), or high-fat diets supplemented with naringenin at 0.075% and 0.15% levels for 45 days. Feeding a high-fat diet resulted in marked metabolic and oxidative alterations, including increased lipase activity, reduced amylase activity, suppression of muscle antioxidant enzyme activity, elevated lipid peroxidation, and pronounced hepatic lipid accumulation. Molecular analyses showed upregulation of hepatic antioxidant genes (*sod*, *gpx*) and the lipid oxidation regulator *ppar-δ*, along with suppression of *fads2*, indicating lipid metabolic stress and oxidative challenge. Histological examination revealed severe hepatic steatosis in HFD-fed fish.

Dietary supplementation of naringenin, particularly at 0.15%, significantly alleviated these adverse effects. Naringenin restored muscle antioxidant enzyme activity, enhanced total antioxidant capacity, reduced lipid peroxidation, and partially normalised transaminase activity. At the molecular level, naringenin attenuated HFD-induced upregulation of *ppar-δ*, partially restored *fads2* expression, and reduced oxidative stress-related gene responses. Histological observations confirmed a marked reduction in hepatic lipid vacuolation in naringenin-supplemented groups, indicating improved hepatic lipid homeostasis. In vitro assays further demonstrated the intrinsic antioxidant potential of naringenin through effective free radical scavenging.

Enhancement of biomass in *Nannochloropsis oceanica*

The study investigated the effects



of tryptophan supplementation on biomass productivity of *Nannochloropsis oceanica*. Cultures were prepared in 100 mL flasks containing 50 mL sea water (25ppt) and 10% of F/2 medium inoculated with *N. oceanica* at 10% (v/v), and supplemented with tryptophan at 0 (control), 0.02, 0.04, 0.06, 0.08, 0.10, 0.12, 0.14, or 0.16% (w/v). Flasks were incubated at 24°C under a 16:8 h light: dark cycle for 24 days, and the optical density (OD) at 679 nm was recorded at 3 days' interval. Tryptophan supplementation markedly enhanced microalgal

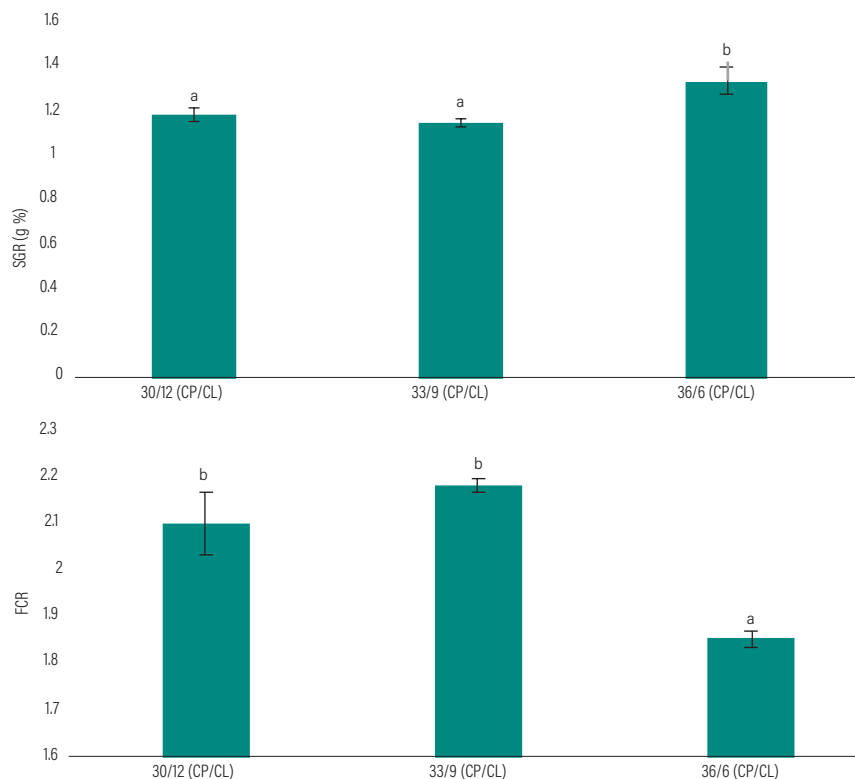
0.12% tryptophan consistently outperformed the others. Notably, a sharp rise in OD was observed on the 6th day, followed by a steady increase up to days 16–18.

Dietary protein-energy requirement of *Siganus vermiculatus*

The dietary protein to energy (DP: DE) requirement of vermiculated rabbit fish, *Siganus vermiculatus*, was evaluated through a 90-day feeding trial. Three experimental diets with varying DP: DE ratios were formulated and fed to the respective groups, namely 30/12, 33/9, and 36/6 (CP: CL). Final body weight, specific growth rate, protein efficiency ratio and weight gain were significantly higher in fish fed the 36/6 diet compared to those fed the 30/12 and 33/9 diets ($p < 0.05$), whereas the lowest growth performance was recorded in the 33/9 group. Feed conversion ratio was significantly lower in the 36/6 treatment, reflecting improved feed utilisation efficiency ($p < 0.01$). Overall, the study confirmed the superior growth and feed utilisation performance of vermiculated rabbit fish fed the 36/6 CP: CL content.

Dietary protein-energy requirement of vermiculated rabbit fish and the nutritional composition of edible gastropods were evaluated.

growth and biomass production in a dose-dependent manner. Growth curve analysis revealed an exponential increase in OD in all tryptophan-treated cultures, particularly between days 12 and 18, whereas the control exhibited only linear growth. Among the treatments,



The SGR (a) and FCR (b) obtained for *S. vermiculatus*. The data are expressed as the arithmetic mean of three replicates. The bars with different superscripts showed a significant difference.

Nutritional value of edible gastropods

The nutritional value in terms of protein, lipid and some major mineral contents of 5 edible gastropods, such as *Volegalea*

cochlidium, *Turbinella pyrum*, *Babylonia zeylanica*, *Chicoreus ramosus* and *Chicoreus virgineus* were carried out. Among these gastropods, *C. virgineus* was rich in protein (62.5%) and lipid content (2.85%) on dry matter

percentage; the protein (55.1%) and lipid contents (1.65) were low in *V. cochlidium*. The calcium (0.7%) and phosphorus (0.5%) content were found to be higher in *B. zeylanica*. These values were lower in *T. pyrum*. Among the gastropods, *V. cochlidium* and *C. virgineus* were rich in copper (60 ppm).

Evaluation of black soldier fly larvae meal for juvenile clownfish (*Amphiprion ocellaris*)

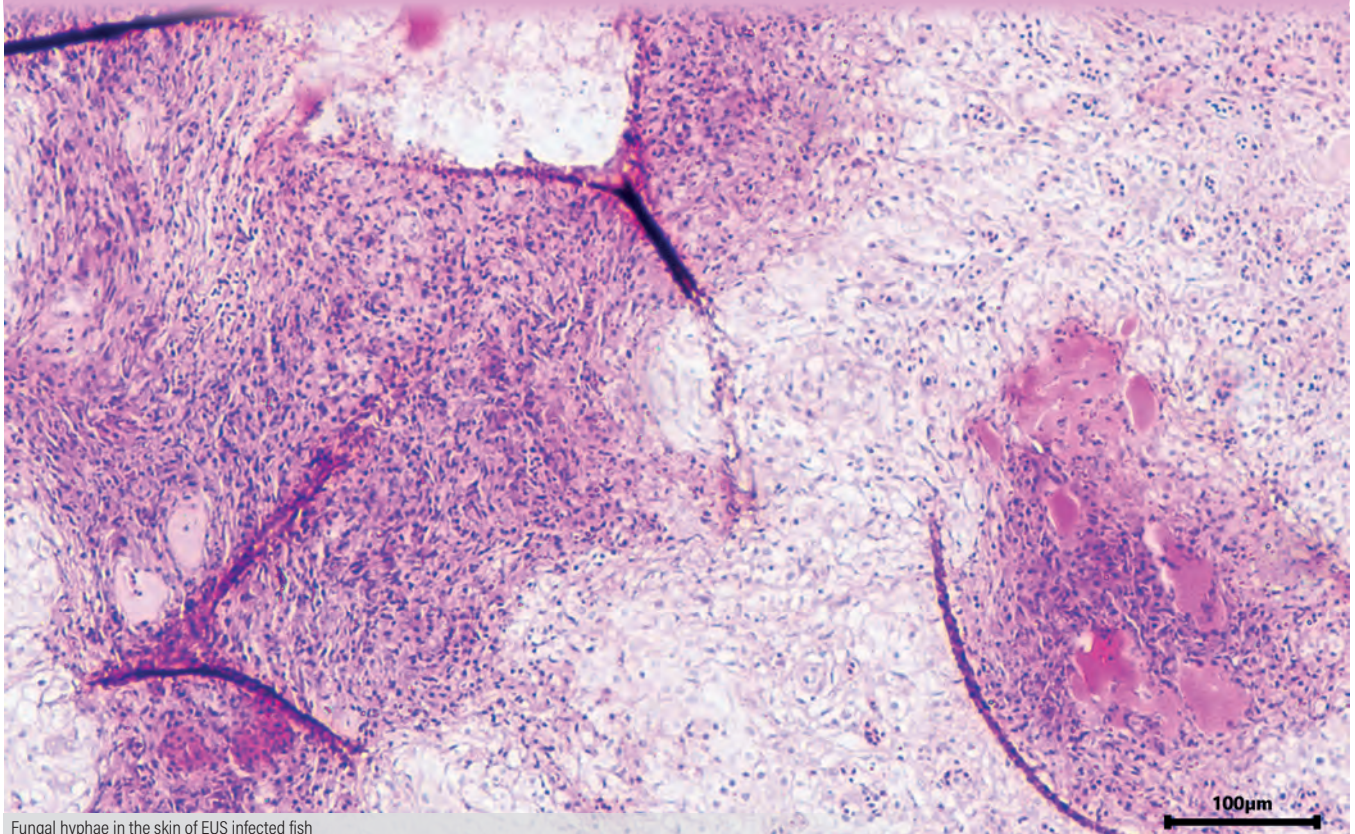
A 60-day feeding trial was carried out on juvenile *Amphiprion ocellaris* under controlled recirculating aquarium conditions to evaluate the suitability of diets containing black soldier fly larvae (BSFL) meal and natural pigments. Four experimental diets were tested, and their effects on growth performance, digestive enzyme activity, carcass composition, and overall fish health were assessed. The findings showed that BSFL-based diets supported better performance than the control diet. Among the treatments, the diet containing BSFL with 20 g pigment supplementation (T2) produced the best results. Fish in this group attained the highest final weight (2.10 ± 0.04 g) compared with the control (1.65 ± 0.05 g), along with the greatest weight gain (1.84 g), specific growth rate, feed conversion efficiency, and survival (95.8%). Digestive enzyme activities were also highest in T2, with amylase, protease, and lipase values of 22.4 ± 1.11 , 30.2 ± 1.04 , and 15.8 ± 1.12 U/mg protein, respectively, indicating improved digestion and nutrient utilisation. Carcass composition further revealed higher crude protein (57.8%) and lipid (14.1%) contents in pigment-supplemented groups, confirming enhanced nutrient assimilation and improved overall performance of the fish.



Edible gastropods. A) *Chicoreus virgineus* B) *Babylonia zeylanica* C) *Volegalea cochlidium*

Fish Health Management and Bioprospecting

The programme achieved notable progress in fish health management and bioprospecting, focusing on disease surveillance, pathogen profiling, and the development of advanced probiotic delivery systems for sustainable aquaculture. Major disease outbreaks in cage-farmed species were investigated, highlighting the role of environmental stress, viral infections, and parasitic infestations, along with effective treatment and biosecurity measures. Innovations in probiotic microencapsulation improved stability and survival, while microbial bioprospecting identified high-value bioactive compounds with pharmaceutical potential. These efforts support integrated health management strategies, reduce mortality risks, and enhance productivity in mariculture systems.



Fungal hyphae in the skin of EUS infected fish

Fish health management

Project: MBFNHD/HM/23

Pathogen profiling

Epizootic Ulcerative Syndrome (EUS), caused by *Aphanomyces invadans*, affects cage-reared snappers near Paravur, Ernakulam, resulting in

EUS in cage-reared snappers caused deep ulcers, lethargy, reduced feeding and up to 60% mortality, often linked to sudden salinity and temperature stress. Histopathology showed *Aphanomyces*-related infection.



Encrusting epiphytic biofouling on seaweed thalli

deep skin ulcers, lethargy, reduced feeding, abnormal swimming, and high mortality (60%). Outbreaks follow environmental stressors like sudden salinity and temperature increases. Affected fish show haemorrhagic, necrotic ulcers with scale loss and exposed musculature. Histopathology

reveals skin and muscle necrosis with inflammatory cell infiltration and branching fungal hyphae in the dermis.

A comprehensive disease investigation was conducted to elucidate disease outbreak in Asian seabass (*Lates calcarifer*) caused by concurrent

infection with Red Sea bream iridovirus (RSIV) and Infectious spleen and kidney necrosis virus (ISKNV) genogroups belonging to *Megalocytyivirus pagrus*. Affected fish exhibited gross pathological signs typical of *Megalocytyivirus* infection. Molecular diagnostics confirmed the presence of both RSIV and ISKNV genomes in multiple tissues. In contrast, *Etroplus suratensis* co-cultured in the same cages showed no mortality despite viral detection. In addition, asymptomatic wild fishes (*Scatophagus argus*, *Caranx ignobilis*, *Lutjanus argentimaculatus* and *E. suratensis*) from the same site harboured both viral genomes. Phylogenetic analysis of DNA polymerase and major capsid protein genes clustered the RSIV and ISKNV strains within sub-groups 2 and 1, respectively, indicating their circulation among both farmed and wild fish populations.

Parasitological investigations revealed multiple infestations in wild-caught and cultured marine species. *Microcotyle* spp. were recorded in

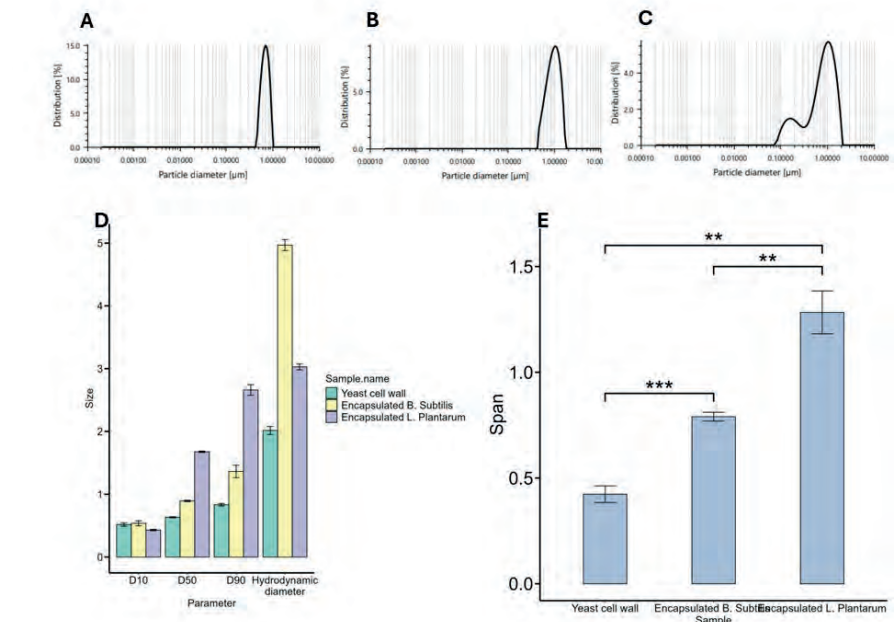


Lesions of the ISKNV and RSIV affected fish showing exophthalmos, corneal opacity and splenomegaly

juvenile seer fish (*Scomberomorus commerson*) from Baithkol and Majali fish landing centres, with infestation prevalence of 66% and 94%, respectively, while *Cymothoa* spp. were also detected in the same

Major parasite and biofouling threats to fish included Microcotyle, *Amyloodinium*, *Argulus* and *Caligus*, which could be successfully controlled using various treatment protocols

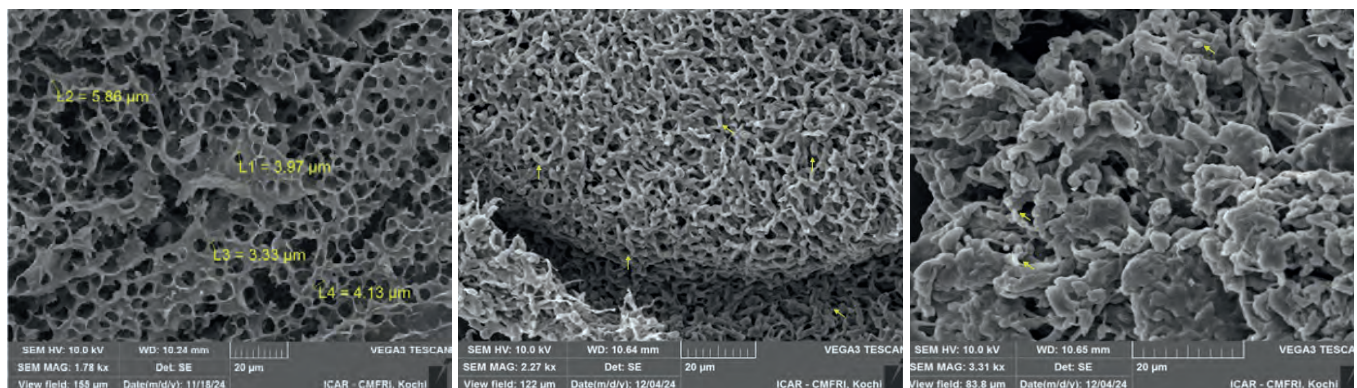
host (20–23%) during November 2025. Cage-farmed Asian seabass (*Lates calcarifer*) from Harbag, Hini and Naganathwada exhibited infestation by *Argulus quadristriatus* and helminth developmental stages. Infestation with *Amyloodinium ocellatum* was diagnosed in nursery-reared white-spotted rabbitfish (*Siganus canaliculatus*) at Karwar and in Indian pompano (*Trachinotus mookalee*) at Visakhapatnam, with over 90% prevalence; the highest parasite density was observed on the skin, followed by gills and fins. Affected rabbitfish stocks at Karwar were successfully treated with chloroquine phosphate (8–10 ppm). *Caligus* spp. were identified in wild-caught *S. canaliculatus* from Karwar

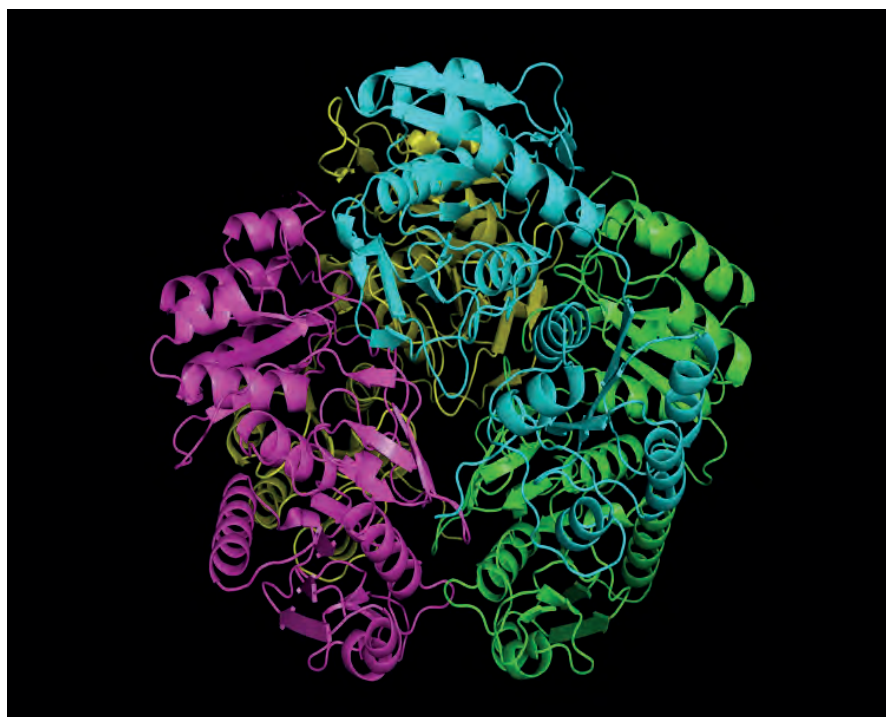


Bay, and quarantine management involving freshwater dips followed by formaldehyde bath treatment (0.02%) was implemented. In addition, encrusting epiphytic biofouling on seaweed thalli was observed to cause localised tissue necrosis, reduced photosynthetic efficiency and biomass loss in *Gracilaria* and *Kappaphycus* spp., highlighting the need for improved water flow management, nutrient regulation and routine cleaning in tank-based cultivation systems.

Development of vaccines/ probiotics/ drug delivery systems

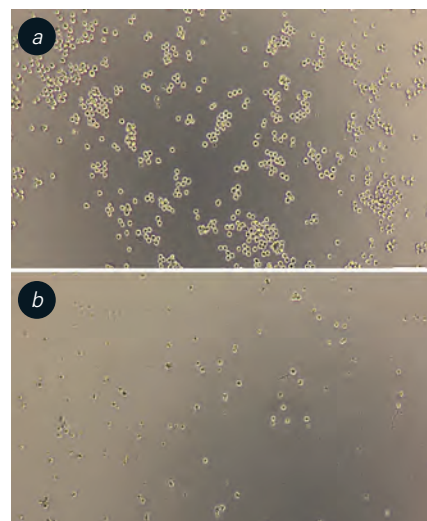
The effectiveness of baker's yeast (*Saccharomyces cerevisiae*) cell wall-based microencapsulation-as a safe, natural, and sustainable strategy- for probiotic delivery was demonstrated. Probiotic cells ($\approx 10^8$ – 10^9 CFU/ml) were encapsulated within the hollow yeast cell wall particles produced by sequential acid-alkali treatment. Scanning



Three-dimensional structure of type II L-asparaginase tetramer from *Camyololiticum*

electron microscopy revealed porous, honeycomb-like particles (3–6 μm) suitable for encapsulation. Encapsulation increased particle size

and shifted zeta potential towards more negative values, indicating enhanced colloidal stability. High encapsulation efficiencies were

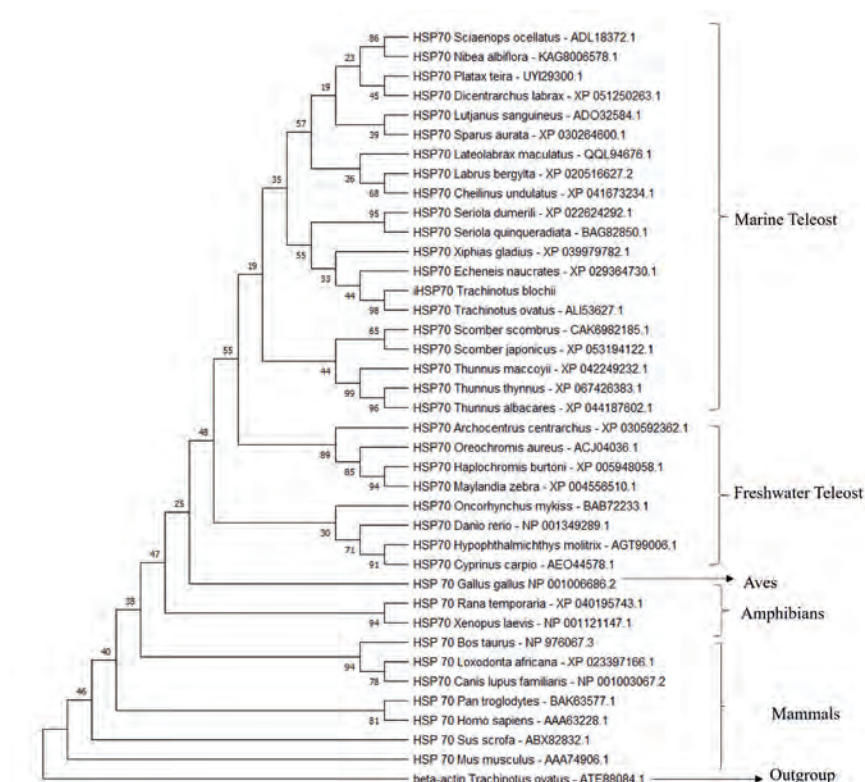


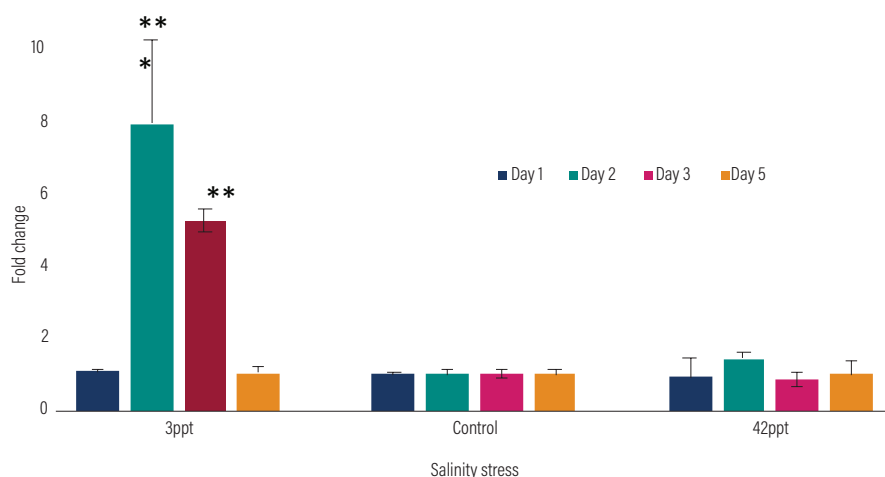
Anticancer activity of *C. amycolyticum* type II L-asparaginase in MOLT-4 cell line after 24 h treatment: A. Morphology of MOLT-4 cells (negative control); B. Morphology of MOLT-4 cells after 24 h of purified enzyme treatment

achieved for *Bacillus subtilis* (89.6%) and *Lactobacillus plantarum* (86.6%). Encapsulated probiotics showed significantly improved survival in simulated gastric and intestinal fluids compared with free cells. Overall, yeast cell wall encapsulation enhanced probiotic stability and gastrointestinal tolerance through strain-specific physicochemical interactions.

Microbial bioprospecting

A novel type-II L-asparaginase from *Chryseomicrobium amycolyticum*, isolated from marine crab haemolymph, was characterised as a potential anticancer enzyme. Owing to limitations of existing L-asparaginase formulations, safer alternatives are sought. Statistical optimisation enhanced enzyme yield from 115.69 to 281.6 IU mL⁻¹. The purified enzyme (~142 kDa) showed high specific activity (173.69 IU mg⁻¹ protein) and strong catalytic efficiency (K_m 6.364 μM , V_{max} 909.09 $\mu\text{M min}^{-1}$, K_{cat} 222.82 s⁻¹). Importantly, it exhibited strict substrate specificity, with no activity toward L-glutamine, D-glutamine, L-glutamic acid, or urea, a desirable clinical feature. Effects of metal ions, surfactants, and protein-modifying agents were evaluated. The full-length gene was

Comparative phylogenetic analysis of the hsp70 gene of *T. blochii*



Expression profiles of tb-ihsp70 at 3% and 42% salinity relative to the control fish (20% salinity)

sequenced, and *in silico* analyses predicted favourable physicochemical properties, low similarity to commercial enzymes, and non-allergenic, non-toxic characteristics. Molecular docking confirmed a

Yeast cell wall microencapsulation using *Saccharomyces cerevisiae* improved probiotic stability and survival, with high encapsulation efficiency for *Bacillus subtilis* and *Lactobacillus plantarum*

higher affinity for L-asparagine than for off-target substrates. The enzyme demonstrated potent anticancer activity (IC_{50} : 0.041–0.05 IU mL⁻¹), inducing apoptosis in cancer cells while sparing normal cells.

AINP on fish health

Project: ICAR Network

The pharmacokinetics and withdrawal period of oxolinic acid (OA), a widely used antimicrobial against Gram-negative bacterial infections, were evaluated in *Trachinotus blochii*. OA concentrations in biological matrices

were quantified using LC-MS/MS. For pharmacokinetic analysis, fish received a single oral dose of 12 mg kg⁻¹ body weight, and samples were collected from 0.5 to 60 h post-dosing. OA was rapidly absorbed, reaching maximum concentrations (Tmax) within 6 h in all tissues. Tissue distribution followed the order: plasma < muscle + skin ≈ liver < intestine ≈ gills ≈ kidney. The longest elimination half-life was observed in the kidney, while plasma, muscle + skin, and gills exhibited faster clearance, indicating renal, intestinal, and branchial routes of elimination. In the withdrawal study, fish were fed OA for 7 days at the therapeutic dose. Residues in edible tissues exceeded the maximum residue limit at 6 h post-treatment but declined to undetectable levels within 24 h. Applying a 30% safety margin, a withdrawal period of 31.2 h (37.7 °C-degree days) is recommended.

AINP on anti-microbial resistance

Project: ICAR Network

A total of 39 cage-cultured fishes, including *Lates calcarifer* (28), *Siganus vermiculatus* (5), and *Trachinotus blochii* (4), along with nine water samples, were collected from cage farms in Uttara Kannada district and screened for *E. coli*, *Vibrio* spp. and *Staphylococcus* spp. Fifteen *E. coli* isolates tested against 17 antibiotics

showed the highest resistance to amikacin (53%), followed by enrofloxacin and cefoxitin (20%). Forty-five *Vibrio* isolates tested against 11 antibiotics exhibited the highest resistance to ampicillin (31.1%), followed by cefoxitin (28.9%) and cefotaxime (15.6%).

Marine fish microbiome

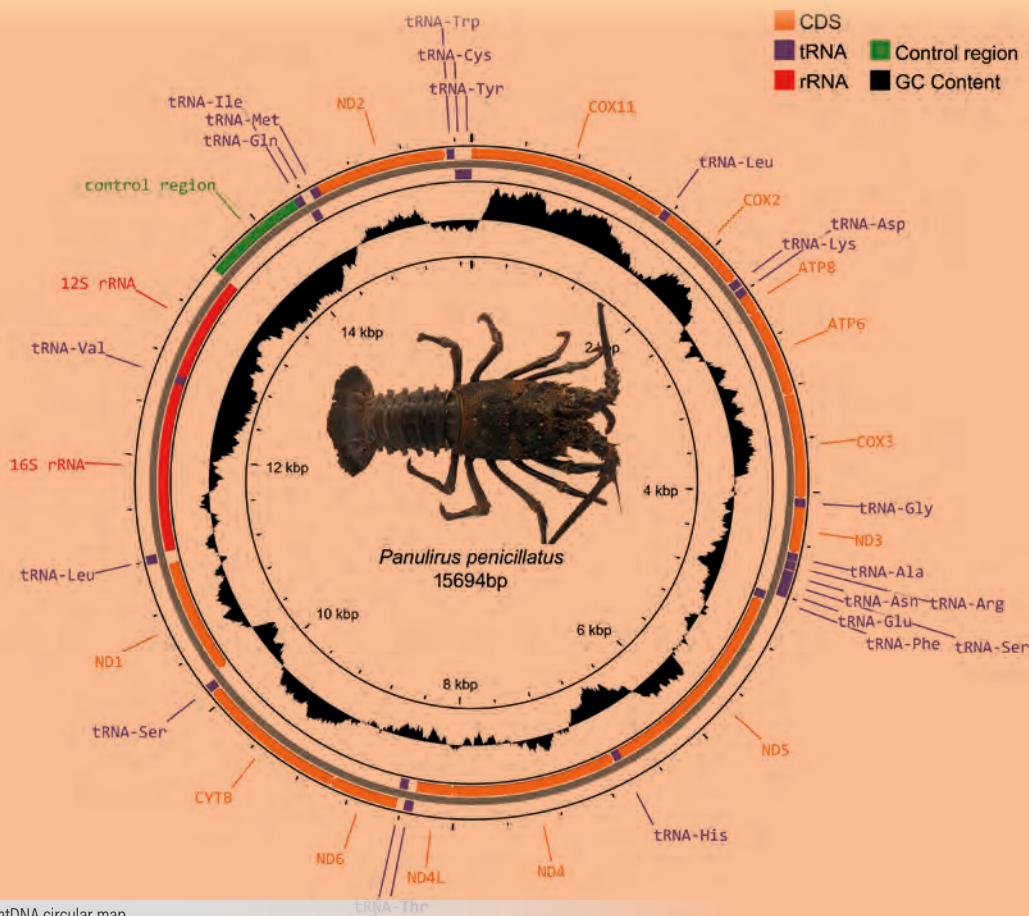
Project: DBT

The role of the hsp70 gene in stress response of snubnose pompano (*Trachinotus blochii*) was studied through molecular analyses. The stress-responsive tb-ihsp70 gene encodes a 639-amino-acid protein. Phylogenetic analysis placed tb-ihsp70 within the Carangidae family, closely related to *Trachinotus ovatus*, highlighting environmental effects on HSP70 evolution. Structural modelling showed a Y-shaped conformation, and protein-protein interaction analysis indicated its role in stress-response networks. Genomic analysis revealed an intronless structure. Expression profiling classified tb-ihsp70 as constitutively expressed but moderately inducible, with the highest basal expression in gill tissue. Salinity stress upregulated expression, especially under low salinity, while *Vibrio harveyi* challenge induced peak expression in the spleen at 12 h post-infection.

The effects of egg disinfection on larval microbiota and survival in *Trachinotus blochii* were studied. Optimal protocols included iodophor (20 ppm), hydrogen peroxide (400 ppm), and glutaraldehyde (40 ppm), all improving hatchability, with glutaraldehyde yielding better results. Larval survival was higher in disinfected groups (34.80±1.1% with glutaraldehyde, 31.18±1.5% with H₂O₂). Disinfection enhanced antioxidant capacity and reshaped microbial communities, increasing diversity and beneficial taxa. Survival correlated with microbial diversity, suggesting egg disinfection as a microbiota-programming strategy for better larval performance.

Genetics and Genomics

Generated advanced molecular resources to support mariculture, fisheries, and conservation. Transcriptome analyses of key species provided insights into stress adaptation, immune responses, and environmental impacts, including pollution effects. Genomic characterisation of important genes and species enhanced understanding of physiological and evolutionary processes. Studies on invasive species and sentinel organisms strengthened monitoring capabilities, while emerging applications such as cellular aquaculture highlighted innovative directions, providing a strong foundation for molecular-based management, conservation, and sustainable fisheries development.



Panulirus penicillatus mtDNA circular map

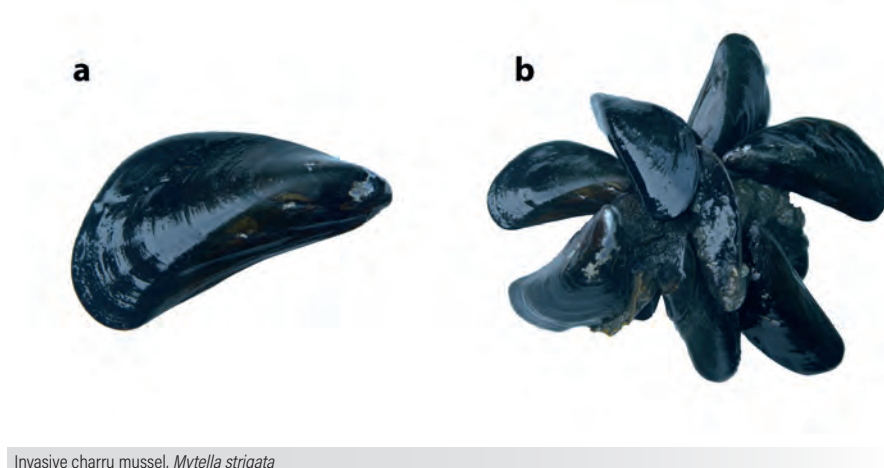
Genetic and genomic tools for advancing marine fisheries, mariculture and conservation

Project: MBFNHD/GNM/25

De novo transcriptome assembly of invasive mussel

The South American invasive mussel *Mytella strigata* is emerging as a major ecological and economic threat in tropical and subtropical estuarine systems, including along the Indian coastline. This study presents the first *de novo* transcriptome assembly of *M. strigata* to elucidate the molecular mechanisms underlying its invasiveness. A total of over 254 million high-quality paired-end reads were generated using Illumina NovaSeq 6000 sequencing. The reads were assembled using Trinity, resulting in 60,362 transcripts with an N50 of 1,578 bp. BUSCO quality assessment indicated 98% completeness, demonstrating the robustness of the assembly. Functional annotation using the UniProt, KEGG, Reactome, InterPro, and eggNOG databases revealed a broad repertoire of genes associated with environmental adaptability, particularly those involved in stress responses, metabolic reprogramming, cellular signalling, immune regulation, and tissue remodelling.

De novo transcriptome of invasive mussel, *Mytella strigata*, produced 60,362 transcripts (N50 1,578 bp) from >254 million reads with 98% BUSCO completeness, indicating strong stress and immune adaptability.



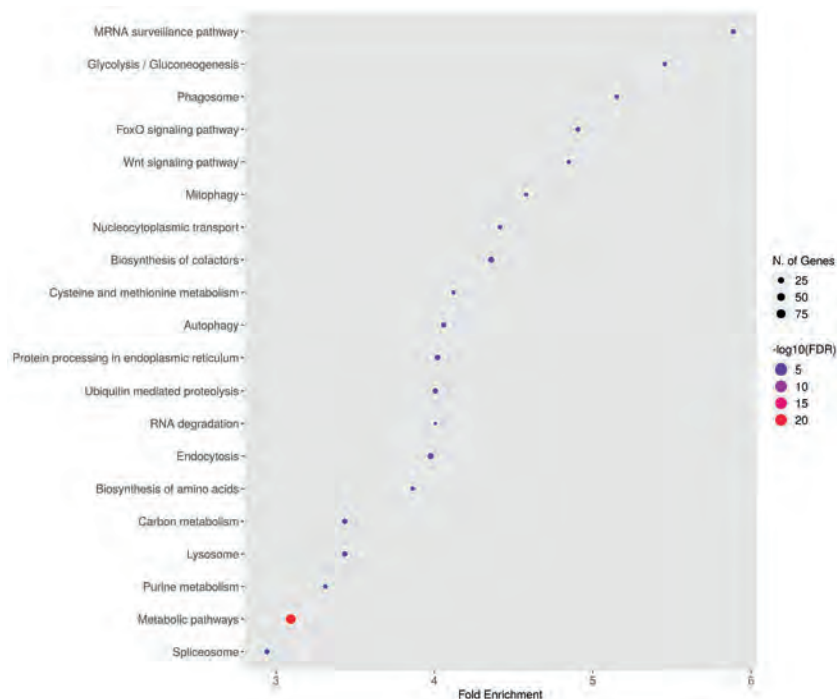
Invasive charru mussel, *Mytella strigata*

Pathway enrichment analysis showed an over representation of genes associated with cancer-related and apoptosis-regulatory pathways, suggesting that *M. strigata* may possess intrinsic genetic traits that enhance survival under fluctuating environmental conditions and confer resistance to physiological stress. Network analyses further identified molecular signatures linked to neoplasia, indicating the possible presence of transmissible cancers. These insights provide a valuable foundation for developing targeted

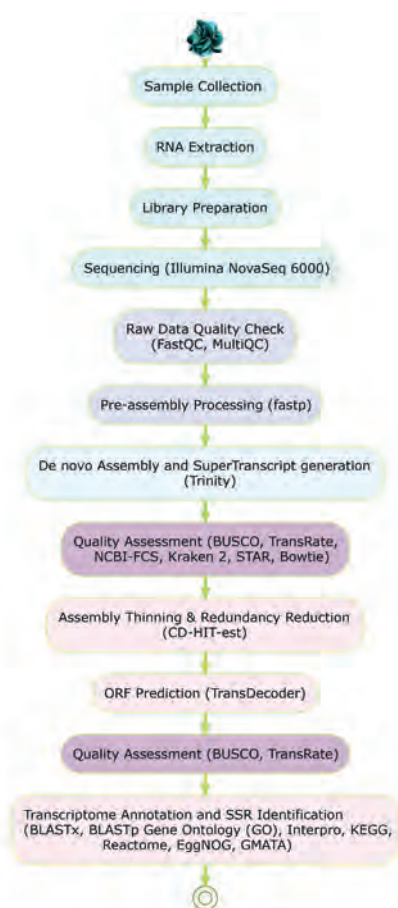
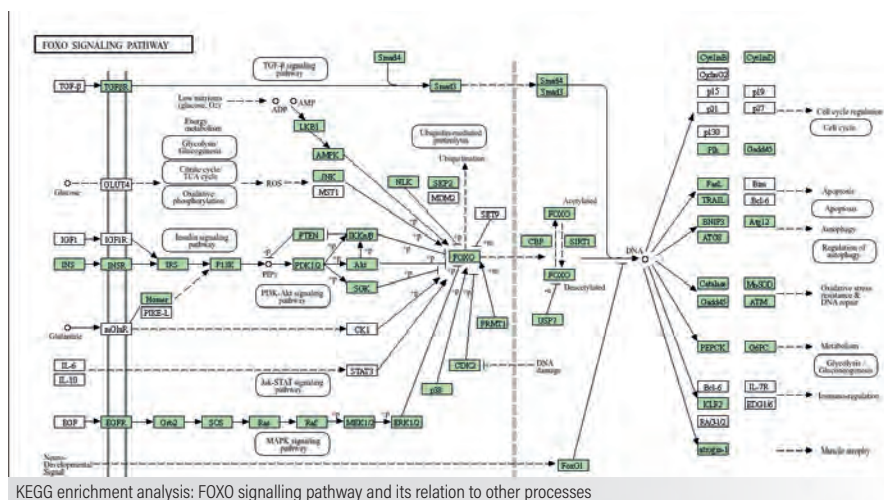
strategies to manage invasive populations and to protect native biodiversity and fisheries in vulnerable marine ecosystems.

Transcriptomic impacts of ZnO nanoparticles in a sentinel aquatic invertebrate

The widespread use of zinc oxide nanoparticles (ZnO NPs) in a variety of products raises serious ecological concerns owing to their toxicity. The



Dot plot representing KEGG pathway terms for acute and chronic treatments



Workflow of the bioinformatic pipeline for the *de novo* transcriptome assembly of gill tissues from *Perna viridis*

ZnO nanoparticle exposure in *Perna viridis* (5–15 mg/l; 28 days) caused major transcriptomic disruption in calcium regulation, immunity and stress pathways, including TGF- β , Wnt and FOXO signalling.

De novo transcriptome assembly of green mussel

Mussels, particularly the Asian green mussel *Perna viridis*, are recognised as important sentinel species in toxicology and biomonitoring. A gill-specific transcriptome database for *P. viridis* was generated using Illumina short-read sequencing. In total, 292 million Illumina reads were produced from eight pooled gill tissue samples derived from 24 individuals to construct a gill-specific reference transcriptome. The reads were assembled using Trinity, resulting in 4,38,842 transcripts with an N50 of 1,958 bp. Predicted protein-coding regions were annotated through homology searches using BLASTx and BLASTp against multiple databases, including NCBI nr and UniProtKB, with an e-value threshold of $1e^{-5}$. This dataset provides a valuable resource for advancing research in transcriptomics,

Asian green mussel (*Perna viridis*) was used as a model organism to investigate the molecular and ecological risks associated with ZnO NP exposure using a transcriptomic approach. Gill tissues from mussels exposed to ZnO NPs (5, 10, and 15 mg/l) for 28 days exhibited significant alterations in gene expression affecting calcium homeostasis, immune responses, and cellular stress processes. Disruption of key signalling pathways, including TGF- β , Wnt, and FOXO, revealed complex toxicity mechanisms. These findings underscore the need for stringent regulatory measures by providing critical insights into the environmental impacts of nanoparticle pollution. Moreover, the overlap of affected molecular pathways suggests potential health risks linked to nanoparticle exposure and indicates that similar mechanisms may also operate in humans.

molecular biology, environmental toxicology, and cancer biology.

De novo transcriptomic discovery of caspase kinase gene in grey bamboo shark

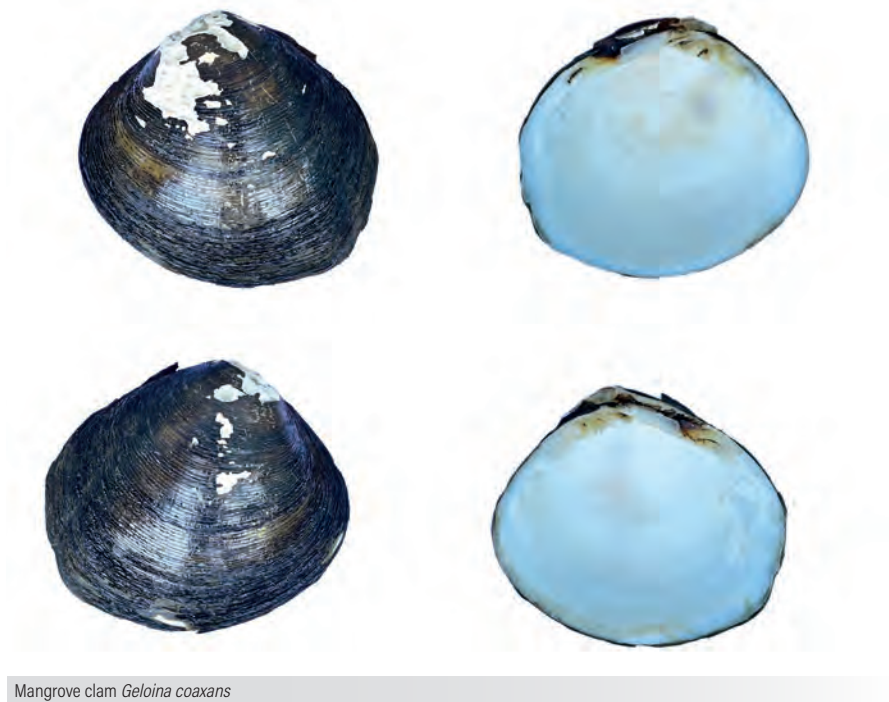
Caspase kinases are crucial elements of the immune and apoptotic



Grey bamboo shark (*Chiloscyllium griseum*) collected from Neendakara fishery harbour, Kerala

signalling pathways in vertebrates. Nevertheless, the molecular characterisation of this gene is still lacking in elasmobranchs. The transcriptome of the liver and heart of the grey bamboo shark *Chiloscyllium griseum* was characterised using high-throughput Illumina short-read sequencing. A potential caspase kinase transcript with embedded

Grey bamboo shark, *Chiloscyllium griseum*, caspase kinase gene characterised with conserved domains, 299 aa ORF, and higher heart expression than liver ($P < 0.001$).



Mangrove clam *Geloina coaxans*

serine/threonine kinase and caspase recruitment domains was identified by functional annotation. The ORF prediction using TransDecoder indicated the presence of a 299 bp length amino acid that showed high homology with the caspase kinase from the vertebrate counterparts, suggesting evolutionary conservation. A significant level of gene expression was observed in the heart tissue as compared to the liver tissue ($P < 0.001$), indicating its role in cardiovascular apoptotic regulation. This transcriptomic dataset provided molecular insights into apoptotic gene regulation in elasmobranchs, opening up new avenues in studies related to immune-apoptotic pathways in basal vertebrates.

De Novo transcriptome sequencing and assembly of the mangrove clam

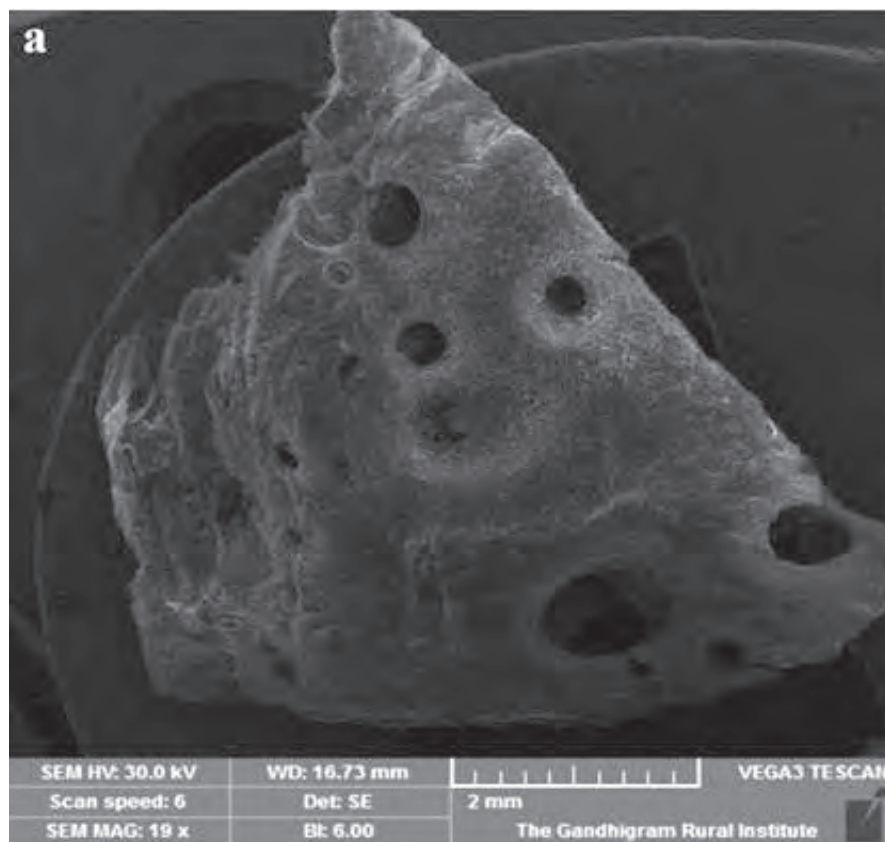
Mangrove ecosystems are considered complex habitats owing to hypoxic conditions and salinity fluctuations. Bivalves such as *Geloina*

coaxans play major roles in sediment stabilisation, nutrient recycling, and the support of local fisheries. Despite their ecological importance, genomic resources remain scarce, limiting research into mechanisms of stress tolerance and adaptation. The first *de novo* transcriptome of the mangrove clam *Geloina coaxans* was assembled using Illumina short-read sequencing. A total of 324 million Illumina paired-end reads were generated, producing 534,707 transcripts, which were refined to 166,515 coding-rich sequences. ORF analysis indicated that 44.16% of sequences contained complete ORFs. Annotation against multiple databases retrieved 34,067 BLAST hits, 116,639 GO terms, and mapped 10,314 Reactome and 439 KEGG pathways. Functional categories were dominated by immune defence, oxidative stress, biomineralisation, and cancer-associated pathways, including "Pathways in cancer" and "Calcium signalling". The dataset generated in this study serves as a reference resource for mangrove clam genomics and translational biomedical research.

Mitochondrial genome of the pronghorn spiny lobster

The first complete mitogenome characterisation of *Panulirus penicillatus* (family Palinuridae) was carried out in this study. This species is of global commercial importance and has a circumtropical distribution; however, unregulated harvesting across regions has led to population declines. Notably, *P. penicillatus* is unique among spiny lobsters as the only species to have crossed the East Pacific barrier, occurring in both tropical and subtropical regions of the eastern and western Pacific Ocean. This biogeographic feature has resulted in strong genetic isolation among populations within the species.

P. penicillatus is an important fishery resource in the Lakshadweep and Andaman and Nicobar Islands, with occasional catches or small, localised fisheries along the mainland coast. The first complete mitogenome of the pronghorn spiny lobster from the Indian Ocean was generated using



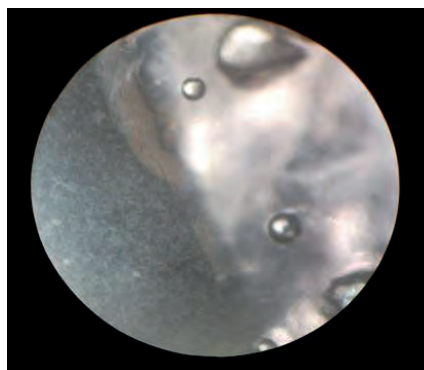
Surface view of cross-linked Carrageenan-Chitosan scaffold

low-pass whole-genome sequencing. The mitochondrial genome was 15694 bp in length and comprised the standard complement of coding and non-coding genes, including a 785 bp intergenic region identified as the D-loop. Gene arrangement revealed 22 genes on the heavy strand, with the remaining genes located on the light strand. This study makes a significant contribution to ongoing research on the pronghorn spiny lobster, a species that exhibits adaptive characteristics distinct from other spiny lobsters, and provides essential genetic resources for accurate species identification and future research on this globally exploited species.

Cellular aquaculture and refinement of *in-vitro* pearl formation

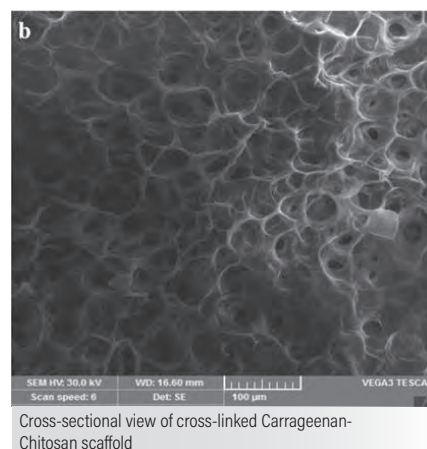
Project: MBT/CA/26

The development of a marine meat prototype mediated through *in-vitro*



Growth of cells on scaffold

muscle cell culture technology and biocompatible scaffolds as a natural environmental substrate for the muscle cells to adhere and grow is progressing with an aim to achieve clean and green meat production. The standardisation and preparation of tissue-engineered biocompatible scaffolds using Chitosan and Carrageenan was carried out by lyophilisation of Carrageenan-Chitosan solution. The lyophilised polymeric mixture and the fabricated scaffold were cross-linked



with glutaraldehyde as a cross-linking agent to obtain a stable, porous scaffold. The fabricated Carrageenan-Chitosan scaffold was characterised by Scanning Electron Microscopy to analyse the microstructures of the scaffold. The porosity distribution and the pore dimensions of the scaffold were also observed in the scaffold. A change in the morphology of the scaffold was observed before and after cross-linking of the scaffold. The pore size range of the scaffold was 17.5 – 45 µm. The fabricated Chitosan-Carrageenan scaffold sustained the growth of cultured cells for almost 17 days post incubation.

The establishment of primary *in-vitro* cell cultures of mantle epithelial cells was carried out in *Pinctada fucata* using L15, M199 and sterile sea water as culture medium. The medium was supplemented with 0.1% yeast extract. Four concentrations of 0.1% yeast extract namely 50µl, 75µl, 100µl, 150µl/ml medium was tested in the present study and it was noted that 100µl of 0.1% YE / ml medium gave better results with regard to cell proliferation. It was also found that sterile sea water had better growth, proliferation and cell size when compared to L15 and M199 medium. The formation of fibroblasts was also found to be better in sterile seawater medium. The viability and sustainability of cells for varying lengths of time needs to be tested.

Marine Habitats

Research carried out on marine habitats focused on assessing climate-driven disturbances, pollution impacts and habitat dynamics across Indian coastal ecosystems. Cyclonic systems and marine heatwaves highlighted increasing climate risks to fisheries and reef communities. Assessments of litter, microplastics, water quality and plankton dynamics revealed strong anthropogenic and seasonal influences on coastal ecosystem health. Studies on coral reefs, mangroves, seagrasses and seaweed beds documented bleaching impacts, habitat recovery, biodiversity patterns and ecological functions. Mapping 'habitats of particular concern (HPCs)', pollution monitoring and restoration initiatives generated valuable data and management insights to support conservation and ecosystem management



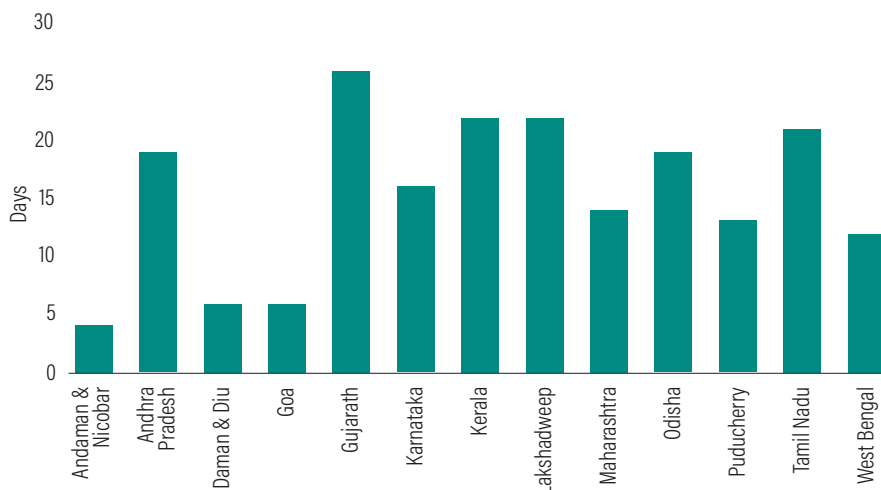
Growth of *Ulva fasciata* on intertidal rocks

Spatio-temporal analysis of the impacts of abnormal weather on the Indian coasts

Project: MBEMD/MWH/34

Cyclonic systems in the northern Indian Ocean

Cyclonic systems over the Northern Indian Ocean in 2025 were mapped to assess fishing-day losses. Eleven systems formed (two cyclonic storms



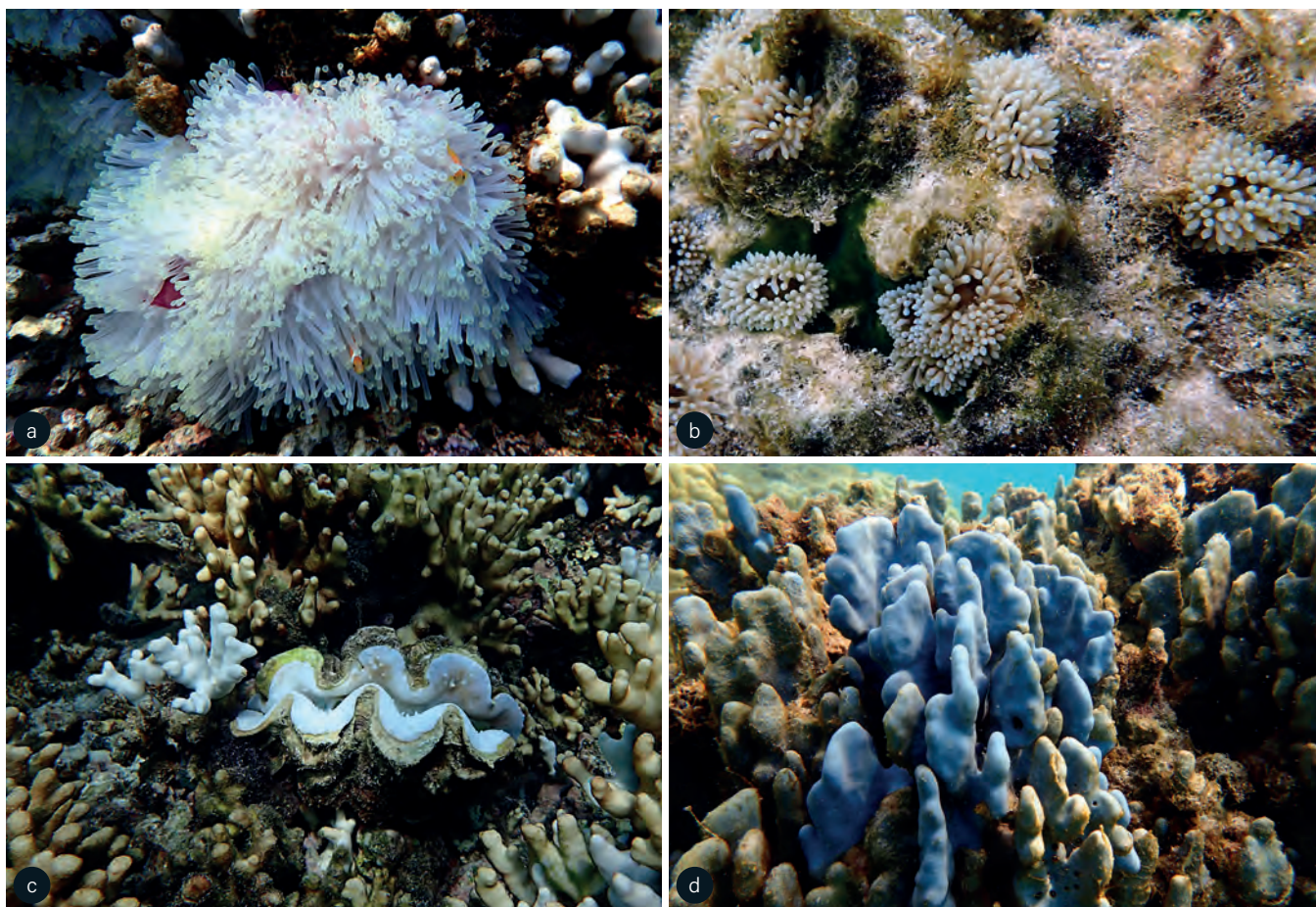
Number of fishing days lost due to cyclonic systems in the Northern Indian Ocean during 2025

Cyclonic systems and marine heatwaves posed increasing climate risks to coastal habitats.

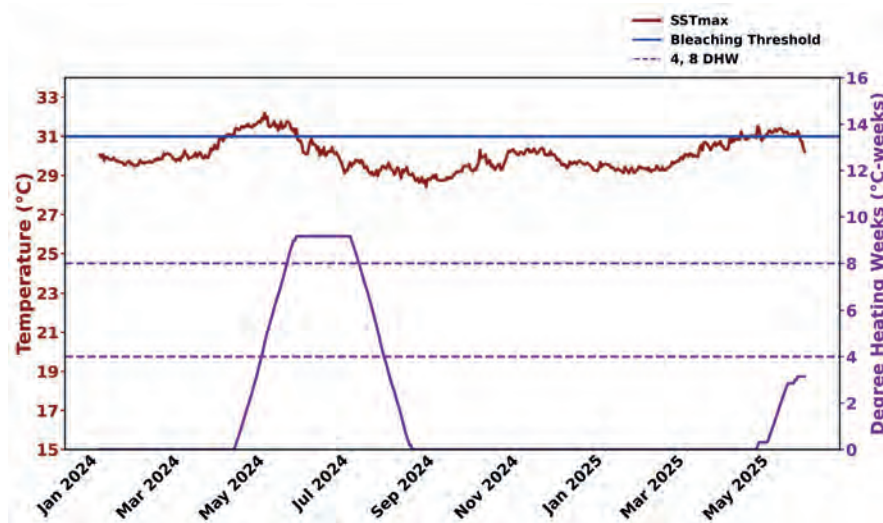
and two severe cyclonic storms), causing 200 cumulative fishing days lost across coastal states/UTs, with the highest loss in Gujarat (26 days) and the lowest in the Andaman & Nicobar Islands.

Marine heatwaves

Assessment of the 2024-2025 marine heatwaves in Lakshadweep showed severe thermal stress in 2024 (SSTmax 32.2 °C; DHW ~9.2 °C-weeks),



Bleaching status of non-scleractinian taxa in Lakshadweep during May 2024. (a) Bleached *Radianthus magnifica*; (b) Partially bleached *Anemonia cf. majano*, (c) bleached *Tridacna maxima* and (d) bleached *Heliopora coerulea*



Progression of marine heatwaves in Lakshadweep waters during 2024 and 2025, with the regional bleaching threshold (NOAA Coral Reef Watch) indicated by the blue line.

causing widespread bleaching in non-scleractinian taxa, whereas lower stress in 2025 (DHW <4 °C-weeks) led to minimal bleaching, indicating strong interannual variability and species-specific vulnerability.

Marine heatwaves along the Kerala coast showed strong spatial variability, with Kochi experiencing prolonged thermal stress (193 days; Nov 2023–May 2024), compared to Kozhikode (125 days) and Thiruvananthapuram (71 days), indicating heightened

climate-related risks to coastal ecosystem health and productivity in central Kerala.

Seawater ingressión

A pilot study was initiated in Edakochi (Kochi) to assess the socio-economic impacts of increasing seawater ingressión linked to sea-level rise. Reconnaissance survey, designing of assessment proforma, and GIS-based land parcel mapping were completed, and detailed field surveys are planned.



Land parcel map of Edakochi, with an inset showing its location within Kochi corporation.

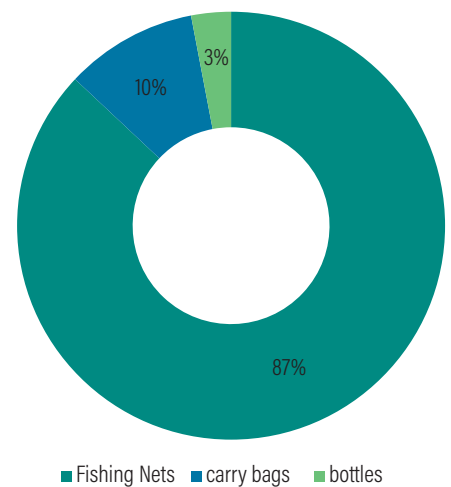
Impact of coastal marine pollution on the ecosystem's health, biodiversity and mitigation measures

Project: MBEMD/MPC/28

Marine litter and microplastics

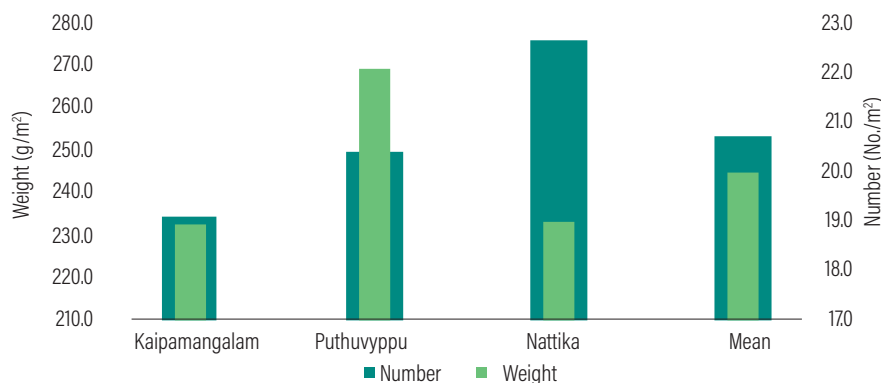
Quantification of marine litter across fishing grounds off Karnataka, Calicut, Mandapam and Visakhapatnam showed variable but locally intense plastic loads, peaking at 627.51 kg/km²/haul/hour during the monsoon off Visakhapatnam, with discarded fishing nets dominating. Macro-litter surveys along three central Kerala beaches also revealed marked spatial variation.

Microplastic contamination off Kochi and Lakshadweep showed the highest sediment abundance at 250 m (30 particles/m²) and the lowest at 750

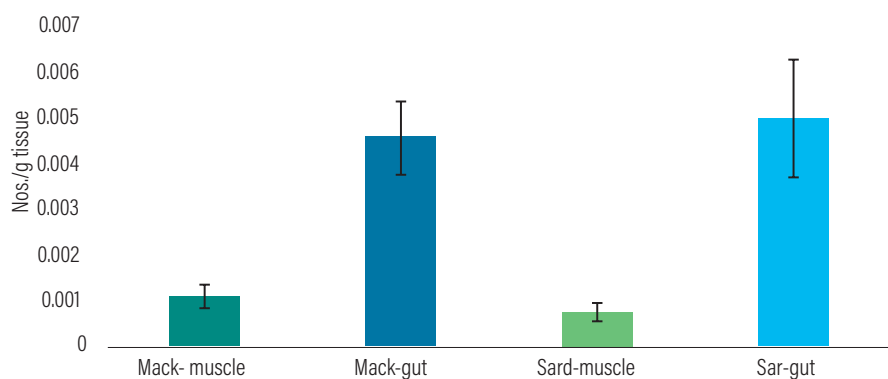


Composition of marine plastic debris in fishing grounds off Calicut

m (19 particles/m²), dominated by filaments (77%). A species-specific pattern was evident in fish tissues, with higher muscle loads in *Rastrelliger kanagurta* and higher gut loads in *Sardinella longiceps*; polyethylene was the dominant polymer.



Annual average beach litter status of central Kerala for the year 2025



Variation in microplastic abundance in the muscle and gut tissues of oil sardine and mackerel along the Thiruvananthapuram coast

Sediment/seawater quality grading and pollution assessment

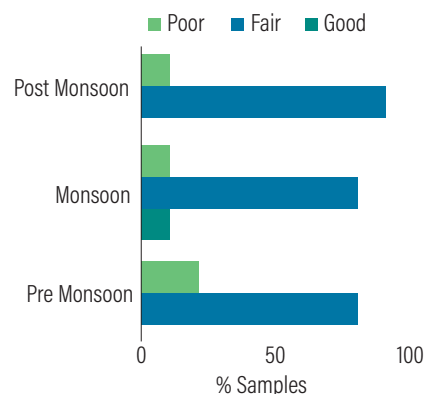
Water quality assessment across 19 stations in the Kochi estuary (USEPA, 2012 criteria) indicated an overall 'fair' status, primarily affected by elevated dissolved inorganic nitrogen and phosphorus from anthropogenic inputs. A similar 'fair' grading trend was observed along the Mangaluru coast across 7 stations monitored.

Seasonal assessment in the Kochi estuarine system (Vembanad Lake) showed monsoon-driven changes in sediment quality, nutrients and community structure, with diatom-dominated phytoplankton (36 species) and heterogeneous benthic macrofauna linked to sediment redistribution.

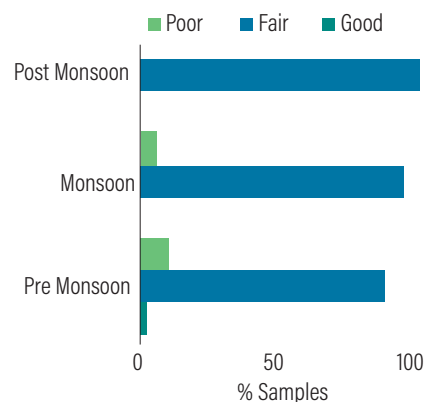
Plankton dynamics along the Kozhikode coast showed strong monsoon-driven variability, with

shifts in diversity, dominance phases and community turnover reflecting seasonal ecosystem change.

Red tide and bioluminescence events off Kochi (30-40 m depth) and



Seasonal water quality grading of the Kochi Estuary during 2025

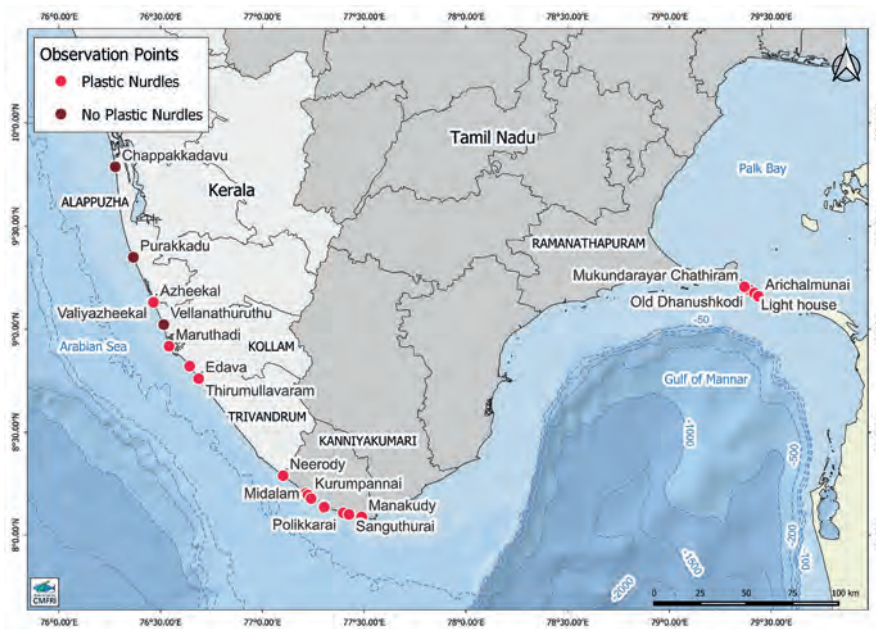


Seasonal water quality grading of the Mangaluru coast during 2025

Chavakkad (Aug 2025) were driven by blooms of *Noctiluca scintillans* and *Cochlodinium fulvescens* under



Red tide observed 20 km off Kochi at a 30 m depth zone, on 14 August 2025



Location map showing the distribution of plastic nurdles washed ashore along the Indian coastline

Marine litter and microplastics showed spatially variable but locally intense plastic loads across fishing grounds and beaches.

turbidity increases from monsoon runoff. However, widespread dispersal of plastic nurdles up to Tamil Nadu raised ecological concerns, highlighting the need for continued water and sediment monitoring.

Ecotoxicology

Laboratory evaluation of *Villorita cyprinoides* exposed to CuSO_4 (96 h) showed concentration- and time-dependent mortality, with larger clams exhibiting higher sensitivity. LC_{50} values indicated significantly lower tolerance in larger individuals compared to smaller ones.

In vitro cytotoxicity of Hg, Cd, cyfluthrin, and dichlorvos was assessed using the PB1BrTr brain cell line of *Premnas biaculeatus*. XTT

eutrophic conditions, altering oxygen levels and plankton dynamics.

Seasonal observations in Dakshina Kannada waters showed dominance of *Skeletonema costatum* and *Coscinodiscus* sp., with occurrences of mixoplanktonic and kleptoplastic taxa such as *Noctiluca scintillans*, suggesting that changing nutrient

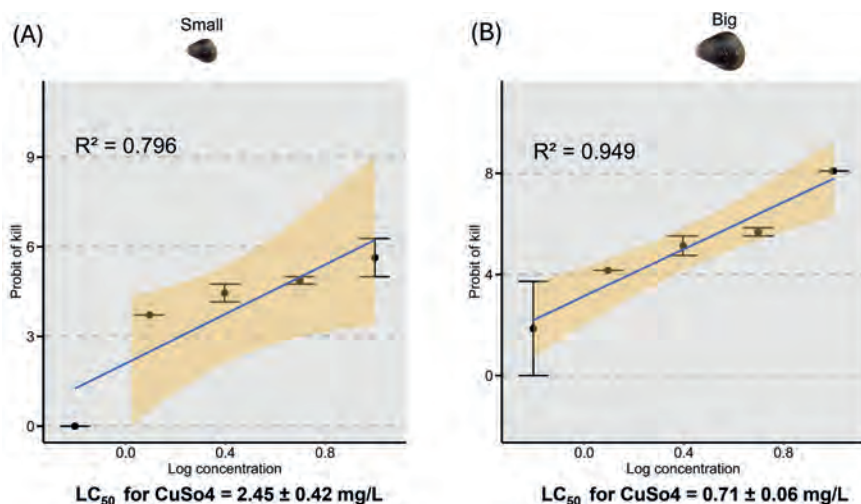
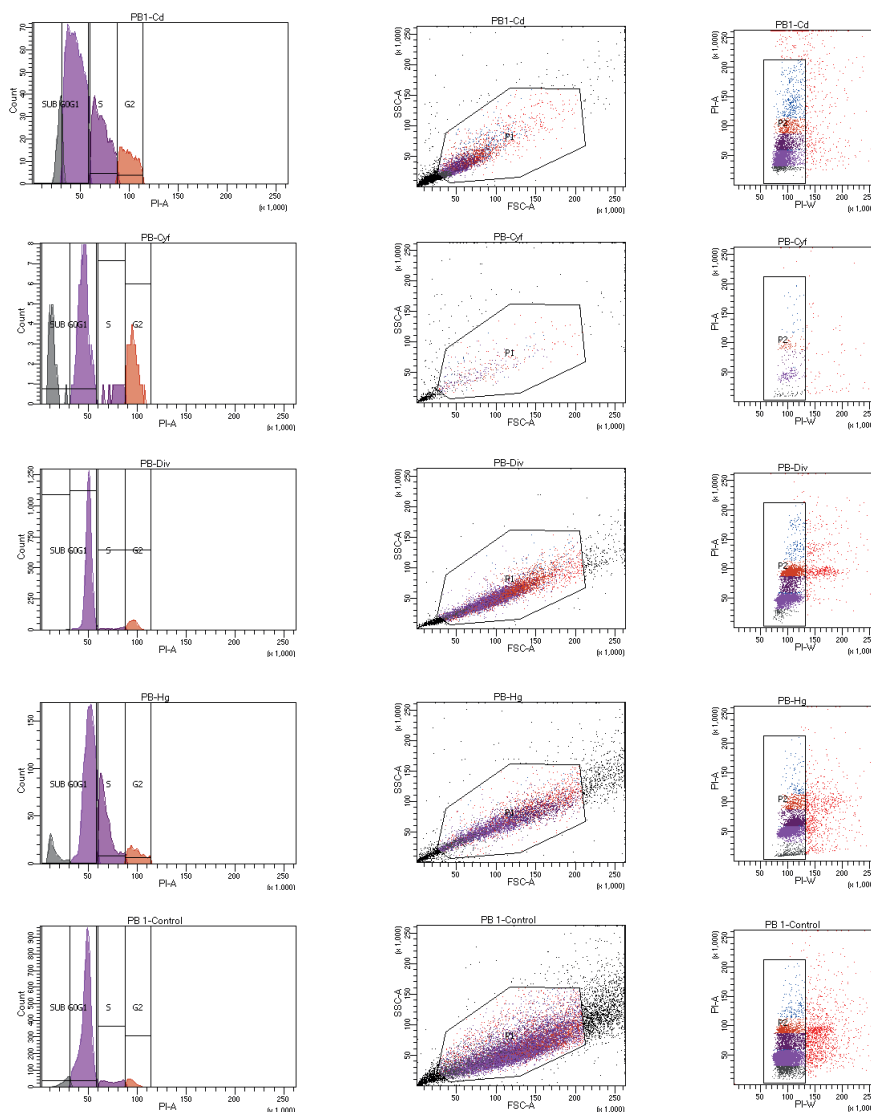
regimes and climate stressors may favour mixoplankton dominance and influence coastal energy flow and carrying capacity.

Following the MSC ELSA-3 shipwreck (24 May 2025) off Kerala, rapid monitoring at 10 coastal stations showed normal physico-chemical conditions with only temporary



Plastic nurdles washed ashore at Dhanushkodi beach (10.06.2025)



Size class-wise LC_{50} estimates for $CuSO_4$ in *Villorita cyprinoides*

Flow cytometric analysis of PB1BrTr cells treated with sublethal levels of pollutants, showing cell cycle phases (PB1-Control, PB1-Cd-cadmium, PB1-Hg-mercury, PB1-Div-dichlorvos, PB1-Cy-cyfluthrin)

assays showed dose-dependent effects, and flow cytometry indicated early apoptotic responses, confirming PB1BrTr as a sensitive model for sublethal toxicity assessment.

Understanding the essential fish habitats for sustainable management of coastal and marine ecosystems

Project: MBEMD/EFH/29

The project focused on delineating Habitats of Particular Concern (HPCs) to guide targeted conservation, sustainable management and climate-adaptive strategies, supporting long-term marine ecosystem health and fisheries sustainability.

Coral reefs

Post-2024 bleaching surveys at Agatti and Kavaratti (Lakshadweep) recorded major mortality of branching *Acropora* (~50% Agatti; ~40% Kavaratti) under elevated SST (30.1–34 °C), while massive *Porites* showed resilience and early recovery signs. SCUBA surveys at Netrani Reef (Karnataka) showed recruitment of *Porites* and *Pocillopora*, but absence of *Acropora* and damage

Coral reefs in Lakshadweep and Netrani showed bleaching impacts, high mortality of *Acropora* corals, alongside signs of recovery of massive and branched corals.

to *Turbinaria*. Breeding activity of cuttlefish (*Sepia* spp.) indicated the reef's importance as a cephalopod breeding habitat.

Monitoring of corals at Netrani Reef from May 2024 to November 2025

Recruitment of *Pocillopora* sp. in Netrani reef

Goniopora sp., *Coscinarea* sp. and *Psammocora* cf. *nierstraszi* recovered fully after initial slight bleaching. Massive corals such as *Porites lutea*, *Favites pentagona*, *Leptoseris* cf. *mycetoseroides* and *Pavona varians* showed gradual recovery by 2025. In contrast, branching corals, including *Pocillopora* spp. and *Acropora* spp. suffered complete mortality, though new colonies of *Pocillopora verrucosa* were observed. *Psammocora obtusangula* showed no bleaching throughout the period.

Mangroves

Assessment of the Poovar mangrove estuary (HPC), Thiruvananthapuram,

Mangrove ecosystems revealed notable biodiversity, rising anthropogenic pressures and responses to restoration.

showed varied recovery following the 2024 bleaching event. Several taxa, including *Turbinaria mesenterina*,

Goniastrea pectinata, *Goniastrea retiformis*, *Plesiastrea versipora*, *Leptastrea* sp., *Coscinarea monile*,

recorded 17 fish species, with *Eetroplus suratensis* dominant. Several species were overexploited, while litter dumping, sewage discharge, tourism development and mangrove cutting indicated rising anthropogenic pressure.

GIS mapping of the 2.74 ha Mangalavanam Bird Sanctuary, a mangrove wetland linked to the Cochin Estuary, was completed. The site supports diverse mangroves and serves as a critical habitat for avifauna and nursery grounds for aquatic species.

Assessment in the Netravati–Gurupura estuary showed mangroves acting as biofilters, with *Acanthus ilicifolius* and *Cyperus malaccensis* exhibiting high heavy metal uptake and fair–good water quality. Mangrove restoration in the Kochi estuary using *Rhizophora*

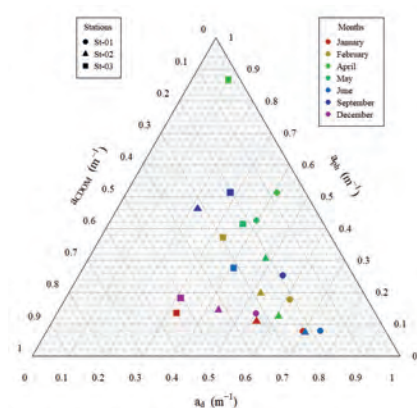


GIS map of Mangalavanam bird sanctuary

mucronata showed improved post-monsoon sapling growth, regulated by sediment quality, organic carbon, redox potential, dissolved oxygen and nutrients.

Seagrass meadows

Spatio-temporal assessment of *Halophila beccarii* (~2 ha) in the Kadalundi estuary documented

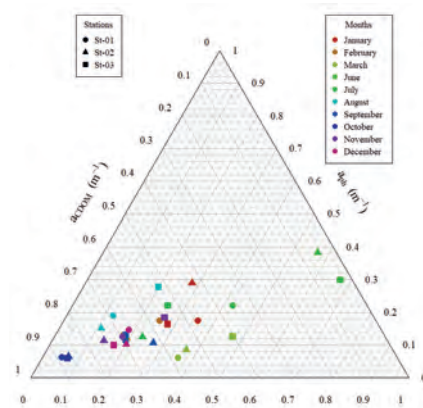


Relative contributions of phytoplankton, CDOM, and detrital absorption in coastal waters off Kochi at 440 nm

morphometrics, seasonal flowering (Oct–Dec), variable shoot density (17–1,254 m⁻²) and biomass, with water, sediment and nutrient monitoring establishing baseline ecological conditions for this vulnerable species.

Seaweed beds

Year-round surveys at Thirumullavaram recorded >80



Relative contributions of phytoplankton, CDOM, and detrital absorption in coastal waters off Mandapam at 440 nm

macroalgal species across rocky intertidal–subtidal habitats, showing seasonal succession (*Ulva fasciata* in monsoon; *Caulerpa peltata* in Dec–Jan). Peak diversity (Dec–Mar) supported ornamental fishes and larval schools, while grazing invertebrates indicated active benthic turnover.

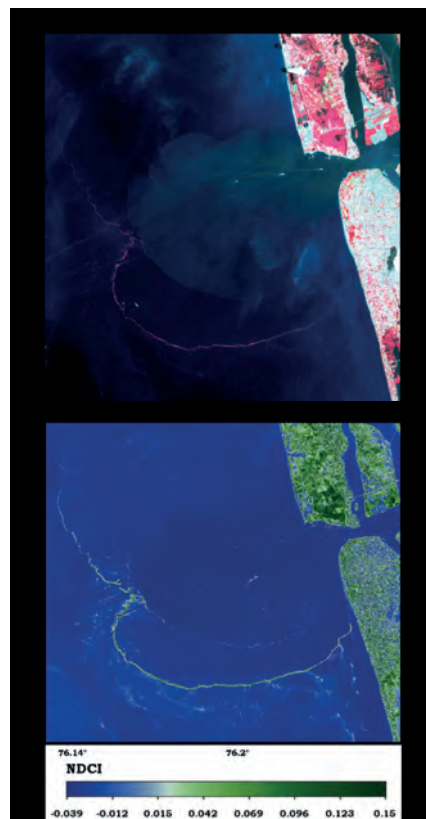
CO₂ Assimilation off Kochi and Mandapam coasts

Project: PME/ERPRC/NRSC

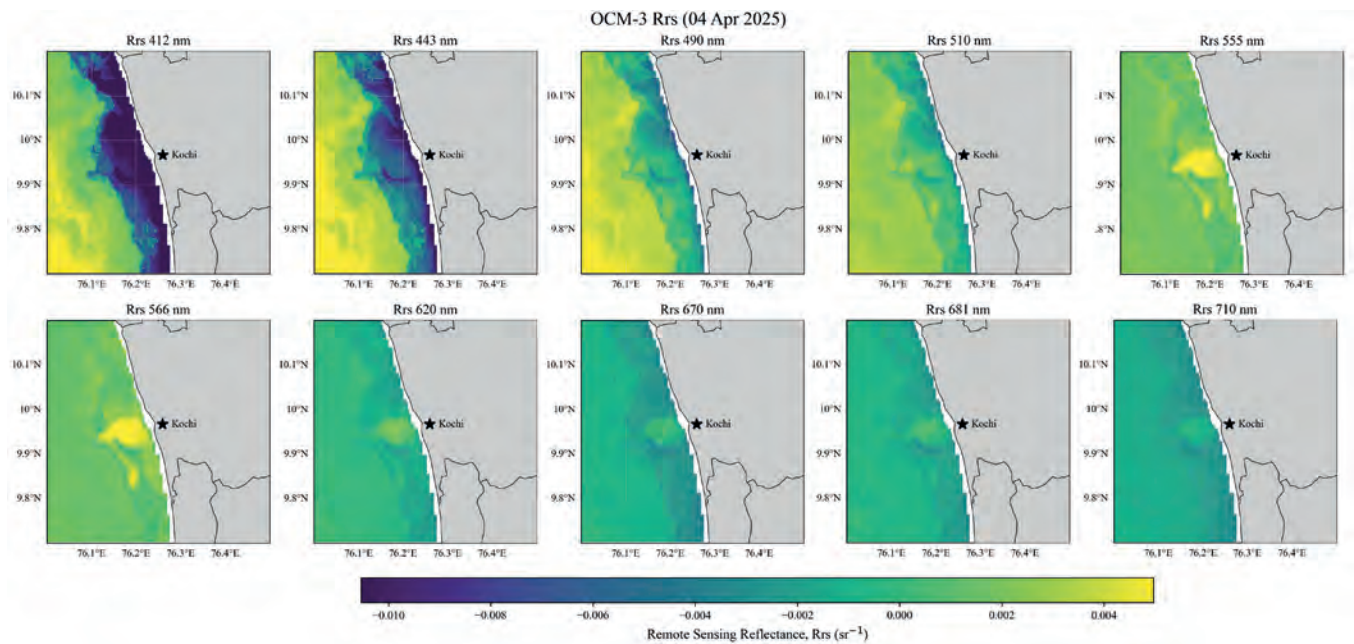
Absorption budgets off Kochi and Mandapam were dominated by detrital (ad) and CDOM (aCDOM) components, indicating optically complex coastal waters. An April 2025 *Trichodesmium* bloom off Kochi increased phytoplankton absorption, detected through FCC imagery, elevated NDCI and OCM-3 reflectance shifts.



Growth of *Caulerpa peltata* at Thirumullavaram



False colour composite (FCC) and NDCI of 04 April 2025 bloom



Spatial distribution of Ocean Colour Monitor-3 (OCM-3) reflectance (R_{rs}) over coastal waters off Kochi on 04 April 2025

Identification and removal of ghost fishing nets in selected fishing zones off the Thiruvananthapuram coast

Project: KSBB

Assessment of ghost-net-affected sites along the Thiruvananthapuram coast showed the highest biodiversity at Mukkam and elevated microplastics at Vizhinjam Harbour; debris removal at Mukkam improved biodiversity and reduced microplastic loads.



Impact assessment of water jet pumps used in chank exploitation

Project: DoF & Fishermen Welfare, Tamil Nadu

Water jet pump-based exploitation of dead chank (*Turbinella pyrum*) off the Thoothukudi coast (Dec 2024–Feb 2025) caused temporary seabed disturbance and turbidity with potential benthic impacts. Increasing unregulated operations, unregistered boats and inexperienced divers highlight the need for stricter regulation.



Marine Biodiversity

Multidisciplinary research on marine biodiversity in Indian waters addressed bycatch dynamics, jellyfish blooms, microbial diversity, marine mammals, and coastal bio-inventories. Bycatch studies revealed juvenile exploitation, gear-specific community variations, and habitat disturbance risks. Monitoring of gelatinous zooplankton documented regional jellyfish bloom patterns and species diversity. Microbial studies identified diverse archaeal, bacterial, and viral communities with potential biotechnological applications. Marine mammal surveys recorded species distribution, strandings, and compliance with conservation regulations. Coastal bio-inventories along the Andhra Pradesh coast revealed high species richness and threatened taxa. AI-based digital tools are also being developed to strengthen deep sea biodiversity assessment and improve species identification.



Spotted jellyfish, *Mastigias papua*, from the Gulf of Mannar

Assessment and evaluation of the marine biodiversity with emphasis on bycatch from an ecosystem perspective

Project code: MBEMD/BYC/30

Bycatch monitoring at major landing centres recorded 21 species, mainly juveniles of commercially important finfishes (*Trichiurus*, *Nemipterus*, *Epinephelus* spp.), with notable juvenile landings of *Priacanthus hamrur*, indicating significant juvenile exploitation along the Gujarat coast.

Bycatch monitoring recorded 21 species, mainly juveniles of *Trichiurus*, *Nemipterus* and *Epinephelus*, indicating notable juvenile exploitation.

Trawl assessments off Mangalore and Kasaragod showed discards dominated by jellyfishes (*Chrysaora* spp.), gastropods and bivalves. Incidental capture of benthic corals and juveniles of white pomfret, *Lactarius*, *Lagocephalus* and *Epinephelus diacanthus* suggests habitat disturbance and risks to stock sustainability.

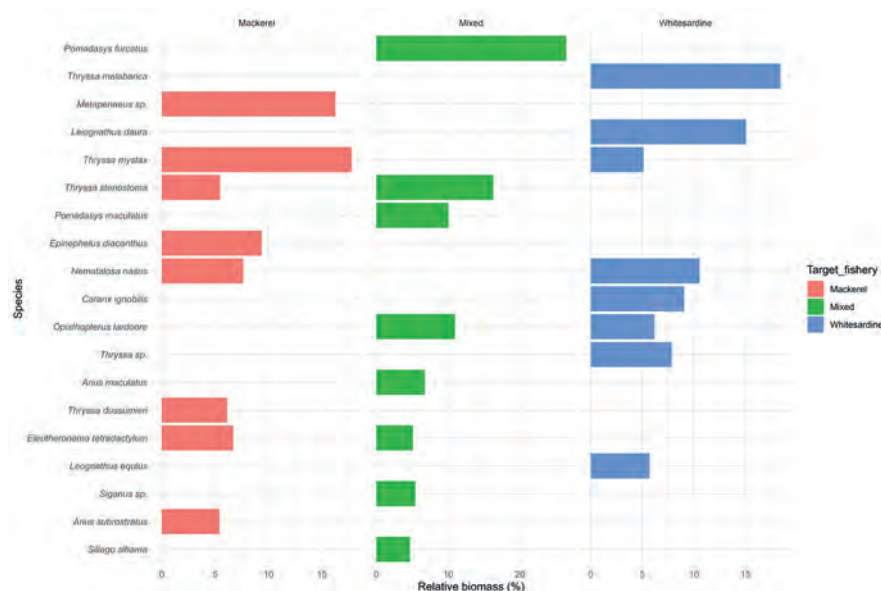


Bycatch at Mangalore fishing harbour

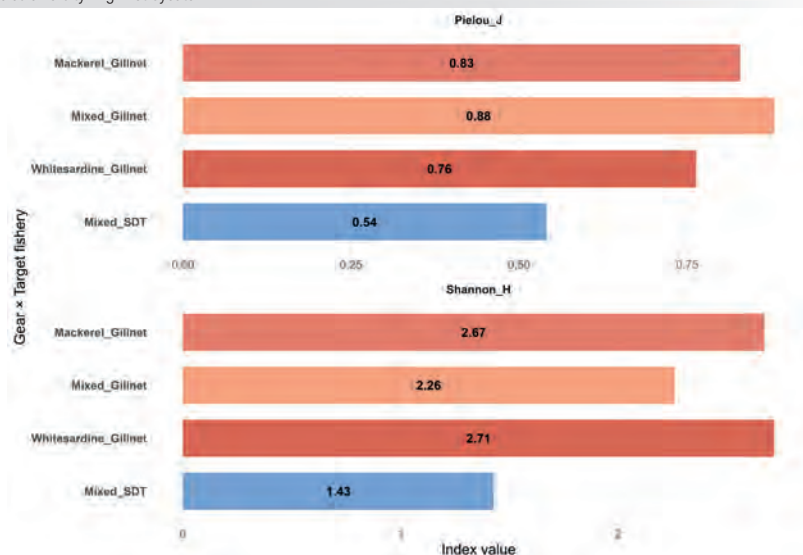


Bycatch at Calicut





Species diversity in gillnet bycatch



Shannon diversity and Pielou's evenness in gillnet bycatch



Deep sea trawl landings at Sakthikulangara

At Calicut, bycatch analysis showed clear gear-specific differences. Gillnets were dominated by finfish (93.7% biomass) with higher diversity and evenness, indicating balanced assemblages. In contrast, small demersal trawls were dominated by crustaceans and stomatopods, with lower diversity and evenness, reflecting benthic dominance and reduced community complexity.

Gear wise bycatch at Calicut showed finfish dominance in gill nets and crustacean dominance in demersal trawls.

Along central Kerala (150–200 m depth), shrimp trawl bycatch was dominated by finfishes such as *Jaydia queketti*, *Epigonus* sp., *Callionymus kotthausi* and *Saurida* spp., while squid trawls recorded *Grammoplites scaber*, *Nemipterus japonicus* and *Arius caelatus*. Most species were listed as Least Concern, with a few Data Deficient under the IUCN Red List.

Off Thoothukudi, shrimp trawl bycatch included 240 species (66 families) against 14 target species, largely teleosts. Most were Least Concern (64%), with 63% reef-associated and ~70% from mid- to high-trophic levels, indicating capture of ecologically important taxa.

Gelatinous zooplankton bloom and their ecological interplay in the Indian coastal waters

Project: MBEMD/GZB/32

Swarming diversity of jellyfishes

Monitoring of gelatinous zooplankton blooms along the Indian coast revealed clear seasonal and regional

Jelly fish, *Crambionella annandalei*

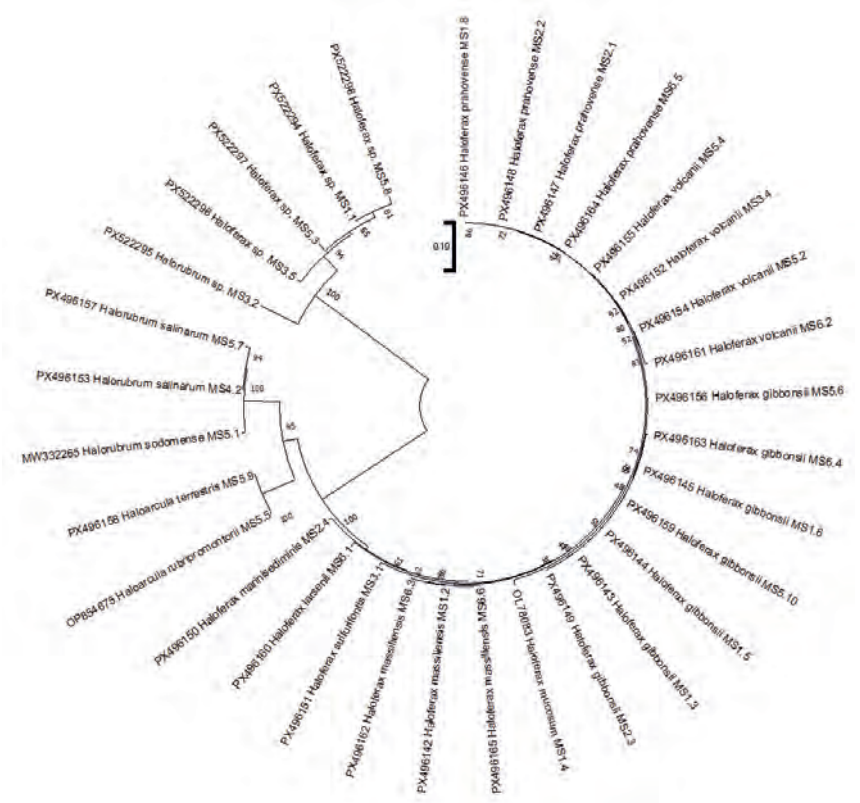
Crambionella, *Cyanea*) further south. In contrast, the east coast experienced intense blooms of *Lobonemoides* sp., along with *Chrysaora* and *Cyanea*, indicating strong spatial variability in jellyfish swarming dynamics. Overall, 41 scyphozoan and 8 cubozoan jellyfish species have been recorded from Indian coastal waters.

Marine microbial diversity in relation to ecosystem functioning and environmental changes

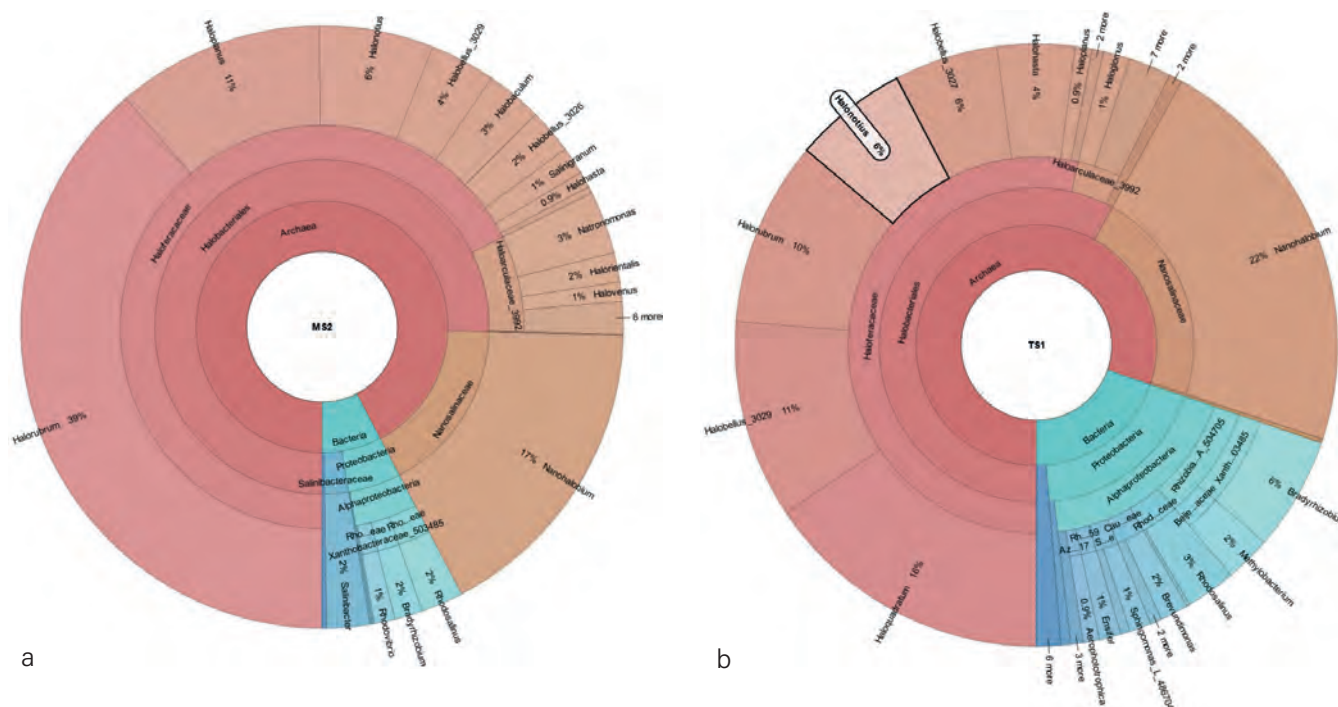
Project: MBEMD/MMD/39

Thirty-two haloarchaeal strains isolated and characterised from Manakudy solar saltpan (Tamil Nadu) belonged predominantly to Haloferacaceae (30) and Haloarculaceae (2), with *Haloferax* (27) as the dominant genus (*H. gibbonsii* being the most prevalent species), followed by *Halorubrum* (3) and *Haloarcula* (2).

patterns, with winter peaks on the west coast and summer peaks (April–June) on the east coast. West coast blooms were dominated by *Catostylus* sp. in Gujarat and mixed assemblages (*Netrostoma*, *Marivagia*, *Cephea*,

Venomous box jellyfish, *Alatina* sp., from the Palk Bay

Neighbour-joining phylogenetic tree based on 16S rRNA gene sequences of haloarchaea from Manakudy Saltern



Krona plot illustrating the hierarchical taxonomic composition of (a) Thoothukudi (TS1) and (b) Manakudy (MS2) samples at different taxonomic levels

Marine microbial studies highlighted agarase-producing plastisphere bacteria, hydrocarbon-degrading *Acinetobacter*, and antagonistic bacterial strains from *Gracilaria*.

Comparative metagenomic profiling of solar salterns at Thoothukudi (TS1) and Manakudy (MS2), Tamil Nadu, revealed archaeal-dominated communities mainly under *Halobacteriales*. Although alpha diversity was comparable (slightly higher in TS1), beta diversity indicated clear taxonomic separation. A high proportion of unclassified taxa underscores the largely unexplored microbial diversity of hypersaline ecosystems.

16S rRNA amplicon sequencing of mesopelagic sediments (500-1000 m) showed bacterial dominance (~99% reads) with depth-structured communities and low archaeal abundance (mainly *Crenarchaeota*). Limited vertical connectivity (14-27% shared taxa) suggests minimal exchange among sediment microbial assemblages.

Seasonal sampling at Chellanam Harbour, Kochi, yielded 229 plastisphere-associated bacterial isolates. Three agarolytic strains,

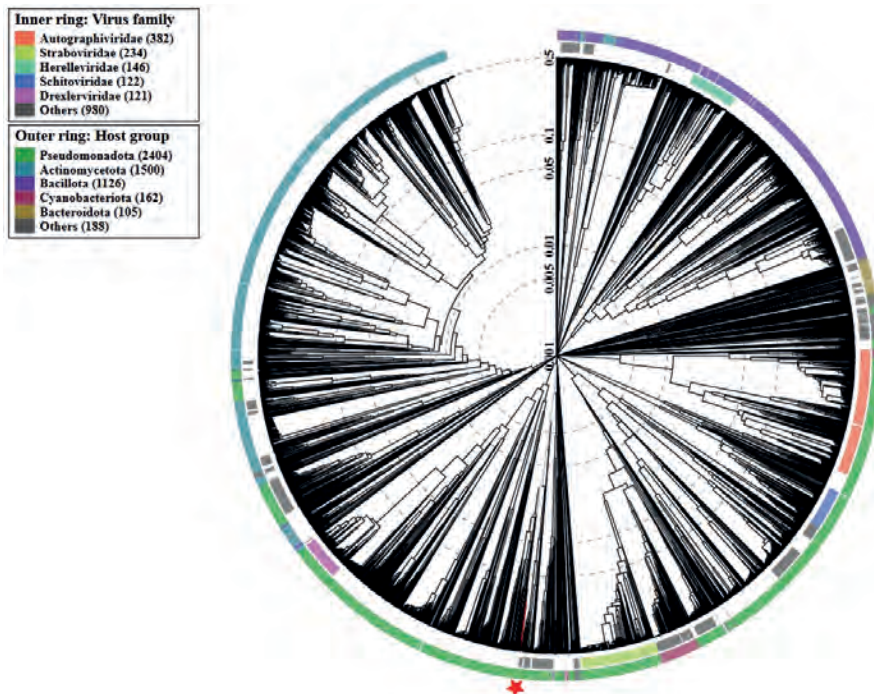
Aquimarina litoralis, *Persicobacter diffluens*, and *Microbulbifer elongatus*, showed agarase activity, indicating industrial enzyme potential.

Salt marsh soils at Tuticorin yielded eight bacterial genera, including *Bacillus* sp., *Pseudomonas* sp., *Micrococcus* sp., and *Azotobacter* sp., while *Acinetobacter* sp. from oil-impacted sites showed hydrocarbon degradation ability. Bacteria from *Gracilaria* sp. showed antimicrobial activity against *Escherichia coli* and *Staphylococcus aureus*, with isolate GRA2 most effective. A 7-day multi-substrate immersion study at Calicut established a baseline culture collection of heterotrophic biofilm bacteria, revealing substrate-specific microbial recruitment.

A novel bacteriophage, PhMV1.3, infecting *Pseudoalteromonas piscicida* strain MV1.3, was identified. TEM showed an icosahedral head (~45 nm), and genome sequencing revealed a 38.85 kbp dsDNA genome (44.71% G+C) with 53 predicted ORFs.



Spot assay showing lysis by PhMV1.3 on mat culture of *P. piscicida* strain MV1.3



Viral proteomic tree of *P. piscicida* phage (PhMV1.3), generated using ViPTree

Marine mammal stock assessment in India

Project: DoF-PMMSY

ICAR-CMFRI, with national partners, prepared and submitted the Compliance Finding Application demonstrating India's adherence to international marine mammal conservation and sustainable fisheries standards. In October

2025, the U.S. National Marine Fisheries Service confirmed compliance with U.S. marine mammal protection regulations, ensuring continued market access for Indian seafood exports.

Between February and December 2025, 21 cetacean sightings around Lakshadweep documented nine species. Spinner dolphins (*Stenella longirostris*) were most frequent

(43%), followed by spotted dolphins (*S. attenuata*), including a large aggregation (~350 individuals). Indo-Pacific humpback dolphins (*Sousa plumbea*) were also recorded off Kochi.

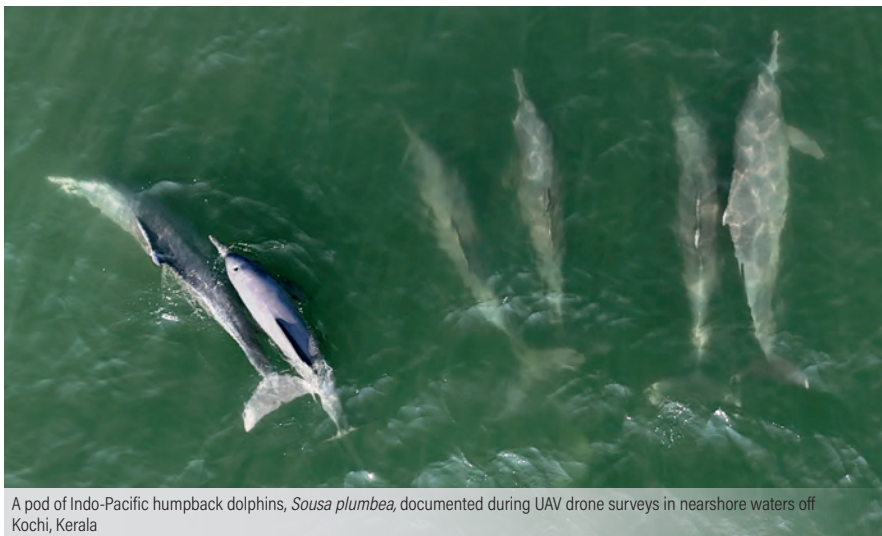
Mixed-species associations were observed in western Indian waters, including spinner, pantropical spotted and bottlenose-rough-toothed dolphin pairings. A large aggregation (~693 individuals) of spinner, spotted and striped dolphins was recorded off Kalpeni, showing coordinated foraging, calves, and typical fission-fusion social dynamics.

Cetacean surveys around Lakshadweep recorded nine species, with spinner dolphins (*Stenella longirostris*) most frequent.

Integrated shore-based and UAV surveys along the central Kerala coast assessed resident *Sousa plumbea* populations using photo-identification and mark-recapture methods. Drone monitoring documented distribution, group structure and behaviour in the Munambam and Chettuva estuaries,



Spinner dolphin, *Stenella longirostris*, porpoising out of water



A pod of Indo-Pacific humpback dolphins, *Sousa plumbea*, documented during UAV drone surveys in nearshore waters off Kochi, Kerala

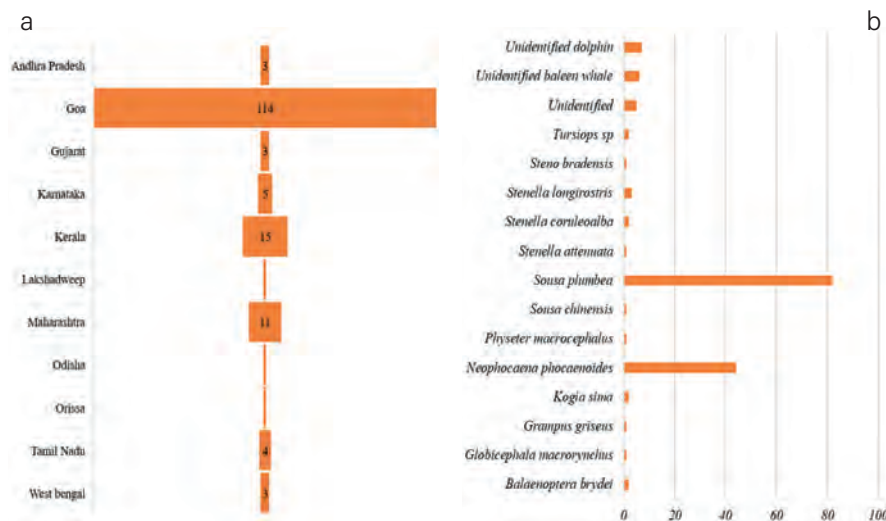
Goa recorded the highest incidents (113), followed by Kerala (15) and Maharashtra (11). Molecular analysis confirmed *Balaenoptera edeni edeni*, *Sousa plumbea* and *Pseudorca crassidens*.

A workshop on 'Conservation of Marine Mammals in the EEZ of India: Prioritising Future Evidence Needs' was held on 6 October 2025 at ICAR-CMFRI, Kochi, to strengthen scientific evidence for conservation planning and compliance with the US MMPA.

Bio-inventorying and documentation of marine species in coastal and marine ecosystems of Andhra Pradesh

Project: PME/APSBB/VRC/2022

A bio-inventory along the Andhra Pradesh coast recorded 1,275 marine species (456 genera, 290 families, 98 orders) across major coastal habitats. ETP assessment (IUCN, CITES, Wildlife Protection Amendment Act 2022) identified 65 threatened finfish species (9.5%), with high vulnerability among elasmobranchs (58 of 76 species). All four marine turtles and five of the 16 marine mammals were threatened and protected. No molluscs were IUCN-listed as threatened, though *Nautilus pompilius* and some gastropods are protected; stony corals



State-wise (a) and species-wise (b) numbers of individual marine mammal species stranded in the year 2025

and recorded a pod of >10 short-finned pilot whales offshore.

A total of 161 marine mammal

strandings representing 14 species were documented, with *Sousa plumbea* (82) and *Neophocaena phocaenoides* (44) most frequent;



Participants of the workshop 'Conservation of marine mammals in the EEZ of India'



Launch workshop on automated identification of marine species

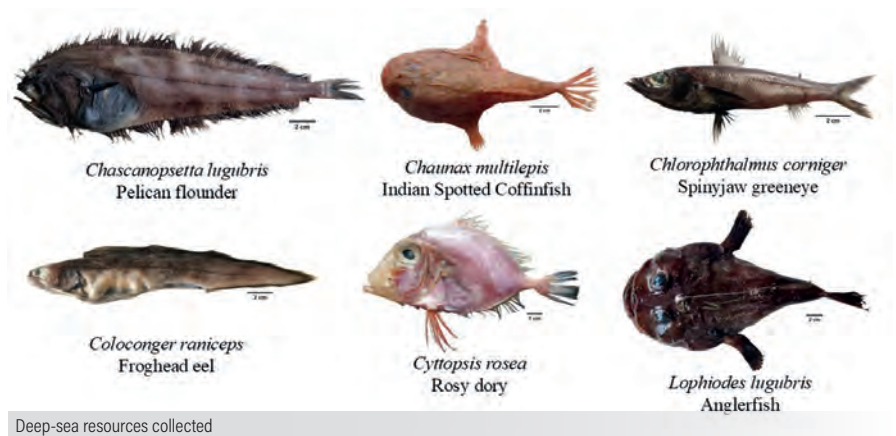
are protected, while soft corals and octocorals remain largely unassessed.

Automated identification of deep sea species with artificial neural networks

Project: MoES

The project was launched on 13 October 2025 at ICAR-CMFRI, Kochi. Deep sea landings from seven west coast harbours documented 164 species (125 genera, 83 families), dominated by Anguilliformes, Perciformes and Acanthuriformes; 19 decapod crustaceans were also recorded. Biological data (length–weight, feeding, reproduction), radiographs and otolith images (102 species) were generated.

An Android-based DeepDATA application is being developed to host and manage the compiled image

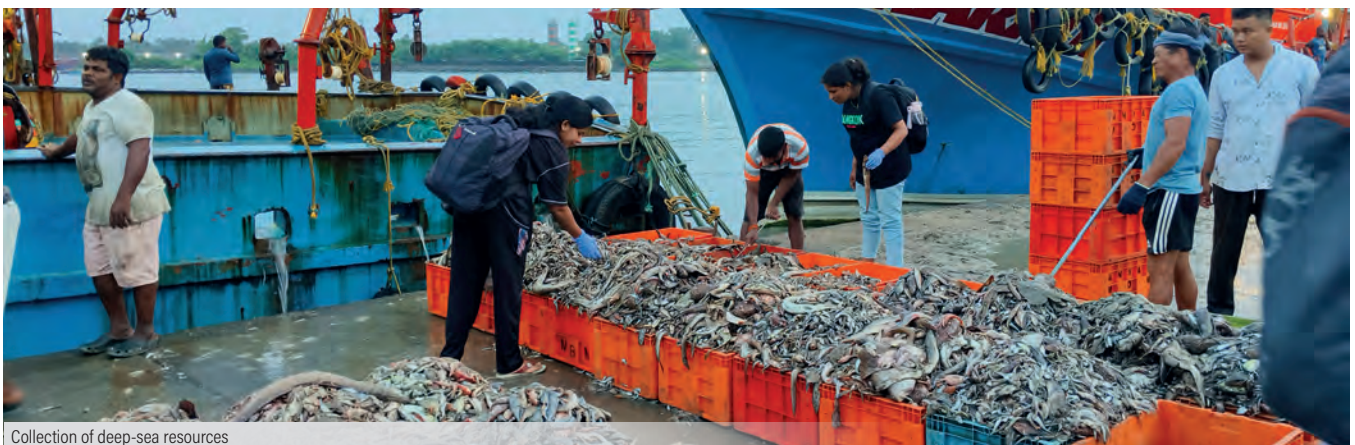


Deep-sea resources collected

repository along with associated metadata of deep sea fishes. This will serve as a foundational framework for integrating image databases, metadata, and future AI-based tools into a unified, user-friendly system. The systems also enable large-scale storage and management of image and metadata archives, ensuring long term preservation of data and

facilitating future updates, expansion of the database, and incorporation of AI-driven analytical modules.

Furthermore, the development of an AI-based marine species identification system is in progress, aiming to automate recognition and improve deep sea biodiversity assessment.



Collection of deep-sea resources

Climate Change

Activities under the program achieved significant progress in assessing climate change impacts on coastal and marine systems, integrating ecosystem studies, satellite analyses, and socio-economic surveys. Surveys in Kerala and Karnataka revealed reduced fishing days, income loss due to climate-related impacts, and high awareness of climate impacts among stakeholders. Mangrove assessments showed increased blue carbon potential along Tamil Nadu coasts. Experimental studies on fish thermal tolerance highlighted adaptive capacity under warming scenarios, supporting climate-resilient fisheries planning, livelihood diversification, and ecosystem-based adaptation strategies.



Lush growth of mangroves protecting coastlines from extreme climate impacts

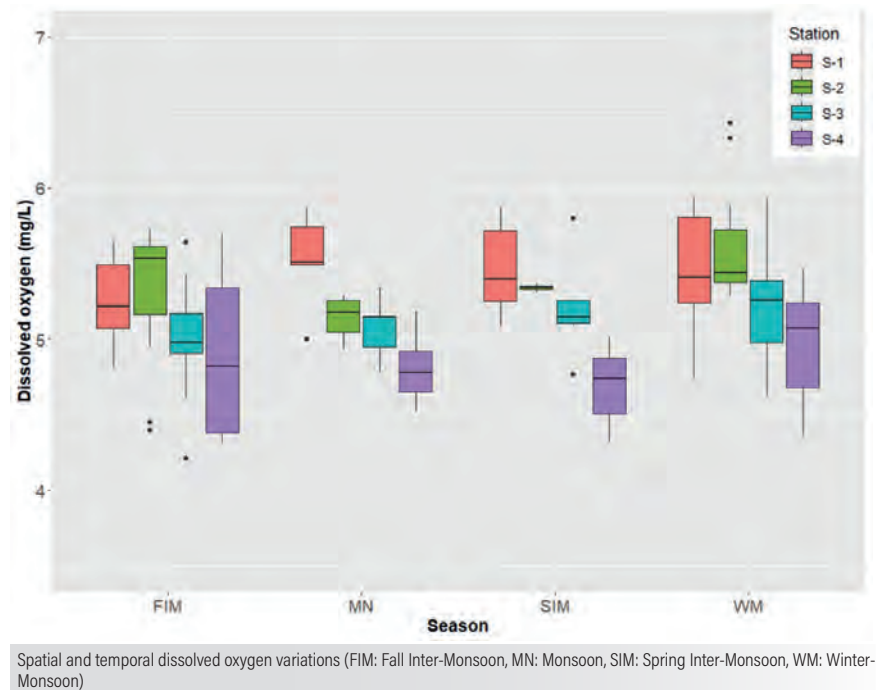
Climate resilience in India's coastal fisheries and ecosystems

Project: NICRA: 1009459

During the reporting period, studies were undertaken to assess climate change impacts on India's coastal and marine systems, including ocean deoxygenation, coastal food systems, fisheries livelihoods, and ecosystem services. Socio-ecological surveys documented climate impacts and adaptation responses among fishing communities in Kerala and Karnataka, while ecosystem-based assessments evaluated mangrove carbon sequestration. Experimental studies examined the thermal tolerance and adaptive capacity of marine fishes under warming scenarios, generating evidence to support climate-resilient fisheries and sustainable coastal livelihoods.

Assessing dissolved oxygen variability along the Gujarat coast

Globally, human-induced warming has caused significant ocean deoxygenation, with approximately 85% of oxygen loss attributed to increased water-column stratification and 15% to reduced oxygen solubility due to rising temperatures; these hypoxic conditions severely affect marine biodiversity and fisheries, resulting in substantial ecological and economic losses. Inter-annual trends in satellite-derived dissolved oxygen (SDDO) and the spatial and temporal variability of *in-situ* dissolved oxygen (DO) along the Gujarat coast were analysed using monthly satellite-derived DO time-series for the north-eastern Arabian Sea from the Marine Copernicus Programme covering 28 years (1993–2020), together with *in-situ* DO measurements collected during 2013 and 2019 across four seasonal phases: spring inter-monsoon, monsoon, fall



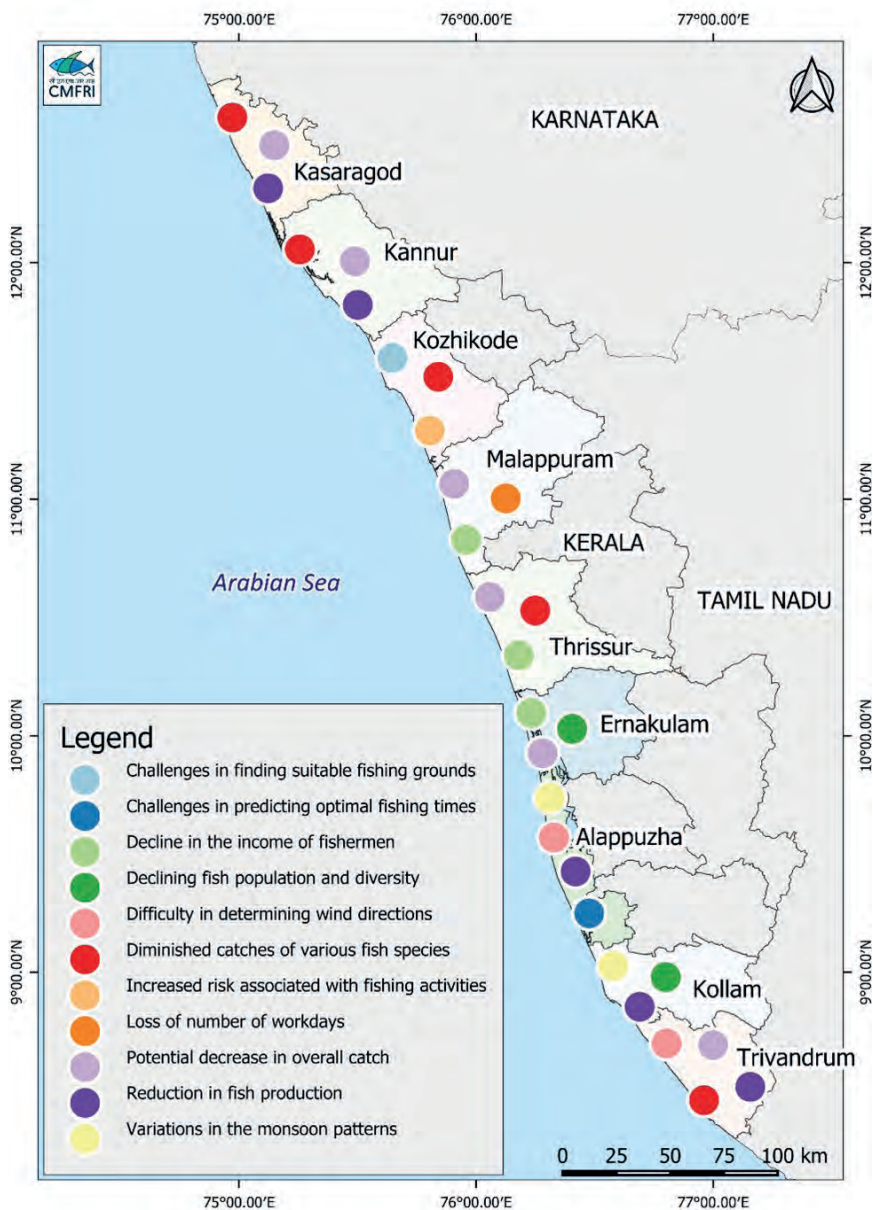
inter-monsoon, and winter monsoon. Long-term satellite observations indicated a significant decline in annual mean DO over the study period ($R^2 = 0.378$), with the highest seasonal DO levels recorded during the winter monsoon (5.3 ± 0.2 mg/l) and the

Climate change impacts and responses in Kerala and Karnataka's coastal fisheries

Global food systems face increasingly complex challenges from climate change, disrupting every stage of the food supply chain and threatening livelihoods and food security. Small-scale fishermen, with limited adaptive capacity, are disproportionately affected, particularly in marine and coastal regions such as Kerala, India. This study assessed the impacts of climate change on Kerala's coastal food systems, with emphasis on existing mitigation measures and adaptive responses. Data were collected from 905 representatives of fishermen's households across all nine coastal districts of Kerala using a mixed-methods approach, ensuring representation across fishing communities. Most respondents identified deforestation, industrial pollution and greenhouse gas emissions as the primary drivers of climate change and reported substantial annual losses in fishing days due to extreme weather events.

Climate change impacts evaluated in coastal and marine systems using service and ecosystem level assessment revealed ocean deoxygenation, impacts on fisheries livelihood, and coastal food systems.

lowest during the inter-monsoon (5.0 ± 0.1 mg/l). The observed decline in DO is primarily associated with intensified human activities, industrial discharges, and climate change-related processes, particularly enhanced thermal stratification and recurrent algal bloom events.



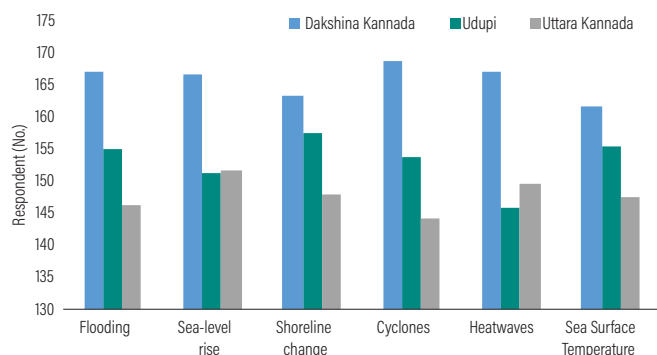
Map showing major climate change impacts in the coastal districts of Kerala

Coastal surveys conducted in Kerala to assess the impact of extreme weather events, covering 905 fisher household representatives across nine districts, reported loss of fishing days, reduced catch and income.

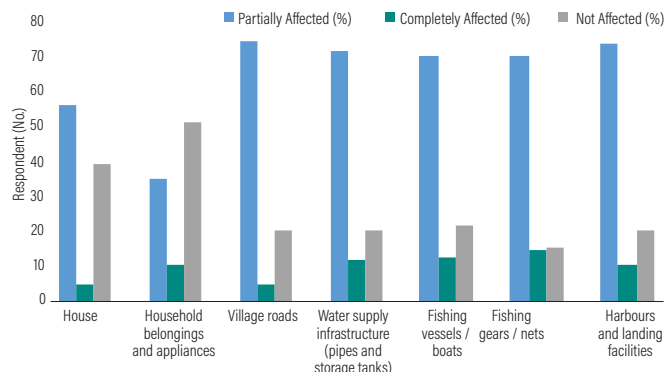
Climate change impacts were also linked to declining fish catches, reduced economic returns and biodiversity loss. Preferred adaptation strategies included improved weather forecasting systems and infrastructure development, while perceptions of government interventions varied. Strengthening education, aligning large-scale climate initiatives with local impacts, and reinforcing community resilience through integrated adaptation and mitigation strategies should be prioritised.

Major climate change coping strategies along the coastal districts of Kerala

Surveys conducted along the Karavali coast of Karnataka, covering 312 respondents across three coastal districts, revealed that 94% perceived noticeable climate change, with shoreline erosion, cyclones, and heat



Severity of climate-induced physical hazards across districts (No.)



Asset losses caused by extreme climate events in the past year (No.)

waves emerging as the most prominent hazards. These changes have directly affected their livelihoods, leading to asset losses and an average annual reduction of 28 fishing days. Fishers reported adapting through practices such as mangrove conservation, saving money, changing fishing locations, and drawing on indigenous knowledge, while emphasising the need for greater capacity-building and livelihood diversification. Mitigation

The Karnataka Karavali survey covered 312 respondents across three districts, with 94% perceiving climate change impacts and an average reduction of 28 fishing days per year.

efforts were generally assigned medium priority, although there was strong support for renewable energy solutions like solar panels (88.8%) and cleaner fuels such as LPG (43.3%), alongside limited acceptance of fleet-based restrictions. The results emphasise the need for inclusive, locally grounded policies that integrate ecological restoration, technological solutions, diversified livelihoods, and disaster preparedness to enhance resilience among Karnataka's coastal fishing communities.

Mangroves' blue carbon potential along the southern coastal Tamil Nadu

The study assessed the mangrove extent, species composition, above-ground biomass, and carbon sequestration potential at three locations in Thoothukudi and two locations in Kanyakumari along the southern coast of Tamil Nadu using multispectral Landsat-8 OLI imagery from 2013–2021. Composite images

derived from Landsat bands were analysed using the Normalised Difference Vegetation Index (NDVI) within open-source GIS platforms (QGIS) to evaluate spatial and temporal changes in mangrove cover. Satellite-derived estimates indicated an increase in average mangrove area from 3.057 km² in 2013 to 4.161 km² in 2021, reflecting an overall expansion accompanied by a total carbon sequestration increase from 132.97 KtC/year in 2013 to 181.00 KtC/year in 2021. The Thoothukudi region accounted for 87.7 % of the total mangrove area, while the Kanyakumari region contributed the remaining 12.3 % in 2021. The results indicate that, despite an overall positive trend in mangrove extent, significant spatial and temporal variability persists, emphasising the critical role of habitat structure, local biophysical and aquatic environmental conditions in regulating mangrove expansion and decline.

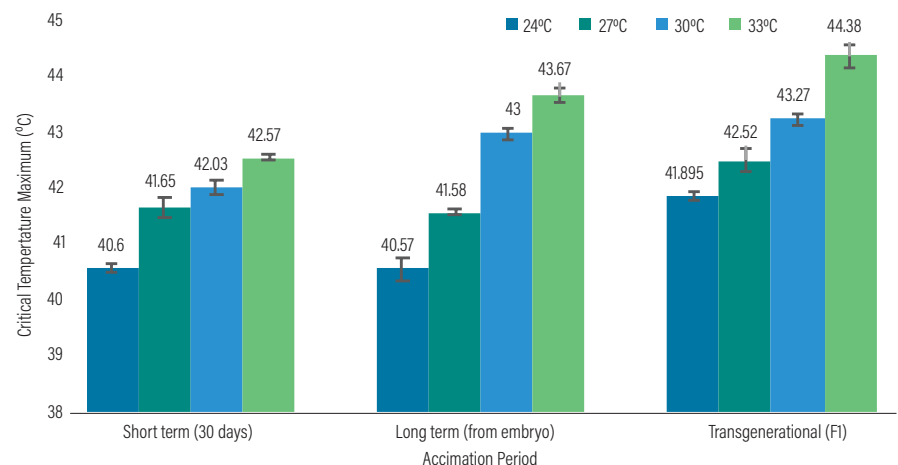
Transgenerational acclimation and thermal tolerance in *Oryzias dancena*

The marine medaka, *Oryzias dancena*, was selected as a model fish to investigate transgenerational effects of climate change on the thermal tolerance of a marine teleost. The critical thermal tolerance maximum of three

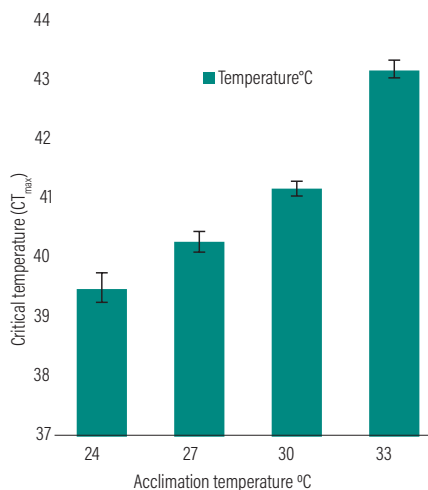
groups of *O. dancena* after short-term acclimation (30 days); long-term acclimation (from embryos to adults) and transgenerational acclimation (from embryos to F1 adults) to four constant temperatures, 24 ± 0.5 °C, 27 ± 0.5 °C, 30 ± 0.5 °C and 33 ± 0.5 °C was estimated in thermostatically controlled tanks (400 l) (0.5 L min⁻¹). The CT_{max} of *O. dancena* after short-term, long-term and transgenerational acclimation to the four temperatures ranged from 40.60 to 42.57 °C, 40.57 to 43.67 °C and 41.89 to 44.38 °C, respectively. The measure of absolute plasticity of CT_{max} and acclimation response ratio of *O. dancena* after short-term, long-term and transgenerational acclimation was 1.97, 3.1, 2.49 °C and 0.28, 9.34 and 0.21 °C, respectively. These results demonstrate the adaptive capacity of *O. dancena* under the projected climate change scenarios.

Thermal tolerance of ornate goby, *Istigobius ornatus*

Many high-value marine ornamental fish species inhabit ecologically sensitive coral reef ecosystems in tropical and subtropical regions, which have been increasingly exposed to episodes of elevated sea surface temperatures in recent years. Understanding the thermal tolerance and acclimation responses of this reef-associated species is crucial for assessing their vulnerability to climate



Critical temperature_{max} of rice fish *Oryzias dancena* after short-term, long term and transgenerational acclimation to four different temperatures



CT_{max} of marine ornamental goby *Istigobius ornatus* after acclimation to four different temperatures

change and evaluating the adaptability of these marine ornamental species to new geographical regions. The critical thermal maximum (CT_{Max}) of *Istigobius ornatus* (mean total length, 46.2, mean body weight, 1.18 g) was estimated following acclimation for 30 days to four temperature regimes. The CT_{Max} of *I. gobius* was found to be 39.5±0.26 °C, 40.28±0.17 °C, 41.2±0.137 °C and 43.22±0.165 °C at 24±0.5 °C, 27±0.5 °C, 30±0.5 °C and 33±0.5 °C, respectively, suggesting that *I. ornatus* exhibits a high capacity for thermal acclimation and is a promising marine ornamental species for aquaculture in tropical regions.

NICRA-SCSP initiative on pond-based mariculture

Under the NICRA-Scheduled Caste Sub-Plan, four ponds were developed at the marine farm of the Calicut Regional Station (RS). Fifteen Scheduled Caste beneficiaries from the nearby villages of Korappuzha and Chemancherry were identified and trained in pond culture practices. Four ponds with a depth of 1.8–2.0 m were developed and stocked with 750 silver pompano (*Trachinotus blochii*) and 500 Asian seabass (*Lates calcarifer*). Beneficiaries actively participated in stocking, feeding, growth monitoring, and harvesting under continuous



Culture pond managed by SC beneficiaries



Training for the farmers

technical guidance from scientists and technical staff of Calicut RS. The fish were fed with pelleted feed throughout the culture period. Silver pompano was harvested after seven months, attaining sizes of 190–225.5 g, and marketed through Matsyafed at ₹350–450 per kg. Partial harvest of seabass was carried out after nine months, with fish reaching 700 g to 1.2 kg and

sold through Matsyafed at ₹400–550 per kg. The culture performance of both species was encouraging, demonstrating the feasibility of pond-based mariculture. The NICRA-SCSP initiative enhanced beneficiaries' skills and confidence in culturing promising marine finfish species, contributing to livelihood diversification and climate-resilient aquaculture development.



Harvested sea bass from the ponds

Economics, Sustainability and Trade

In 2025, India's marine fish landings were valued at ₹69,254 crore at landing centres and ₹97,702 crore at retail centres, with rising unit prices and marketing efficiency (70.88%). Gujarat and Kerala recorded the highest valuation shares, while Indian mackerel dominated species-wise value. The sector generated ₹48,585 crore as Gross Value Added, indicating a strong economic contribution. Operational efficiency varied across mechanised, motorised and non-motorised sectors. Prices showed large variation across species, and marketing efficiency differed across States. Despite sectoral growth driven by markets and technology, price volatility and intermediary margins continue to influence fishers' income.



Sorting of fish catch from a motorised craft at Chellanam fisheries harbour, Kerala

Economics, trade, and stakeholders in the marine fisheries sector: a policy outlook

Project: FRAEED/ETS/05

National-level valuation of marine fish landings

In 2025, the value of marine fish landings was estimated at ₹69,254 crore at the landing centre (LC) level, representing a 10.45% increase over 2024, and ₹97,702 crore at the

Marine fish landings in 2025 were valued at ₹69,254 crore at landing centres and ₹97,702 crore at retail centres, generating ₹48,585 crore as GVA with improved marketing efficiency.

retail centre (RC) level, marking an 8.43% increase. The average unit price increased to ₹194.48/kg at LC (up 7.03%) and ₹274.37/kg at RC (up 5.08%). Marketing efficiency also improved to 70.88%, registering a 1.86% increase compared to 2024.

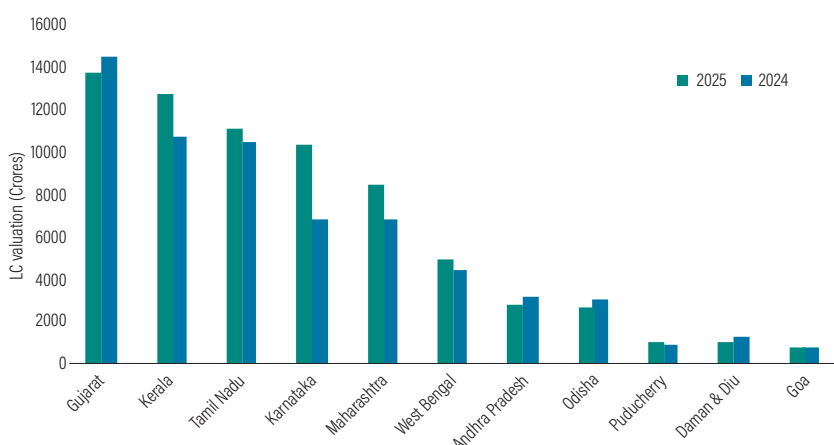
Valuation of fish landings across States

Gujarat recorded the highest price realisation with ₹13,764 crore at the LC level (20% of the total valuation) and ₹19,357 crore at the RC level (20% of the total valuation). Kerala followed with ₹10,751 crore at LC (18%) and ₹16,385 crore at RC (17%). Most states showed an upward trend in valuation compared to 2024.

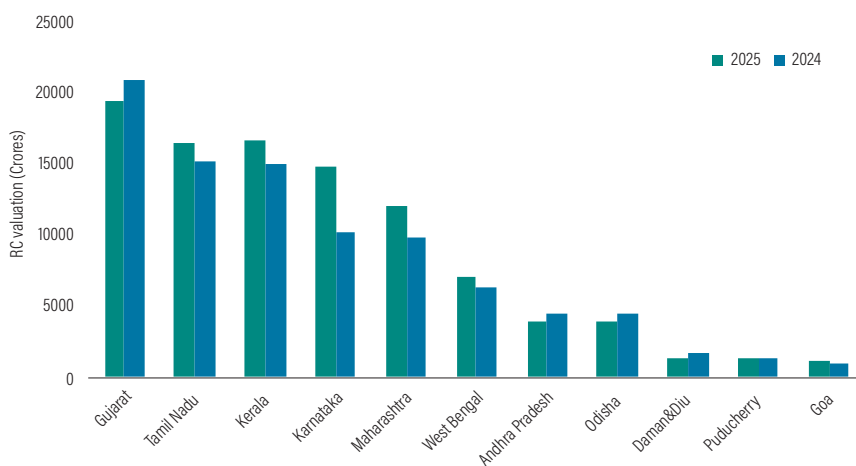
The unit price at both LC and RC levels showed a steady increase during 2010-2025. At LC, the price rose



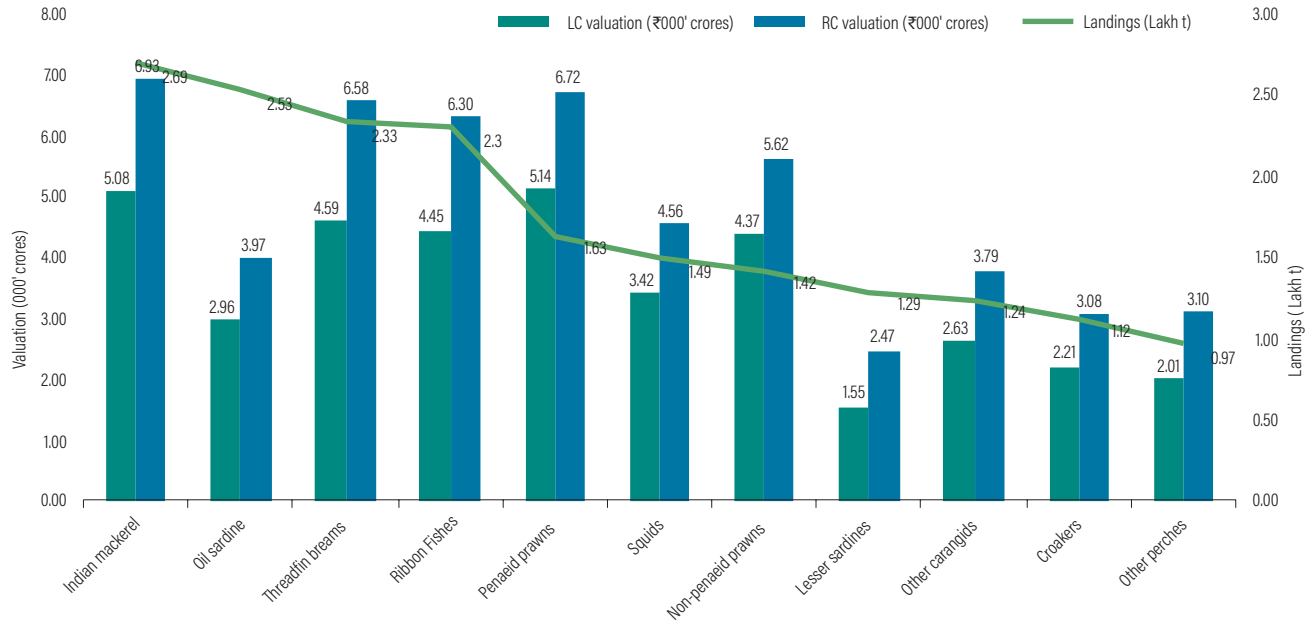
Onboard sorting of fish catch at Digha landing centre, West Bengal



State-wise LC valuation 2025 (₹ crores)



State-wise RC valuation 2025 (₹ crores)



Species-wise landings and valuation

Gujarat and Kerala recorded the highest valuation of landings, while Indian mackerel and penaeid prawns dominated species-wise value contribution.

from ₹67.60/kg to ₹194.48/kg, while at RC, it increased from ₹110.44/kg to ₹274.37/kg over the same period.

Indian mackerel recorded the highest share in the total valuation of marine fish landings at the LC level (7.55%). Penaeid prawns contributed the highest value at LC (7.36%), while Indian mackerel dominated at the RC level (7.04%).

Macroeconomic indicators

The marine fisheries sector contributed a gross value added (GVA) of ₹ 48,585 crores, accounting for 70.16% of the gross revenue.

Macroeconomic indicators of the marine fisheries sector

Indicators	Value
Value at LC level (in ₹ crores)	69,254
Total operating cost (in ₹ crores)	43,713
Net operating income (in ₹ crores)	27,557
Average Capital Productivity	0.63
GVA	48,585
GVA of gross revenue (%)	70.16 %

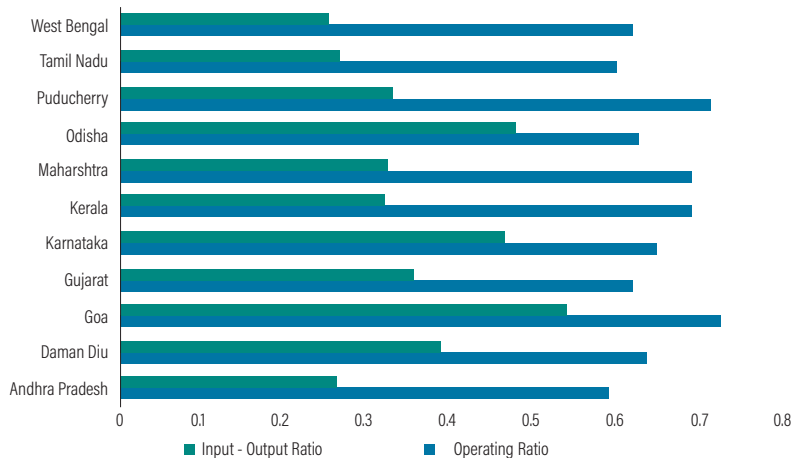
State-wise operational efficiency of marine fishing operations

The operating ratio in the mechanised sector ranged from 0.58 in Andhra

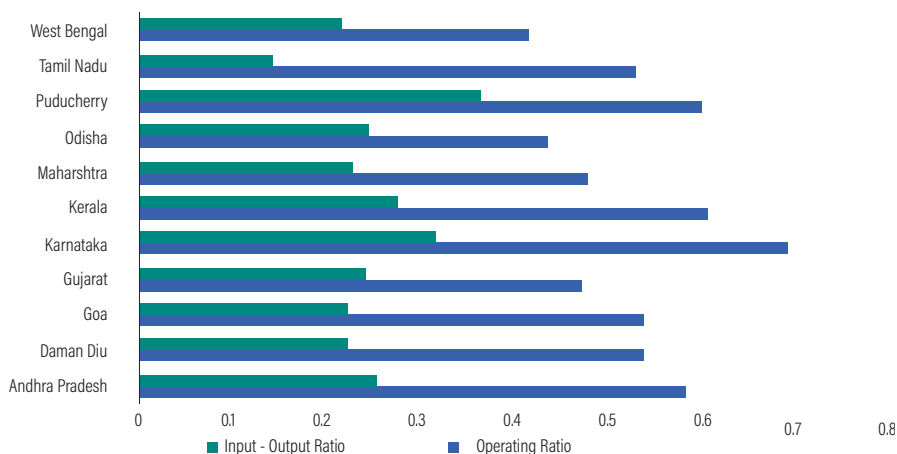
Pradesh to 0.71 in Goa, while the input-output ratio varied from 0.26 to 0.53 in the same states. A lower operating ratio indicates higher capital productivity.

The operating ratio of the motorised sector ranged from 0.41 in West Bengal to 0.68 in Karnataka. The input-output ratio ranged from 0.21 to 0.31, respectively, in the same States.

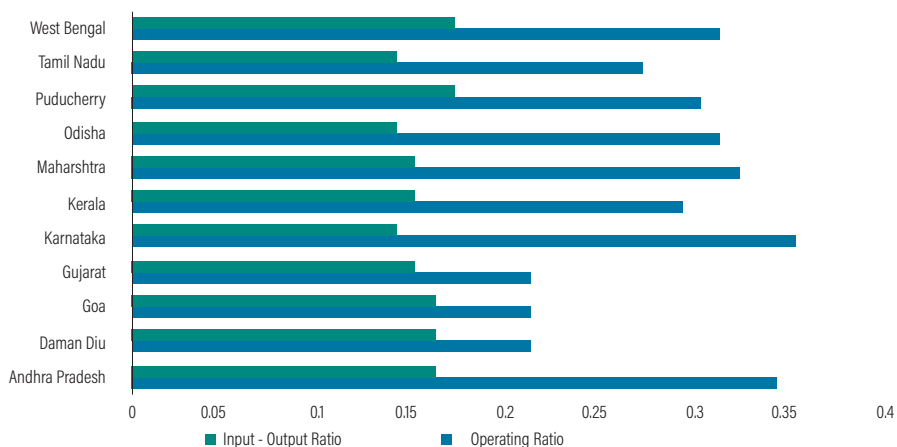
The operating ratio of the non-motorised ranged from 0.21 in Gujarat, Goa, Daman and Diu to 0.35 in Karnataka. The input-output ratio ranged from 0.14 in Karnataka, Odisha and Tamil Nadu to 0.17 in West Bengal.



State-wise operational efficiency of marine fishing operations (mechanised sector)



State-wise operational efficiency of marine fishing operations (motorised sector)



State-wise Operational Efficiency of Marine Fishing Operations (non-motorised Sector)

at Purushottampursumity (gillnet, MD) to 0.57 at Dhamra Fisheries Harbour (gillnet, MD).

Motorised sector

The average capital productivity of the motorised crafts was 0.58, ranging from 0.32 at Chinnamuttom (H & L) to 0.74 at Kulaskarapattinam (Gillnet). The average input-output ratio worked out to 0.26, varying from 0.13 at Colachel (H&L) to 0.58 at Thanur (Ring seine)

Operational efficiency varied across mechanised, motorised and non-motorised sectors, reflecting differences in capital productivity and input-output ratios.

Non-motorised sector

The average capital productivity of the non-motorised sector across selected landing centres was 0.31, ranging from 0.07 at Thengapattinam (gillnet) to 0.82 at Mangalore (Jeppu). The average input-output ratio was 0.10, varying from 0.03 at Vizhinjam (hooks and line) to 0.26 at Puri (gillnet), reflecting lower

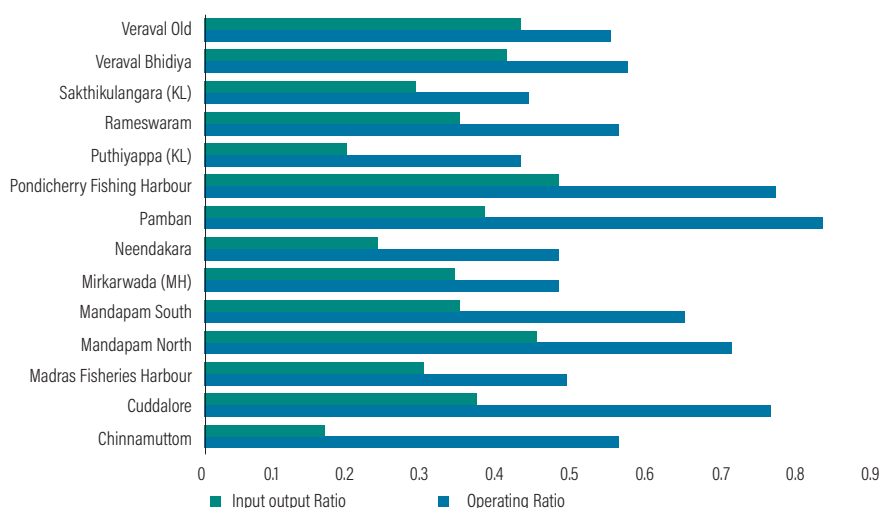
Craft-wise economic performance of marine fishing methods

Mechanised sector

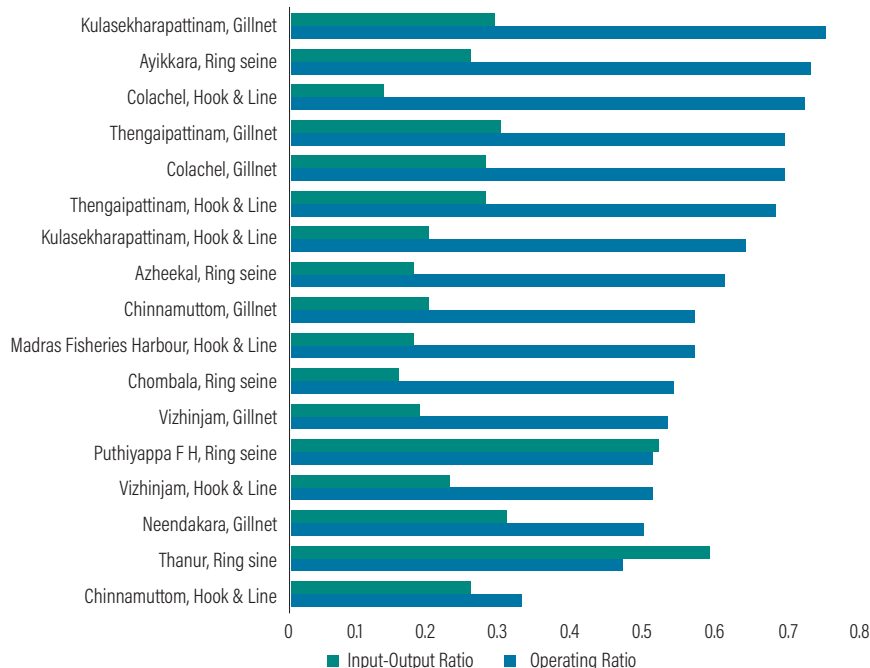
The average capital productivity of mechanised multi-day trawlers across selected landing centres was 0.53, indicating that 53% of gross revenue was spent on operating expenditure. It ranged from 0.20 at Nakhwana (West Bengal) to 0.80 at Malpe (Karnataka). The average input-output ratio was 0.34, varying from 0.04 at Colachel (Kerala) to 0.69 at Malpe (Karnataka).

The average capital productivity of mechanised gillnetters and dolnetters across selected landing centres was 0.46, ranging from 0.18 at Jafrabad

(dolnetter) to 0.73 at Cochin Fisheries Harbour (Kerala). The average input-output ratio was 0.57, varying from 0.08



Operational efficiency of mechanised single-day trawlers



Operational efficiency of the motorised sector

operating costs as most crafts are owner-operated with minimal crew.

Craft-wise gross value added in marine fishing

Gross value added (GVA) is an important indicator of economic performance, representing the income generated by the sector. The sector-wise share of GVA in gross revenue for different marine fishing methods is presented below.

Mechanised sector

The average share of GVA in gross revenue for mechanised trawlers was 66.36%, ranging from 33.12% at Dhamra (multi-day trawlers operating for more than 10 days) to 94.05% at Kakinada (multi-day trawlers operating for 2–5 days).

Motorised sector

The average share of GVA in gross revenue for the motorised sector was 72.55%, ranging from 33.48% at Kakinada (gillnet operations) to 91.50% at Juvvaladinne (gillnet operations).

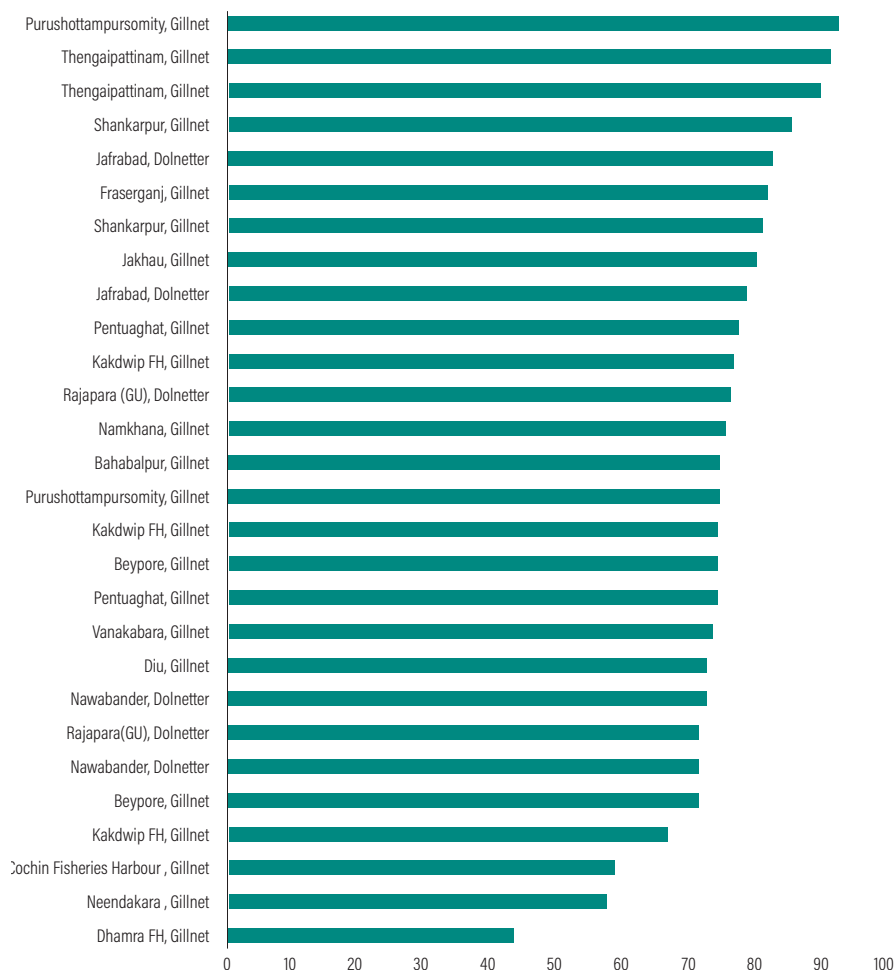
Non-motorised sector

The average share of GVA in gross revenue for the non-motorised sector was 89.01%, ranging from 73.90% at Vijaydurg (gillnet fibre boat operations) to 96.94% at Vizhinjam (hook and line operations).

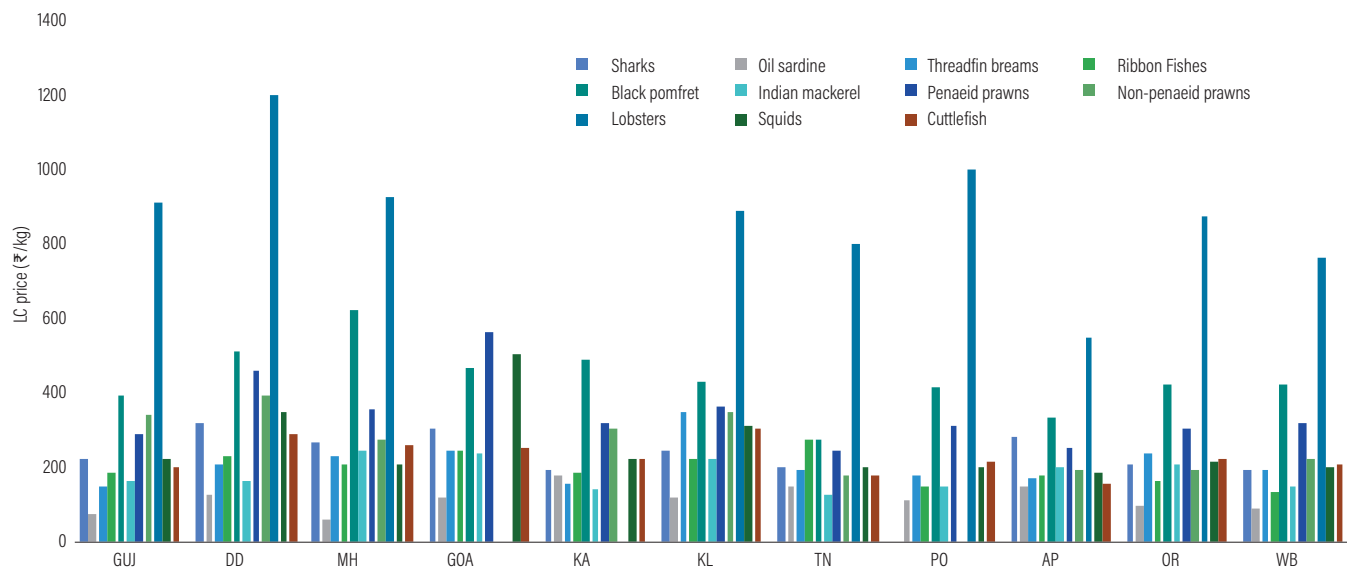
Price behaviour of marine fish

Analysis of landing prices for major species showed significant variation across species and States, ranging from ₹115.23/kg for oil sardine to ₹718.89/kg for lobsters.

The analysis of average RC prices for major species in India showed that lobster realised the highest retail price



GVA as a share of gross revenue in the mechanised sector (dolnetters and gillnetters) across selected landing centres



State-wise landing price behaviour (₹/kg). GUJ- Gujarat, DD- Daman and Diu, MH- Maharashtra, GOA- Goa, KA- Karnataka, KL- Kerala, TN- Tamil Nadu, PO- Puducherry, AP- Andhra Pradesh, OR- Odisha, WB- West Bengal.

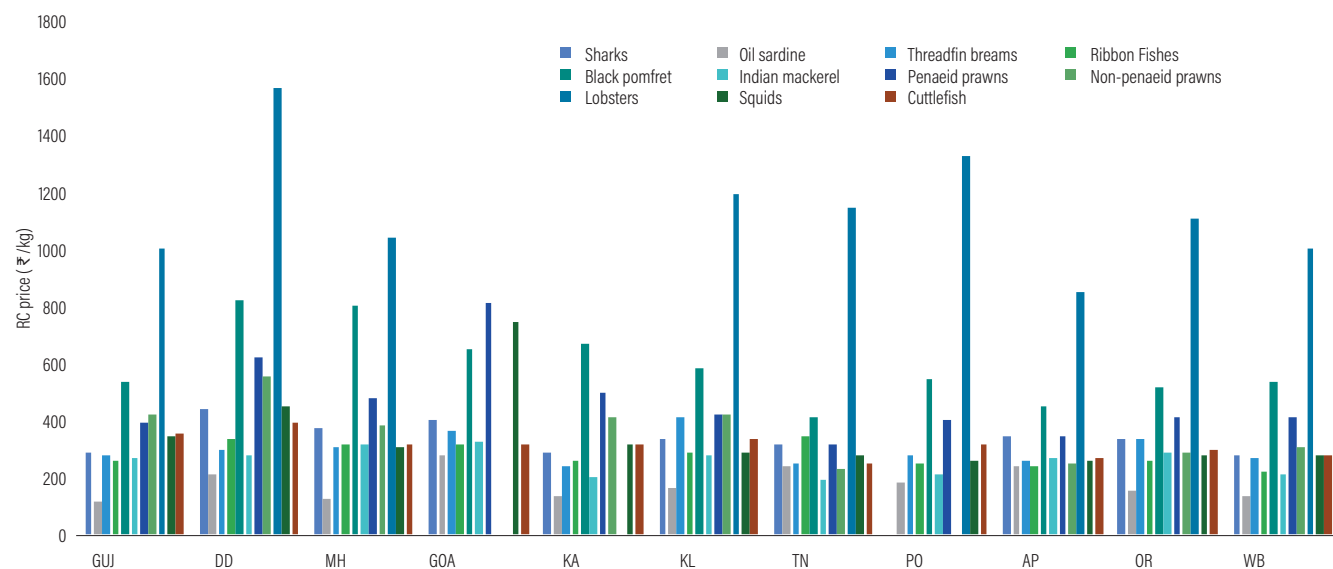


Icing and packing of shrimps at Chellanam landing centre, Kerala

at ₹931.85, followed by black pomfret at ₹594.34.

Marketing efficiency

Marketing efficiency, measured as the fishers' share of the consumer's rupee (FSCR), varied across States for major species. Kerala recorded the highest efficiency (75.92%), followed by Gujarat (71.10%) and West Bengal (70.97%).



State-wise retail price behaviour (₹/kg). GUJ- Gujarat, DD- Daman and Diu, MH- Maharashtra, GOA- Goa, KA- Karnataka, KL- Kerala, TN- Tamil Nadu, PO- Puducherry, AP- Andhra Pradesh, OR- Odisha, WB- West Bengal.



Transporting freshly caught seerfish at Visakhapatnam landing centre



Fish trade at Visakhapatnam landing centre, Andhra Pradesh



State-wise average marketing efficiency of marine fish species in India

Marine fish prices varied widely across species and States, with market spreads influencing the fishers' share of the consumer's rupee.

Species-wise marketing efficiency was categorised as high (>75%), medium (65–75%), and low (<65%). High-value species recorded efficiencies from

77.15% (lobsters) to 75.06% (octopus), while medium-value species ranged from 73.90% (Non-penaeid prawns) to 70.06% (Ribbon fishes). Low-value species showed efficiencies between 62.65% (flying fishes) and 64.90% (*K. pelamis*), with oil sardine at 63.50%.

MoSPI Value of Output (VOP) data indicate that leading fish-producing states have driven structural transformation in India's fisheries and aquaculture sectors through improved

resource use, technology adoption, and market expansion. Fish prices remain more volatile than meat and poultry due to uncertain catches, climate variability, and complex value chains. Price increases—particularly for high-value marine species—have contributed more to output growth than production gains, though a substantial share of price gains accrues to intermediaries. Market surveys show price spreads of 20–68% across landing centres, with lower spreads at Veralal and higher at Cochin, affecting fishers' share of the consumer's rupee.

A panel analysis of real marine fish prices (2011–2025) for 20 major species across coastal states shows generally rising but uneven price trends, moderate seasonality, and short-term volatility driven by supply fluctuations. Strong co-movement between landing and retail prices was observed, with incomplete long-run pass-through and rapid short-run transmission, indicating partially integrated but imperfect marine fish markets with scope for margin adjustments along the value chain.

Fisheries Governance, Livelihood and Gender Welfare

Research on fisheries governance, livelihoods, and gender welfare highlights the complex social, economic, behavioural dimensions shaping India's marine fisheries sector and empowering livelihoods through skill development. The findings showed that fishers' compliance is strongly influenced by cognitive biases, while livelihood conditions vary widely across fishing sectors and regions. Studies also revealed the disproportionate impact of the COVID-19 lockdown on small-scale fishers, the positive role of labour migration in improving livelihoods and technology adoption, and the importance of welfare support systems. The success of inclusive gender-focused initiatives in promoting entrepreneurship, training, market access, and income generation in fisheries is also highlighted.



Mussel culture by women entrepreneurs in St Sebastian Island, Kollam

Applications of behavioural approaches in sustainable marine fisheries stewardship

Project: FRAEED/ABA/06

Understanding cognitive biases is vital for marine stewardship, as they strongly shape fishers' compliance decisions and can lead to unintentional

Behavioural analysis identified eight major cognitive biases influencing fishers' compliance, with present bias and loss aversion emerging as dominant drivers across mechanised, motorised, and non-motorised sectors.

non-compliance despite regulatory awareness. Subject-matter experts assessed eight biases, such as present bias, loss aversion, confirmation bias, availability heuristic, optimism bias, false consensus, anchoring, and perceived lack of deterrence across mechanised, motorised, and non-motorised sectors. Compliance was driven mainly by



Drying Bombay duck is livelihood for fisher women in Gir, Gujarat

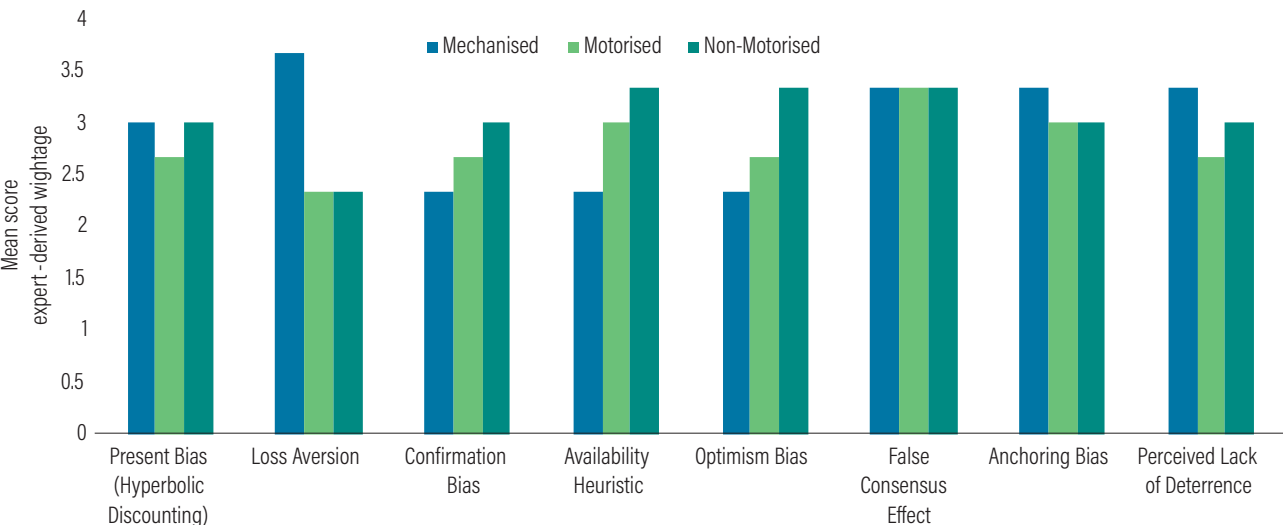
behavioural and psychological factors with clear sectoral differences: present bias dominated all sectors (notably non-motorised and mechanised), loss aversion was strongest in mechanised fisheries due to capital protection concerns, and confirmation bias and availability heuristic were higher among motorised and non-motorised fishers, reflecting reliance on personal and community experience over scientific evidence. Widespread false consensus, anchoring to past practices, and weak perceived deterrence indicate the need for sector-specific compliance strategies.

These insights support developing a Stewardship-welfare hybrid model linking stewardship behaviour with fisheries welfare frameworks.

Livelihood status of marine fisherfolk

Project: FRAEED/LIV/03

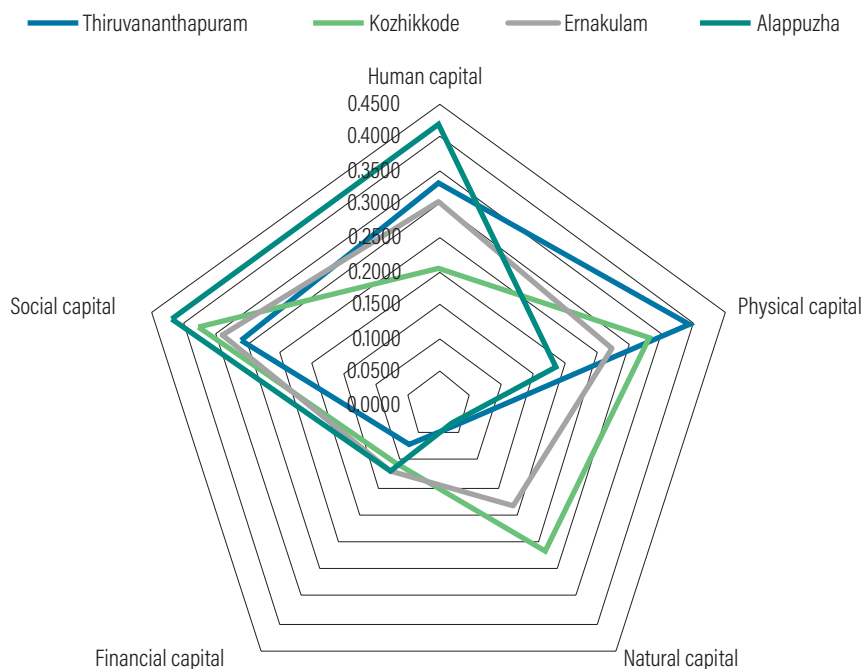
The livelihood status of fishers across coastal India was assessed using five capital assets (human, physical, financial, social, and natural). The results showed wide variation in



Expert assessment of cognitive biases influencing fishers' compliance

income, expenditure, and asset endowments. Mechanised boat owners in Ratnagiri, Maharashtra, reported the highest monthly spending (₹63,045), followed by Kozhikkode, Kerala (₹57,189), while the lowest annual income was recorded among non-mechanised fishers in Balasore, Odisha (₹49,167).

Among allied activities, auctioneers in Ernakulam, Kerala, earned the highest annual income (₹11.67 lakh) and monthly expenditure (₹35,944) whereas, fish-marketing households recorded the lowest monthly expenditure (₹3,838). Overall, fisher households in Kerala showed low financial and natural capital but stronger human and social capital, with Alappuzha and Thiruvananthapuram exhibiting particularly low natural capital due to limited resource endowments.



Livelihood capital indices of marine fisherfolk in Kerala

Impact of 2020 Lockdown on Indian Fisheries and Livelihoods

Project: ICSSR

The 2020 COVID-19 lockdowns paralysed India's marine fisheries, exposing significant governance gaps and systemic inequities. While the entire sector experienced a 32-41% contraction in fishing effort, the impact was disproportionately severe for non-motorised, small-

scale fishers. These marginalised groups experienced a 50.7% decline in landings, with recovery hindered by limited access to credit, disrupted local markets, and a lack of essential resources, including ice and fuel. In contrast, the mechanised and export-oriented sectors recovered more quickly, aided by government interventions, including classifying fisheries as an 'essential service,' reducing seasonal fishing bans from 61 to 47 days, and permitting rotational fishing.

Dynamics of labour migration on employment, livelihoods and resource productivity

Project: ICAR-NASF

This project investigated the impact of labour migration on employment, livelihoods, and resource productivity. A comprehensive multistage stratified random sampling framework, with a total sample size of 7,200 respondents, comprising 3,600 migrant and 3,600 native key informants, was used across 120 centres in 9 coastal states and 3 Union Territories to assess



Fisher activity in a fish landing centre in Kerala

The 2020 COVID-19 lockdown caused a 32-41% decline in fishing effort, with non-motorised small-scale fishers suffering the most severe impacts on landings and recovery.

demand-supply scenarios and gender mainstreaming.

Labour mobility grid

The labour mobility grid revealed clear state-wise sourcing patterns. In Kerala, the majority of migrant

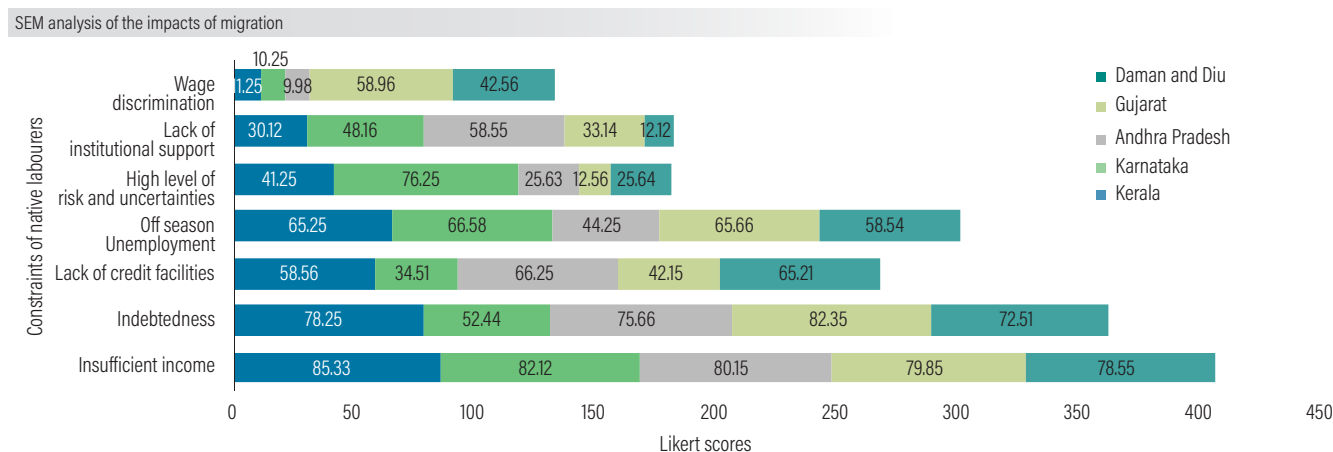
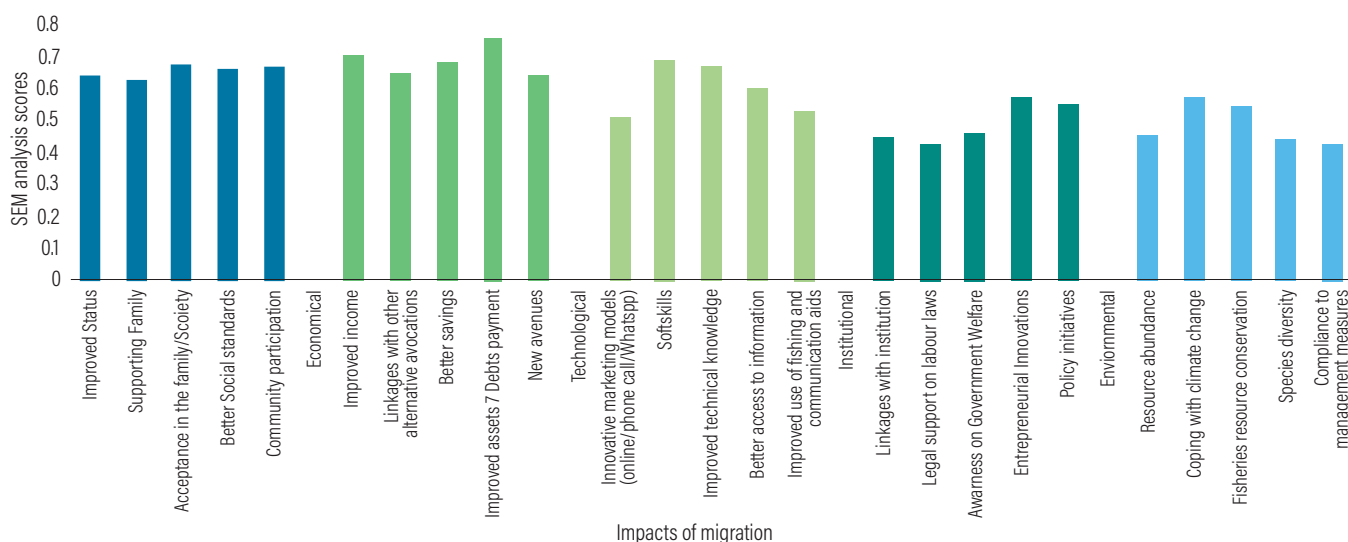
Livelihood assessments across coastal India showed wide disparities in income and assets, with mechanised fishers reporting the highest expenditure and non-motorised fishers the lowest income.

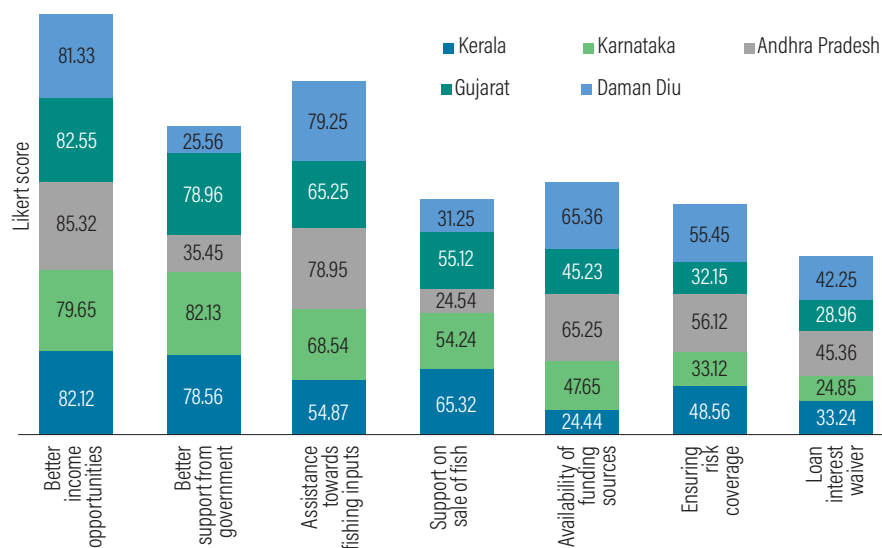
workers came from Tamil Nadu, West Bengal, Odisha, and Assam, with smaller inflows from Karnataka, Jharkhand, and Andhra Pradesh. In Karnataka, migrants mainly originated from Tamil Nadu, Jharkhand, Chhattisgarh, and Andhra Pradesh, with fewer from Kerala, Uttar Pradesh, and Odisha. In Andhra Pradesh, key source states were Odisha, West Bengal, Uttar Pradesh, and Telangana, with minor contributions from Bihar, Gujarat, Maharashtra, and Assam. In Gujarat, migrants largely arrived from Assam, Andhra Pradesh, Uttar Pradesh, and Maharashtra, with smaller numbers from Daman and Diu, Madhya Pradesh, and Haryana. In Daman and Diu, workers from Odisha, Bihar, Uttar Pradesh, Jharkhand, and Andhra Pradesh played a crucial role

in meeting labour needs in both the fishing and processing sectors.

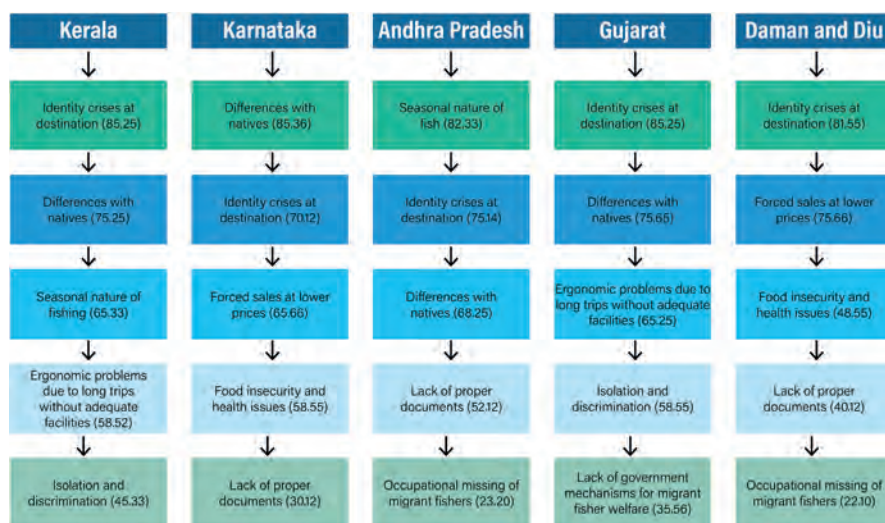
Impacts of migration on varied domains of life

The impact of migration was examined across five major domains –social, economic, technological, institutional and environmental using Structural Equation Modelling (SEM). It was found that migration significantly uplifted fishers by increasing their economic income, assets, reducing debts, and enhancing overall livelihood security. It enabled fishermen to strengthen their social standing, improve technological adoption, and facilitate the adoption of viable fishing practices and expertise.

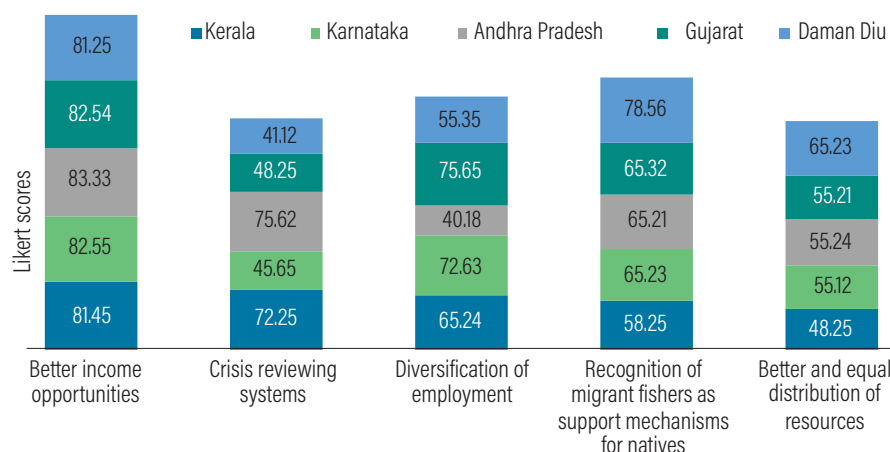




Essential needs of native labourers



Major constraints of migrant labourers



Essential needs of migrant labourers

Constraints and essential needs of native and migrant labourers

Likert scale analysis identified key constraints and needs of native and migrant labourers; bracketed values (e.g., 85.33) denote mean scores, with higher values indicating greater severity or urgency. For native labourers, insufficient income was the foremost constraint in Kerala (85.33), Karnataka (82.12), Andhra Pradesh (80.15), and Daman and Diu (78.55), while wage discrimination was consistently the least concern in these states. Gujarat differed, with indebtedness (82.35) as the primary constraint and risk and uncertainty ranking lowest.

The demand for better income opportunities is the highest priority for all regions except Gujarat, with Andhra Pradesh showing a score of 85.32, showing the strongest need in the Likert scale analysis. In contrast, Gujarat prioritises better government support systems (82.13). Least prioritised needs include loan interest waivers (Karnataka, Gujarat), government support (Kerala), fish sales support (Andhra Pradesh), and funding availability (Daman and Diu).

Identity crises are the primary concern in the Likert scores of major constraints with Kerala (85.25), Gujarat (85.25), and Daman and Diu (81.55). In contrast, Karnataka faces major friction through differences with natives (85.36), while Andhra Pradesh is most affected by the seasonal nature of fishing (82.33). Occupational missing is lowest in Andhra Pradesh (23.20) and Daman and Diu (22.10), while Karnataka struggles least with lack of documentation (30.12).

The demand for better income opportunities is the top priority across all regions, peaking in Andhra Pradesh with a Likert score of 83.33 and Karnataka (82.55). Conversely, crisis

review systems are the lowest priority in Karnataka, Gujarat, and Daman and Diu. Other low-priority needs include resource distribution in Kerala and employment diversification in Andhra Pradesh.

Stakeholder workshop on labour welfare

On 27 August 2025, ICAR-CMFRI hosted a workshop on labour welfare and sustainable fisheries management. The workshop highlighted several initiatives, such as the Prime Minister's CARE Fund, improving housing for workers, scholarships facilitating local youth transitions to other sectors, and QR-enabled Aadhaar cards managing labour mobility while addressing national security. Discussions also noted that while production declined during COVID-19, migrant labour was key to recovery, underscoring the need to formalise and support this workforce for the sector's sustainability.

Empowering coastal livelihoods

Project: PM-VIKAS

Under the Pradhan Mantri Virasat ka Samvardhan scheme, ICAR-CMFRI initiated implementation of the Matsya Shakthi project in the coastal areas of Thiruvananthapuram, Kerala, to empower 690 minority fishers through skill development and vocational training. The scheme was inaugurated by Shri George Kurian, Minister of State for Minority Affairs and Fisheries, Animal Husbandry and Dairying, Government of India, on 26 August 2025



Shri George Kurian, Minister of State, launching the Matsya Shakthi project

at the Vizhinjam Regional Centre of ICAR-CMFRI.

Optimisation and innovation for blue economy

Project: BOBP-IGO

The project, 'Fishery management regimes: optimisation and innovations for the blue economy in the Bay of Bengal region', established a multi-country platform across India, Bangladesh, and Sri Lanka. Field studies in Tamil Nadu, West Bengal, Jaffna (Sri Lanka), and Chittagong (Bangladesh) addressed resource depletion and jurisdictional gaps.

Gender mainstreaming

Project: SIT Hub DBT

The project advanced inclusive livelihoods for the transgender/ LGBTQIA+ community by profiling 200 stakeholders, prioritising fish value addition, and developing 22 microenterprise plans. Under the DST-funded STI Hub (Ernakulam), 84 enterprises using 12 technologies were set up across eight districts, supported by 141 trainings for 490 beneficiaries and CMFRI-ATIC market linkages, enhancing technology uptake, income, and fisheries-based livelihoods.



DST Chairman visiting the SIT Hub project site in Ala



Stakeholder workshop on fisher welfare

Tribal Sub-Plan and Scheduled Caste Sub-Plan

ICAR-CMFRI implemented TSP and SCSP schemes across its 22 centres, promoting aquaculture, mariculture and livelihood diversification for SC/ST communities. Activities included cage farming, biofloc, seaweed culture, bivalve farming, crab and lobster fattening, ornamental fish culture and input distribution, benefiting hundreds of families and generating substantial income, employment and resource efficiency through technology transfer and capacity-building initiatives.



Harvest of Indian pompano from a beneficiary's cage under the SCSP scheme

Activities under tribal sub-plan and scheduled caste sub-plan schemes

Tribal Sub Plan (TSP) and Scheduled Caste Sub Plan (SCSP) schemes of ICAR-CMFRI were implemented through its 22 centres across the country, of which nine were under TSP and 13 under the SCSP. The Schemes aim to overall development of SC/ST communities through direct benefit by implementing various fish farming technologies and allied support at farmers field during 2025.

Tribal sub plan

Kochi: Farming of pearlspot and tilapia was carried out in nine cages at Vaikom and Thandasserry for *Ulladan* and *Malayaran* tribes, generating ₹1.5-2.0 lakh/cage. Nine

ICAR-CMFRI's TSP and SCSP initiatives in 2025 strengthened SC/ST livelihoods through fish farming, mussel farming and skill development, which paved the way for enhancing their income.

biofloc units at Vaikom, Idukki and North Paravoor were stocked with *Channa striatus*, yielding ₹1.5–2.0 lakh per unit. A renovated pen-cum-pond system at Thathappally (1,700 m²) produced 1.9 t of murels in 10 months, sold at ₹450/kg, generating a net profit of ₹10-12 lakh.

Calicut: Murrel pond culture was demonstrated for five beneficiaries of the Karimpalan tribal community, achieving significant growth with zero mortality. The women's self-help group (SHG) "Arowana" was



Channa seed stocking in biofloc unit

trained in freshwater ornamental fish culture.

Lakshadweep: A cage culture demonstration in a 2 × 2 m floating cage was established at Agatti Island, featuring silver pompano and carangids, along with hands-on training in cage fabrication, mooring,

feeding, and health monitoring. An integrated mariculture demonstration using 15 HDPE rafts for *Gracilaria edulis* was initiated at Kavaratti Island.

Mumbai: Distributed fishing implements to 48 Malhar Koli and Warli tribal families, and oyster depuration units to 10 families,



Farming of the seaweed, *Gracilaria edulis*, on HDPE rafts at Lakshadweep



Hands-on training on aquarium fabrication for Sidi tribals

improving income and market value, and conducted awareness programmes on responsible fishing.

Veraval: Capacity-building on aquarium fabrication and entrepreneurship for the Sidi

tribal community resulted in the establishment of an aquarium shop, leading to enterprise creation.

Madras: Asian seabass culture in six sea cages for Irular tribes yielded 0.606 t of fish, generating ₹3.06 lakh.



Harvest of grey mullet by beneficiaries

Distribution of FRP catamarans and on-site training strengthened technology adoption.

Visakhapatnam: Nine cages of Indian pompano operated by Yenadi tribal groups produced 5 t of fish, generating ₹15.5 lakhs, benefiting 45 families.

Technology transfer and capacity-building enabled community-led fisheries, improving productivity, entrepreneurship and socio-economic resilience.

Puri: Implemented integrated aquaculture and poultry activities for 42 tribal beneficiaries, generating ₹10.85 lakh.

Scheduled caste sub plan

Kochi: Cage and pen farming of Asian seabass, pearlspot, tilapia and *Caranx* were undertaken in 40 cages, two pen units and 11 biofloc units, including murrel farming at Perumbavoor, with the distribution of more than 60,000 fish seed. Cage farmers earned ₹2-5 lakh per cage through partial harvesting, while biofloc units generated ₹2-3 lakh each.



Handing over FRP catamaran to tribal beneficiaries



DDG, Dr. J. K. Jena, distributing wooden canoes to beneficiaries at Kochi

Fishing implements (canoes) and aquaculture inputs (nets, solar panels, weighing balances, feed) were also distributed. A mussel harvest mela at Kodungallur benefited 15 SC families, while black clam relaying in Vembanad Lake benefited 17 SC groups comprising 100 families.

Calicut: Two crab fattening units and cage and pen culture systems

were established, and seed of high-value species was supplied. Training in net mending and boat repair was imparted, and poultry units were provided to diversify income sources.

Mangalore: Estuarine cage culture of pompano and bivalve farming was demonstrated, and the distribution of fishing equipment was undertaken at Mangalore. Six SC beneficiaries

participated in cage culture demonstrations, while 72 beneficiaries received fishing equipment. Awareness programmes reached over 90 participants.

Karwar: Cage culture of seabass was undertaken and generated income of ₹42,000 to ₹80,100/unit/partial harvest, and distributed canoes and deep freezers.

Interventions such as seaweed farming and cage culture created scalable, income-generating models for inclusive development.

Mumbai: Extended livelihood support through distribution of ice boxes and gill nets to 10 SC families in Ratnagiri district.

Veraval: Demonstrated intercropping of silver pompano in shrimp ponds, improving resource-use efficiency and income diversification. Cage sites

Harvest of biofloc-farmed *Channa striatus* at Perumbavoor

Bivalve farming beneficiaries at Koduganallur



Demonstration of bivalve farming at Mangalore



Distribution of canoes to SC beneficiaries



Harvested tilapia from cages

were surveyed, mooring systems installed, and beneficiaries trained in cage installation, cage maintenance and culture.

Vizhinjam: Technical support to SC SHGs enabled cage and pen culture of seabass, pompano, trevally, tilapia, and murrel, and farmers earned ₹1.1 to ₹1.94 lakh through harvest.

Tuticorin: Sea cage culture of snub-nose pompano produced 418 kg, generating ₹1.31 lakh, and also undertook crab and lobster fattening, seabass cage culture and murrel pond culture.

Other locations: Mandapam: About 3,145 seaweed rafts were distributed to 161 families across Tamil Nadu, producing 185 t of dry seaweed worth ₹185 lakh per year, contributing to significant carbon sequestration, while eight seabass cages yielded 2.04 t of fish, generating ₹7.8 lakh off Madras. Achieved revenues exceeding ₹15 lakh through pompano cage and pond culture at Visakhapatnam. Supported integrated aquaculture and poultry activities for 57 SC families, generated ₹11.04 lakh at Puri, while at Digha, hands-on training, input distribution and post-harvest support were given to SC fishers.

Harvest of farmed *Lates calcarifer* at Chengalpattu district, Tamil Nadu

Krishi Vigyan Kendras

Activities of the two *Krishi Vigyan Kendras* under the administrative fold of ICAR-CMFRI resulted in significant improvements in extension and livelihood support in the Lakshadweep Islands and Ernakulam district in Kerala. Interventions focused on sustainable farming, seaweed cultivation, value addition, and innovative practices such as lemongrass farming and agri-waste utilisation. Capacity building, demonstrations, and awareness programmes strengthened farmer adoption, entrepreneurship, and market linkages. These efforts enhanced rural livelihoods, promoted resource efficiency, and supported climate-resilient and community-based agricultural and fisheries development.



On-farm trials conducted on the preparation of soilless media for cultivation

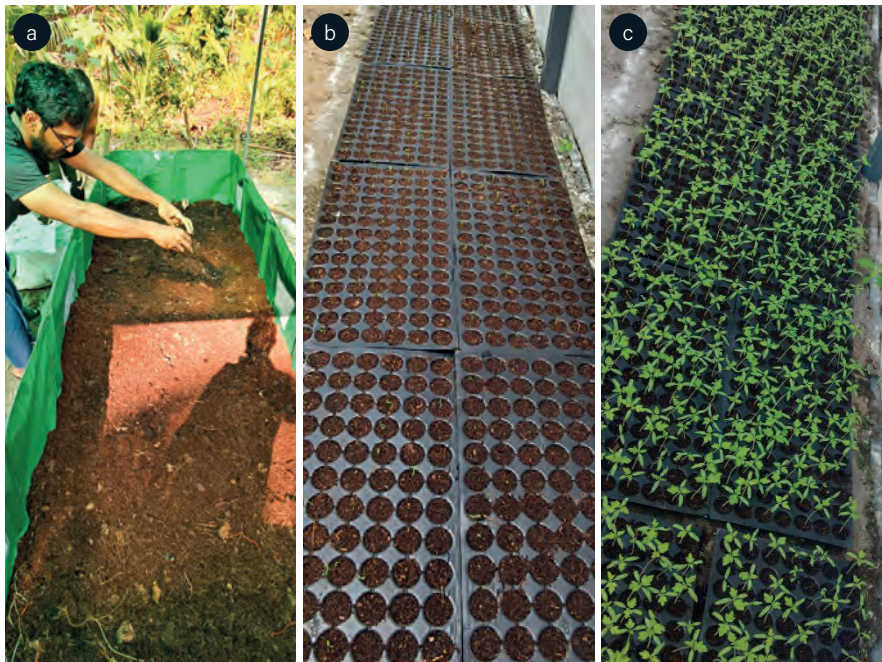
Krishi Vigyan Kendra, Lakshadweep

In the reporting period, ICAR-CMFRI-KVK, Lakshadweep conducted On-Farm Trials (OFTs), Frontline Demonstrations (FLDs), training, and extension activities. A comprehensive action plan included extension programmes, advisory services, and promoting rural entrepreneurship in coconut and fish value addition. The KVK collaborated with ICAR-CPCRI, ICAR-IIHR, ICAR-CIFT, and local agencies, with a focus on seaweed farming. In 2025, it held five OFTs, 14 FLDs, and 60 training and extension activities.

The *Krishi Vigyan Kendra*, Lakshadweep conducted on-farm trials, frontline demonstrations, and training programmes to promote sustainable farming, including seaweed farming, vegetable cultivation with coir-based media, and coconut-based products for livelihood enhancement.

On farm trails

The On-Farm Trials (OFTs) were on soilless media, feed supplements for poultry, seaweed farming, and improved virgin coconut oil production. One OFT compared locally available growing media with coir-based media, showing the latter's favourable pH and nutrient availability. Vegetable crops like chilli, tomato, and lady's finger grown in coir-based media exhibited significantly better growth. Another OFT assessed *Gracilaria edulis* farming in the Chetlat lagoon, showing a 20–25-fold biomass increase per



On-farm trials conducted. a. preparation of soilless media, b. Preparation of seed-bed, c. Germination of vegetable crops in coir medium

harvest cycle, indicating potential for multiple annual crop cycles. A Farmer Field School (FFS) was also established to support participatory learning and technology adoption.

Frontline demonstrations

The innovations involved in the demonstrations were on proper icing in fish, bakery products from coconut, nutrient-rich products from Moringa,

black soldier fly and others. A frontline demonstration on innovative coconut-based products was conducted with a primary focus on coconut value addition to enhance livelihood opportunities. The demonstration involved the preparation of two bakery products, viz., Coconut Peda and Desiccated Coconut Copra, which facilitated the identification and popularisation of new coconut-based products. Vermicompost production using recalcitrant coconut leaves using



Demonstration on coconut value-added products. a. Women participants in hands-on training, b. Value-added coconut products



Demonstration on vermicompost production using coconut leaves

the earthworm *Eudrilus* sp. was found to be feasible. The recovery from the coconut leaf biomass was found to be 70%.

Vegetable nursery, soilless media and composting units

The KVK Lakshadweep established

its first vegetable nursery at FPO Kavaratti Island to ensure quality planting materials and serve as a demonstration unit for farmers. Under ICAR-CMFRI's TSP and external funding, the KVK set up a 5 t soil-less media production unit and a 2 t vermicompost production unit in Kavaratti to support crop production in sandy, nutrient-poor soils, enhancing water and nutrient

management. Technical guidance for these units was provided by ICAR-IIHR, Bengaluru, and ICAR-CPCRI.

Agri Input Shop

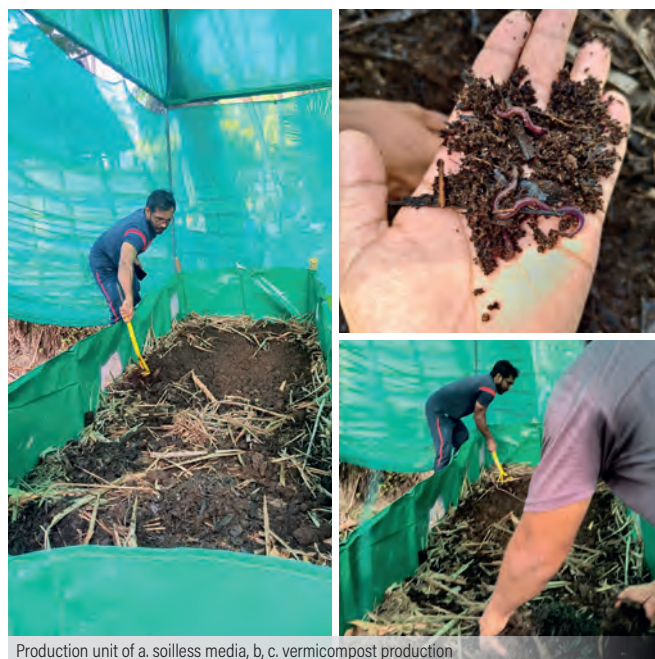
The KVK Lakshadweep, in collaboration with the FPO, Kavaratti, has established the first Agri Input Shop in Lakshadweep. The shop



Demonstration of *Gracilaria edulis* farming. a. *Gracilaria* seeding to farmers b. Ready-to-harvest stage (Chetlat island), c. Harvesting of *Gracilaria* from the raft system (Kadmat island), d. Raft-based seaweed farming at Chetlat Island



Plant nursery established



Production unit of a. soilless media, b. c. vermicompost production

An Agri Input Shop was established in Lakshadweep to provide certified agricultural inputs, and the *Viksit Krishi Sankalp Abhiyan* campaign raised awareness on agricultural technologies and government schemes, besides identifying major issues.



Agri Input Shop established by the KVK Lakshadweep

supplies quality seeds, seedlings, biofertilizers, vermicompost, plant protection inputs, soilless media, and farm tools. This initiative ensures timely access to certified inputs, reduces dependency on mainland supply and promotes sustainable and organic farming. This shop is the first of its

kind in Lakshadweep. The KVK has supported the FPO in the purchase of the initial inputs for sale.

VKSA campaign

Under the *Viksit Krishi Sankalp Abhiyan*, awareness campaigns were

conducted to promote improved agricultural technologies and government schemes in all the islands of Lakshadweep. This is the first time such a campaign was conducted by KVK in all the islands with the support of the Department of Agriculture and other development departments.



Trainings

A special annual training programme was organised on advanced vegetable cultivation to encourage the adoption of recommended practices. During this reporting period, vegetable seeds were distributed to the farmers on all the islands. A combined training programme involving all technologies were organized in different occasions. The KVK organised 60 programmes, involving 1835 farmers and farm women.



Viksit Krishi Sankalp Abhiyan valedictory session in the presence of Union Minister of State Shri George Kurian in Kavaratti Island



Training on advanced cultivation of vegetables

Animal health camp

The KVK Lakshadweep organised an animal health camp at Kavaratti under the TSP of ICAR-CMFRI. About 1897 animals (dairy cows, goats, cats, poultry birds and other pet birds) were treated, and supplements were provided benefitting 117 farmers and other stakeholders. This camp was organised by the KVK for the fourth year consecutively. There has been a higher reception for this extension advisory role.

National and regional award to KVK-Lakshadweep

The KVK-Lakshadweep has been conferred with the Best KVK: National Award and the Best KVK Award for Zone XI. The honour comes as part of the esteemed NAAS–Dhanuka Award for excellence in agricultural extension, a recognition of innovation, dedication, and impactful community outreach in agriculture and allied sectors.



Animal health camp held at Kavaratti Island



Scientist-In-Charge, KVK-Lakshadweep, receiving the best KVK National Award and the Best KVK Award for Zone XI

Krishi Vigyan Kendra, Ernakulam

Lemongrass farming as a mitigation strategy in human-elephant conflict areas

In response to increasing wild elephant raids in eastern Ernakulam, ICAR-KVK Ernakulam launched

The *Krishi Vigyan Kendra* Ernakulam promoted lemongrass farming to mitigate human-elephant conflict, establishing a hydro-distillation unit for essential oil extraction, benefiting small farmers.



Lemongrass oil hydro-distillation unit

a SCSP-supported programme to promote lemongrass cultivation as an elephant-unpalatable and sustainable alternative crop. The Krishna variety of lemongrass has

been successfully grown over five acres at Vavely, Kottappady Grama Panchayat. A 500 kg hydro-distillation unit was established in collaboration with CSIR-CIMAP, Lucknow, under the Nationwide Aroma Mission, with support from ICAR-ATARI. The initiative is being implemented with the Chembakamithra Lemongrass Self-Help Group (SHG), which will manage the distillation unit and cultivation. This facility will serve as a common service platform for small farmers, enhancing oil extraction and future value addition. With the KVK's prior success in mechanised lemongrass harvesting, the initiative aims to reduce labour constraints, boost profitability, and improve resilience in forest-fringe farming systems.



Stakeholders with KVK and CIMAP officials collecting lemongrass oil



Mechanised pineapple silage production unit

Mechanised pineapple leaf silage production initiative

On 22 October 2025, ICAR-KVK Ernakulam launched a mechanised pineapple leaf silage demonstration unit at Kottappady, converting pineapple leaves—an abundant by-product—into nutrient-rich silage. This initiative supports the Swachh Bharat Abhiyan by transforming



Experience sharing by a farmer entrepreneur



Resource persons speaking at the Buyer Seller Meet

farm waste into a valuable resource. Ernakulam district, with 5,390 ha of pineapple cultivation, produces nearly 200,000 tonnes of leaves annually, typically discarded. While pineapple leaves have good fodder value, their short shelf-life limits use. Silage preparation extends its shelf life to one year, ensuring year-round fodder availability. The unit uses a KVK-designed hydraulic press to compact chopped leaves into airtight drums for fermentation, reducing labour and

eliminating plastic silo bags. Feeding trials showed improved milk yield and fat content. This eco-friendly model helps enhance the livelihoods of pineapple growers and dairy farmers while converting waste into wealth.

Buyer-Seller Meet

ICAR-KVK Ernakulam organised Buyer-Seller Meet 3.0 from 1 to 3 February 2025 at ICAR-CMFRI, Kochi, to address marketing

challenges among FPOs, Self-Help Groups, and farmer-entrepreneurs. The event provided a platform for producers to connect with retail buyers and showcase locally produced farm products and agro-inputs. A total of 38 SHGs, FPOs, and individual farmers participated, along with around 80 retail buyers. The programme included expert sessions on government schemes, digital marketing, banking, credit facilities, and financial management, alongside experience-sharing sessions for peer learning. The event displayed a diverse range of products, strengthening market linkages and supporting farmer-led agribusiness development.

VKSA campaign

ICAR-KVK Ernakulam organised the *Viksit Krishi Sankalp Abhiyan* (VKSA) from 29 May to 12 June 2025, in collaboration with the District Agriculture Department and ATMA, to strengthen farmer outreach and



Dr Raghavendra Bhatta, DDG, ICAR, addressing farmers



The experts and farmers during the VKSA gathering

The KVK Ernakulam organised the *Viksit Krishi Sankalp Abhiyan* and a Buyer-Seller Meet to strengthen farmer outreach, market linkages, and awareness of government schemes, while also establishing school fruit gardens to promote healthy food practices

awareness. A total of 40 programmes were conducted across 92 villages, benefitting approximately 9,000 farmers through farmer-scientist interactions, field demonstrations and awareness programmes on government schemes. Agricultural drone demonstrations for nutrient application and plant protection spraying emerged as a major attraction. The campaign was further strengthened by the participation of senior ICAR scientists and dignitaries, including Dr G. Byju (CTCRI), Dr Raghavendra Bhatta, Deputy Director General (Animal Science), ICAR, Dr

V. Venkatasubramanian (ICAR-ATARI, Bengaluru), Dr George Ninan (ICAR-CIFT), and Dr Grinson George (ICAR-CMFRI). Farmer feedback highlighted key concerns such as price volatility, lack of cold storage infrastructure, pest and disease incidence, livestock health issues, and monsoon-related fish mortality, providing valuable inputs for planning future extension and research interventions.

Establishment of fruit gardens in schools

ICAR-KVK Ernakulam, in collaboration with Prof. K. V. Thomas Vidyadham Trust, organised fruit garden programmes on 3 and 20 December 2025 at S.D.P.Y. K.P.M.H.S. School, Edavanakkad, and Chinmaya Vidyalaya, Vaduthala, involving 20 schools. Each school received ten fruit tree saplings and curry leaf saplings, along with organic manure, tree guards, and planting guidelines. The programmes were inaugurated by Shri B. Kashi Vishwanathan and Shri Madhu S. Nair. Ongoing technical support from ICAR-KVK ensures the gardens' long-term success.



Distribution of curry leaf saplings to students at Chinmaya Vidyalaya, Vaduthala



Cochin Port Trust Chairman, Shri B. Kashi Vishwanathan, planting fruit saplings

Institute Technology Management Unit

The active role of the Institute Technology Management Unit resulted in improvements in technology management through strengthened intellectual property protection, technology commercialisation, and industry collaboration. Multiple innovations in aquaculture, marine biotechnology, and sustainability were patented and transferred to industry, enhancing real-world application of research outputs. These efforts effectively linked research with societal needs, promoted entrepreneurship, and enhanced the impact of marine fisheries and mariculture innovations.



ICAR-CMFRI transfers aquafeed technology to M/s Bhairav Renderers, Coimbatore

Activities of Institute Technology Management Unit

The Institute Technology Management Unit (ITMU) of ICAR-CMFRI serves as the nodal body for intellectual property management and technology transfer. The institute has developed diverse marine technologies across resource management, environmental sustainability, aquatic health and mariculture, protected through intellectual property rights. ITMU promotes IPR awareness, supports filing and maintenance of patents, trademarks and copyrights, and facilitates technology licensing to link innovations with industry. It also manages patent informatics

The Institute Technology Management Unit of ICAR-CMFRI manages intellectual property and facilitates technology transfer to industry, linking research with societal needs.

through updated IP databases, enabling informed research planning and commercialisation. The major milestones achieved in 2025 are outlined below.

Patents, designs, and trademarks

During the year, ICAR-CMFRI achieved significant milestones in securing patents, design rights and trademark registration. Securing these IP rights reflects the Institute's sustained efforts in translating cutting-edge research into protected, application-ready solutions for the marine fisheries and aquaculture sectors.

Patents, designs, and trademarks granted during 2025

Name of Innovation/ Technology/ Product/ Variety	Application/ Registration No.	IPR Granted/ Registered
A copepod nauplii accumulating and harvesting device	Design Patent No. 421026-001 in class 10-05	Granted and in-force
A process and formulation to prepare vibrio antagonistic micro feed for finfish and shellfish larvae using marine bacteria and a product thereof	Indian patent grant No. 558580	Granted and in-force
Anticoagulant composition and a process for its preparation	Indian patent grant No. 574177	Granted and in-force

Technology commercialisations

During the reporting period, ICAR-CMFRI achieved significant progress in technology commercialisation through the successful transfer of 11 technologies and know-how to

industry and entrepreneurial partners. These achievements, formalised through Memoranda of Understanding (MoUs) and supported by licence fee and royalty mechanisms, testifies the Institute's strength in translating research outputs into commercially viable and sector-relevant applications.

List of technologies/know-how commercialised

No.	Name of Technology/ Know-how	Name of Contracting / Industry party	MoUs/ Revenue earned (₹)
1	Cadalmin™ BSF pro aquafeed technology	M/s Bhairav Renderers, Coimbatore, Tamil Nadu	MoU (5 years) @ ₹ 1,00,000 licence fee and 5% royalty
2	Live holding and Marine Aquarium husbandry practices for hatchery-raised finfish	Pureflow Biofloc Innovations, Mysuru, Karnataka	MoU (3 years) @ ₹ 2,00,000 licence fee
3	Production and utilisation of fish feeds using Black Soldier Fly Larvae (BSFL) protein	Mekkara Fish Farm, Thrissur	MoU (5 years) @ ₹ 1,00,000 licence fee and 5% royalty
4	Artificial reef-based coastal habitats restoration and sea ranching on the Indian coast	Global Oceanic Adventures & Environmental Conservation (GOAEC) Andhra Pradesh	MoU (5 years) @ ₹ 1,18,000 licence fee
5	Artificial reefs module designing & 3D printing technology	Tvasta Manufacturing Solutions Pvt. Ltd, Chennai, Tamil Nadu	MoU (3 years) @ ₹ 25,000 license fee
6	Black Soldier Fly larvae-based biowaste valorisation technology	Agripoint G3 Technologies Pvt Ltd., Kerala	MoU (5 years) @ ₹ 1,18,000 licence fee and 5% royalty
7	Recirculating Aquaculture System (RAS) technology	Happy Ebi Technologies India Private Limited, Andhra Pradesh	MoU (3 years) @ ₹ 1,00,000 licence fee
8	Seaweed farming technology in selected places of coastal Andhra Pradesh	SEAVIZ Agri Tech Pvt Ltd, Telangana, India	MoU (3 years) @ ₹ 25,000 license fee
9	Nutraceutical product Cadalmin™ Immuneboost extract (IBe)	SNAP Natural and Alginate Products Private Limited, Ranipet, Tamil Nadu	MoU (10 years) @ ₹ 10,00,000 licence fee and 5% royalty
10	Large-scale seed production of Indian pompano (<i>Trachinotus mookalee</i>)	Sai Vasista Hatcheries, Andhra Pradesh	MoU (3 years) @ ₹ 1,18,000 license fee
11	Large-scale seed production of Indian pompano (<i>Trachinotus mookalee</i>)	Leela Prakash Hatchery, Andhra Pradesh	MoU (3 years) @ ₹ 1,77,000 license fee



In 2025, ICAR-CMFRI secured certification for 10 technologies, products, and methodologies, reflecting major advancements

in marine aquaculture, nutraceuticals for cardiac health and anticoagulation, sustainable feed innovations, seaweed farming,

coastal vulnerability assessment, and marine biotechnology, with clearly defined ICAR codes and collaborative contributions.

Technologies/ products/ methodologies certified by ICAR

No	Name of the technology/ product/ methodology	ICAR Code	Lead developer	Co-developer (s)
1.	Copepod nauplii accumulating & harvesting device	ICAR-FS-CMFRI-Product-2025-026	K. K. Anikuttan	B. Santhosh, G. Tamilmani, P. Rameshkumar, M. Sakthivel, M. Sankar, R. Bavithra, K. Vinod, A. K. Abdul Nazar, R. Jayakumar, Divu D., Suresh Kumar M., P. S. Swathi Lekshmi, V. V. R. Suresh, G. H. Rao, Tinto Thomas, Aneesh U., M. Jayasingh and A. Gopalakrishnan
2.	Application of compensatory growth in marine finfishes: An innovative culture technology for enhanced efficiency and economic returns	ICAR-FS-CMFRI-Technology-2025-028	Suresh Babu P. P.	Anuraj A., Shilta M. T., Sanal Ebeneezar, Shinoj P., Raghu Ramudu K., Bobby I., Anikuttan K. K., Rajesh N., Biji Xavier, Sekar Megarajan, Ritesh Ranjan, Shubhadeep Ghosh, Abdul Nazar, A.K., Tamilmani, G., Sakthivel, M., Ramesh Kumar, P.
3.	Breeding and seed production of giant trevally, <i>Caranx ignobilis</i> - a high-value marine fish	ICAR-FS-CMFRI-Technology-2025-027	Ambarish P. Gop	B. Santhosh, M. Shakhivel, Anuraj A., Surya S., F. Muhammed Anzeer, K. S. Aneesh, Dispin Das Y., G. Rathi Buvanaehswari, Krishna Sukumaran, V.V.R. Suresh., Bobby Ignatius., A. Gopalakrishnan, Grinson George
4.	Nutraceutical Cadalmin™ Cardioalginol extract (Cadalmin™ CAe) from seaweed as anticoagulant and to combat cardiac hypertrophy	ICAR-FS-CMFRI-Product-2025-025	Kajal Chakraborty	Ans Mariya George, Silpa K. P., Shifa Jalal, Ashwin Ashok Pai, Shubhajit Dhara, A. Gopalakrishnan
5.	Nutraceutical to combat cardiomyopathy: Cadalmin™ Cardioocto extract (Cadalmin™ COe) from marine mollusk	ICAR-FS-CMFRI-Product-2025-024	Kajal Chakraborty	A. Gopalakrishnan
6.	Biovalorisation of organic wastes into high-value aquafeed ingredients using black soldier fly larvae (<i>Hermetia illucens</i>)	ICAR-FS-CMFRI-Technology-2025-029	Sanal Ebeneezar	D. Linga Prabu, S. Chandrasekar, Adnan H. Gora, Jeena N.S., P. Vijayagopal, Kajal Chakraborty, Grinson George
7.	Methodology to assess the multi-hazard vulnerability of the coastal districts/states of India and generation of an interactive atlas of multi-hazard vulnerability of India	ICAR-FS-CMFRI-Methodology-2025-021	Reshma Gills	Shelton Padua, C. Ramachandran, Eldho Varghese, K. R. Ratheesh, Grinson George, Rose P. Bright, E. Vivekanandan, J. Jayasankar, A. Gopalakrishnan
8.	A novel method for screening polyunsaturated fatty acid-containing bacteria from marine ecosystems.	ICAR-FS-CMFRI-Methodology-2025-023	Sumithra T. G.	Vishnu R., Krupesha Sharma S. R., Chandrasekar S., Anusree V. Nair, Sayooj P., Sreenath K. R., Gopalakrishnan A., C. S. Tejpal
9.	Tube-net-based seaweed farming on HDPE floating rafts for rough coastal waters	ICAR-FS-CMFRI-Technology-2025-022	Sekar Megarajan	Ritesh Ranjan, Joe K. Kizhakudan, Shubhadeep Ghosh, Biji Xavier, Jayasree Loka, Johnson B., Bobby Ignatius, V.V.R. Suresh, Grinson George
10.	Technology for the induced spawning and innate diet analysis of the Indian black clam <i>Villorita cyprinoides</i> (Gray, 1825)	ICAR-FS-CMFRI-Technology-2025-030	Jeena N. S.	Summaya Rahuman, M.K. Anil, P. Gomathi, Sanal Ebeneezar, Eldho Varghese, P. Vijayagopal, P. K. Asokan

Research Management

Key research management activities at ICAR-CMFRI in 2025 included RAC, IRC, and IMC meetings, focusing on institutional review, research progress, and strategic recommendations. Emphasis was placed on alignment with national priorities, strengthening research governance, capacity building, and constituting the Institute Joint Staff Council to support administrative coordination

Research Advisory Committee

The 29th Research Advisory Committee (RAC) Meeting of ICAR- Central Marine Fisheries Research Institute (CMFRI) was held during 09-10 January 2025 at the Mandapam Regional Centre. The Chairman, Dr Dilip Kumar (Former Director, ICAR-CIFE, Mumbai), along with the members Dr S. K. Chakraborty (Former Head of Division and Emeritus Scientist, ICAR-CIFE, Mumbai); Dr H. Shivananda Murthy (Former Professor and Dean, College of

Fisheries, Mangalore); Dr M. Krishnan (Former Head of Division, ICAR-CIFE, Mumbai) and Dr Shubhadeep Ghosh (Assistant Director General, Marine Fisheries, ICAR, New Delhi) participated in the meeting. Dr Grinson George, Director, ICAR-CMFRI, along with all Heads of Divisions, Heads of Regional Centres, Scientists-in-Charge of Regional Stations and all scientists of ICAR-CMFRI joined the meeting.

The meeting commenced with the welcome proposed by Dr K. S. Sobhana, Member Secretary, RAC, followed by the presentation of

the Action Taken Report on the 28th RAC's action points, which received final approval from the committee. During the session, Heads of various research divisions, research centres, and Scientists-in-Charge of research stations showcased the research achievements and progress made.

Emphasis was placed on strengthening institutional governance, enhancing research quality, and promoting externally funded projects for sustained growth.



Research Advisory Committee meeting held at Mandapam RC of ICAR-CMFRI

The 29th Research Advisory Committee (RAC) of ICAR-CMFRI provided a comprehensive set of recommendations aimed at strengthening the institute's role in advancing sustainable marine fisheries and mariculture. The Committee emphasised the integration of advanced



The Institute Research Council meeting

research, technology development, capacity building, and institutional strengthening, while aligning research initiatives with national priorities, the Blue Economy framework, and the United Nations Sustainable Development Goals (SDGs).

Institute Research Council

The 32nd Institute Research Council (IRC) of ICAR-CMFRI was conducted in Hybrid mode during 04-14 March 2025. Dr Grinson George, Director, ICAR-CMFRI, chaired the IRC meeting. Dr Shoba Joe Kizhakudan, Head, FFD & Secretary, IRC, the Heads of Research Divisions, the Heads of Regional Centres and Scientists-in-charge of Regional Stations, Scientists-in-charge of

outstations attended the meeting. Dr Grinson George, Chairman, IRC, welcomed participants and delivered a comprehensive address focusing on institutional accountability, research excellence, and strategic growth. The Action Taken Report of the 31st IRC was presented before the members by the Secretary, IRC for approval, and the reports were approved. Following this, the presentations by the PIs of the On-going In-house projects and Externally Funded projects were made.

In his concluding remarks, the Chairman of IRC appreciated the Institute's research achievements and advised focusing on areas such as ecosystem-based fisheries management, mariculture, and climate-resilient research. He encouraged all scientists to explore funding opportunities and obtain more externally funded projects. He also suggested transferring the unspent amount from externally funded projects to the institute.

Institute Management Committee

92nd Institute Management Committee

The 92nd meeting of the Institute Management Committee (IMC) of

CMFRI was held through hybrid mode on 07 November 2025. The Director and the Chairman of IMC presented a brief about the mandate of the Institute and the research achievements made by the Institute in the past. Actions taken during the points that emerged in the previous meeting were reviewed. The members of IMC expressed satisfaction with the research achievements of the institute. IMC has recommended all the agenda points placed before the committee for approval.

Dr Shubhadeep Ghosh, Assistant Director General (Marine Fisheries), Dr T. Raja Swaminathan, Head of Division & Principal Scientist, Microbiology, Fermentation and Biotechnology, ICAR-CIFT, Dr V.S. Basheer, Principal Scientist, CPAGR, ICAR-NBFGR, Kochi, Dr. (Mrs.) Preetha Panikkar, Principal Scientist and HoRC (In-charge), Bangalore Research Centre of CIFRI, Shri. P. Muraleedharan, SAO & Head of Office, CMFRI, participated in the meeting.

16th Institute Joint Staff Council

The 16th Institute Joint Staff Council of ICAR-CMFRI was constituted in October 2025 for a three-year term under the Chairmanship of the Director. The reconstituted IJSC include The Senior Administrative Officer, CMFRI, The Chief Finance and Accounts Officer, CMFRI, Dr. P. Shinoj, Pr. Scientist, Shri P. S. Anilkumar, CTO and Smt. Deepa P. N., AFAO as representatives from the official side and Shri Jayakumar C.V, T.O., Shri Abhilash P.R, S.T. A., Shri Suresh, Technician, Shri Joseph Mathew, A.A.O., Shri K, Jerald Raja, Assistant, Smt, Divya K.R., M.T.S. and Shri Thobias P, Antony, M.T.S., as representatives from staff side. Shri Joseph Mathew was elected Secretary (Staff Side), and Shri Suresh was elected as CMFRI's representative to the CJSC of ICAR.

Strategic recommendations focused on aligning research with national priorities, Blue Economy objectives, and advancing ecosystem-based fisheries and climate-resilient approaches.

KVKs, PME Cell, HRD Cell, AKMU, and Library & Documentation Unit at HQ, and all Scientists from HQ and

Projects In-House

No.	Project code	Title	Project duration	Principal Investigator	Co-Principal Investigators/Project Associates
Fishery Resources Assessment, Economics & Extension Division					
1	FRAEED/GIS/1	Geo-referenced Marine Fisheries Resources Information System for Indian EEZ based on Enhanced Survey Protocols and Methodological Platforms for Stock Assessment, Modelling and Forecasting	2024-2029	Dr J. Jayasankar	Dr Somy Kuriakose, Dr Mini K. G., Dr Eldho Varghese, Dr Vinaya Kumar Vase, Dr R. Narayana Kumar, Dr Reshma Gills
2	FRAEED/CV/02	Automated System for Marine Fishery Resources Landing Data Collection via Computer Vision and AI-Driven Deep Learning Algorithms for Species Identification and Quantification from Visual Images	2024-2029	Dr Eldho Varghese	Dr J. Jayasankar, Dr Somy Kuriakose, Dr K. G. Mini, Dr Vinaya kumar Vase, Dr Rekha J. Nair, Dr Muktha M., Dr Biplab Banerjee (IIT, Mumbai)
3	FRAEED/LIV/03	Assessing the livelihood status of marine fisherfolk in India: A sustainable livelihoods approach	2024-2027	Dr N. Aswathy	Dr J. Jayasankar, Dr P. S. Swathi Lekshmi, Dr J. Charles Jeeva, Dr S. S. Raju, Dr Shinoj P., Dr Anuja A. R., Dr R. Narayana Kumar, Dr P. N. Ananth
4	FRAEED/GEN/04	A comprehensive praxis on trans-inclusive gender mainstreaming through the paradigm of sustainable livelihoods in Indian fisheries sector	2024-2027	Dr Vipin Kumar V. P.	Dr J. Jayasankar, Dr R. Narayana Kumar, Dr C. Ramachandran, Dr Shyam S. Salim, Dr P. S. Swathi Lekshmi, Dr S. S. Raju, Dr J. Charles Jeeva, Dr B. Johnson, Dr P. Shinoj, Dr Reshma Gills, Dr Anuja A. R.
5	FRAEED/ETS/05	Economics, Trade and Stakeholders in Marine Fisheries Sector: A Policy Outlook (ETS-PO)	2024-2029	Dr Shyam S. Salim	Dr R. Narayana Kumar, Dr J. Jayasankar, Dr S. S. Raju, Dr P. S. Swathi Lekshmi, Dr Somy Kuriakose, Dr Vipinkumar V. P., Dr Aswathy N., Dr Shinoj P., Dr Anuja A. R., Dr Saju George, Dr J. Charles Jeeva, Dr B. Johnson, Dr Sujitha Thomas, Dr Swatipriyanka Sen Dash, Shri Nakhawa Ajay Dayaram, Dr Subal Kumar Roul, Dr K. R. Veera Venthan
6	FRAEED/ABA/06	Decision-making Process in Sustainable Marine Fisheries Stewardship: Applications of Behavioural Approaches	2024-2027	Dr C. Ramachandran	Dr J. Jayasankar, Dr Vipinkumar V. P., Dr Shinoj P., Dr Reshma Gills, Dr Swathi Lekshmi P. S., Dr J. Charles Jeeva, Dr B. Johnson, Dr K. Mohammed Koya (on deputation)
Finfish Fisheries Division					
7	FFD/ELM/07	Decoding the interplay of fisheries-dependent and fisheries-independent factors on elasmobranchs of India to improve conservation, sustainability, livelihood security and management	2024-2029	Dr Shoba Joe Kizhakudan	Dr Sujitha Thomas, Smt. Shikha Rahangdale, Shri Nakhawa Ajay Dayaram, Dr Purushottama G. B., Dr Mahesh V., Dr Rajesh K. M., Dr Akhilesh K. V., Dr U. Ganga, Dr T. M. Najmudeen, Dr Livi Wilson, Dr Surya S., Dr Anulekshmi Chellappan, Dr Remya L., Dr P. Abdul Azeez, Dr K. R. Veera Venthan, Dr Muktha M., Dr Swatipriyanka Sen Dash, Dr Subal Kumar Roul, Dr Sandhya Sukumaran, Dr Mini K. G., Dr Shinoj P., Smt. Vidhya V, Dr Gladston Y.

No.	Project code	Title	Project duration	Principal Investigator	Co-Principal Investigators/Project Associates
8	FFD/LPF/08	Development of Integrated Scientific Fishery Management Approaches for Biological and Livelihood Sustainability of tuna and tuna-like fishes along the Indian coast	2024-2029	Dr Rajesh K.M. (01.04.2025 onwards) /Dr E. M. Abdussamad	Smt. Shikha Rahangdale, Shri Nakhawa Ajay Dayaram, Dr Purushottama G. B., Dr Mahesh V., Dr Anulekshmi Chellappan, Dr T. M. Najmudeen, Dr Abdul Azeez P., Dr Surya S., Dr K. R. Veera Venthan, Dr Margaret Muthu Rathinam A., Dr Manas H. M., Dr Swatipriyanka Sen Dash, Dr Subal Kumar Roul, Dr Mini K. G., Dr Ramachandran C., Dr Reshma Gills, Dr Gladston Y., Dr U. Ganga
9	FFD/IAF/09	Science for Sustainability: Developing an Integrated Assessment Framework (IAF) to support management decisions for marine fisheries of Kerala & Lakshadweep	2024-2029	Dr T. M. Najmudeen	Dr Shoba Joe Kizhakudan, Dr E. M. Abdussamad, Dr U. Ganga, Dr Livi Wilson, Dr Dineshbabu A. P., Dr Josileen Jose, Dr Geetha Sasikumar, Dr Lakshmi Pillai S., Dr Rekha Devi Chakraborty, Dr K. V. Akhilesh, Dr Anulekshmi Chellappan, Dr Surya S., Dr R. Vidya, Dr C. Ramachandran, Dr Remya L., Dr Abdul Azeez P., Dr Somy Kuriakose, Dr N. Aswathy, Dr Shelton Padua, Dr Ajina S. M., Dr Gladston Y.
10	FFD/IAF/10	Science for Sustainability: Developing an Integrated Assessment Framework (IAF) to support management decisions for marine fisheries in Karnataka & Goa	2024-2029	Dr Sujitha Thomas	Dr Rajesh K. M., Dr Purushottama G. B., Dr Mahesh V., Dr Sunil Kumar S. Ail, Dr Bindu Sulochanan, Dr Somy Kuriakose, Dr Vipinkumar V. P., Dr Shyam S. Salim, Dr P. Shinoj, Dr Divya Viswambharan
11	FFD/IAF/11	Science for Sustainability: Developing an Integrated Assessment Framework (IAF) to inform management decisions for marine fisheries of Andhra Pradesh	2024-2029	Dr Muktha M.	Dr Manas H. M., Dr Indira Divipala, Dr Jasmin F., Dr S. S. Raju, Dr Eldho Varghese, Dr B. Johnson, Dr Pralaya Ranjan Behera, Dr Joe K. Kizhakudan
12	FFD/ENCFR/33	Exploring Non-Conventional Fisheries Resources: Assessing their Fishery, Stock Status and Potential for commercial exploitation	2024-2029	Dr Livi Wilson	Dr Shoba Joe Kizhakudan, Dr Sujitha Thomas, Dr Abdussamad E. M., Dr U. Ganga, Dr T. M. Najmudeen, Dr Anulekshmi Chellappan, Dr Muktha M., Dr Swatipriyanka Sen Dash, Dr Manas H. M., Dr Akhilesh K. V., Dr Surya S., Dr Subal Kumar Roul, Dr Remya L., Dr Mahesh V., Shri Nakhawa Ajay Dayaram, Smt. Shikha Rahangdale, Dr Abdul Azeez P., Dr K. R. Veera Venthan, Smt. Vidhya V., Dr Josileen Jose, Dr Geetha Sasikumar, Dr S. Lakshmi Pillai, Dr Rekhadevi Chakraborty, Dr Gyanaranjan Dash, Dr Vidya R., Dr Indira Divipala, Dr Jasmin F., Dr Kavitha M., Dr Rajesh Kumar Pradhan, Dr Sunil Kumar S. Ail, Dr Rajkumar M., Dr P. Gomathi, Dr Rajan Kumar, Dr Bhendekar Santosh Nagnath, Dr Shelton Padua, Dr Ratheesh Kumar R., Dr Somy Kuriakose, Dr Shyam S. Salim, Dr Anuja A. R., Dr Gladston Y.
13	PEL/EL/40	Marine eggs and larval studies along the Indian Coast	2020-2026	Dr R. Ratheesh Kumar	Dr Josileen Jose, Dr Manas H. M., Dr Rajesh K. M., Dr Jasmine F., Dr K. R. Veera Venthan, Dr Anulekshmi Chellappan, Shri Nakhawa Ajay Dayaram, Shri Bhendekar Santosh Nagnath, Dr Sujitha Thomas, Dr Abdul Azeez, Dr Rekha J. Nair, Smt. Shikha Rahangdale, Dr Dineshbabu A. P., Dr Rajan Kumar, Dr Miriam Paul Sreeram, Dr Shoba Joe Kizhakudan, Dr Najmudeen T. M., Dr Mohammed Koya (on deputation), Dr Sandhya Sukumaran, Dr Rajesh Kumar Pradhan, Dr Muktha M., Dr Remya L., Dr S. Thirumalaiselvan, Dr Surya S., Dr M. Rajkumar, Dr Asha P. S., Smt. Ramya Abhijith, Dr Bindu Sulochanan, Dr Indira Divipala, Dr Sunil Kumar S. Ail, Dr Ramkumar S.
Shellfish Fisheries Division					
14	SFD/IAF/12	Science for Sustainability: Developing an Integrated Assessment Framework (IAF) to inform management decisions for marine fisheries of Odisha & West Bengal	2024-2029	Dr Gyanaranjan Dash	Dr Swatipriyanka Sen Dash, Dr Rajesh Kumar Pradhan, Dr Subal Kumar Roul, Dr Mini K. G., Dr S. S. Raju, Dr J. Charles Jeeva, Dr Pralaya Ranjan Behera

No.	Project code	Title	Project duration	Principal Investigator	Co-Principal Investigators/Project Associates
15	SFD/IAF/13	Science for Sustainability: Developing an Integrated Assessment Framework (IAF) to inform management decisions for marine fisheries of Tamil Nadu & Puducherry	2024-2029	Dr K. Vinod	Dr A. Margaret Muthu Rathinam, Dr Eldho Varghese, Dr Kavitha M., Dr Rajkumar M., Dr K. R. Veera Venthana, Dr R. Narayana Kumar, Dr B. Johnson, Dr S. Thirumalaiselvan, Mrs. Vidhya V., Dr P. Gomathi
16	SFD/IAF/14	Science for Sustainability: Developing an Integrated Assessment Framework (IAF) to inform management decisions for marine fisheries Gujarat, Daman & Diu	2024-2029	Dr Rajan Kumar	Dr Swathi Lekshmi P. S., Dr Vinaya Kumar Vase, Dr Ratheesh Kumar R., Smt. Shikha Rahangdale, Dr Anuja A. R.
17	SFD/IAF/15	Science for Sustainability: Developing an Integrated Assessment Framework (IAF) to support management decisions for marine fisheries of Maharashtra	2024-2029	Dr Bhendekar Santosh Nagnath	Dr J. Jayasankar, Shri Nakhawa Ajay Dayaram, Dr Ramkumar S., Dr Reshma Gills, Dr Anuja A. R.
18	SFD/PSF/16	Investigations on the recruitment of juvenile/ subadult penaeid shrimps from nursery habitats to derive management insights for the coastal penaeid shrimp fishery	2024-2028	Dr Lakshmi S. Pillai	Dr A. P. Dineshbabu, Dr Josileen Jose, Dr Gyanaranjan Dash, Dr F. Jasmin, Dr Indira Divipala, Dr Rajan Kumar, Dr Rajkumar M.,
19	SFD/BGF/17	Assessment and management of small-scale bivalve and gastropod fisheries for sustainable exploitation in India	2024-2029	Dr Geetha Sasikumar	Dr R. Vidya, Dr Kavitha M., Dr V. Venkatesan, Dr F. Jasmin, Dr P. Gomathi, Dr Bhendekar Santosh Nagnath, Dr Rajesh Kumar Pradhan, Dr Rajkumar M., Dr Sunil Kumar Ail, Dr Saju George, Dr Shyam S. Salim, Dr G. Vaisakh, Dr Ajina S. M., Dr Indira Divipala

Mariculture Division

20	MD/CBR/18	Captive breeding and seed production of important finfishes, shellfishes, other invertebrates and seaweeds for sustainable mariculture, fisheries enhancement and conservation	2024-2029	Dr V. V. R. Suresh	Dr Imelda Joseph, Dr K. Madhu, Dr Rema Madhu, Dr Bobby Ignatius, Dr Shoji Joseph, Dr N. Rajesh, Dr G. Tamilmani, Dr M. Sakthivel, Dr K. K. Anikuttan, Ms. Bavithra R., Dr P. Rameshkumar, Dr M. Sankar, Dr Suresh Babu P. P., Dr Anuraj A., Dr Jayasree Loka, Dr Ritesh Ranjan, Dr Biji Xavier, Dr Sekar Megarajan, Dr Joe K. Kizhakudan, Dr A. K. Abdul Nazar, Dr D. Divu, Dr C. Kalidas, Dr Kavitha M., Dr B. Santhosh, Dr M. K. Anil, Dr P. Gomathi, Mr. Ambarish Gop, Dr Shilta M. T., Dr Saju George, Dr Krishna Sukumaran, Dr Rathi Bhuvaneswari, Shri Tanveer Hussain, Dr Jeena N. S., Dr Sanal Ebenezar, Dr S. Chandrasekar, Dr Krupesha Sharma S. R., Dr T. G. Sumithra, Dr K. Vinod, Dr Adnan H. Gora, Dr Saima Rehman, Dr Naveen Kumar B. T., Dr Raju Baitha, Dr Biju Sam Kamalam J., Dr Vikas P. A., Dr Ashish Khandelwal, Dr Ajina S. M.
21	MD/CTS/20	Evaluation of crowding and transportation stress in selected mariculture species and development of stress management strategies	2024-2028	Dr Suresh Babu P. P.	Mr. Tanveer Hussain, Dr Shilta M. T., Dr Anikuttan K. K., Dr Tamilmani, Dr Sakthivel M., Dr Rameshkumar P., Dr Rajesh N., Dr Krishna Sukumaran, Dr Anuraj A., Dr Rathi Bhuvaneswari, Smt. Bavithra R., Shri Ambarish P. Gop, Dr Joe K. Kizhakudan, Dr Ritesh Ranjan, Dr Divu D., Dr Jeena N. S., Dr Sanal Ebenezar, Dr Linga Prabu, Dr M. Sankar, Dr Naveen Kumar B. T., Dr Biju Sam Kamalam J., Dr Vikas P. A., Dr Gokhlesh Kumar, Dr Kurva Raghu Ramudu

No.	Project code	Title	Project duration	Principal Investigator	Co-Principal Investigators/Project Associates
22	MD/AR/21	Developing a National Roadmap for Integrated Coastal Conservation and Fisheries Enhancement along the Indian coast through Artificial reefs	2024-2029	Dr Joe K. Kizhakudan	Dr Shoba Joe Kizhakudan, Dr Bindu Sulochanan, Dr Anulekshmi Chellappan, Dr Manas H. M., Dr Indira Divipala, Dr Abdul Azeez P., Dr L. Remya, Dr Grinson George, Dr Sunil Kumar S. Ail, Smt. Shikha Rahangdale, Dr Vinod K., Dr Ritesh Ranjan, Dr R. Saravanan, Dr Loveson Edward L., Dr Sreenath K. R. (deputation), Dr Shelton Padua, Dr Gyanaranjan dash, Dr Muktha M., Dr Pralaya Ranjan Behera, Dr L. Ranjith, Dr Anikuttan K. K., Dr Ratheesh Kumar R., Dr Divya Viswambharan, Dr Vaisakh G., Dr S. Thirumalaiselvan, Dr Bhendekar Santosh Nagnath
23	MD/LQI/22	Development of larval quality indices for farmed marine finfishes	2024-2029	Dr Ritesh Ranjan	Dr Joe K. Kizhakudan, Dr Jayasree Loka, Dr Biji Xavier, Dr Sekar Megarajan, Dr G. Tamilmani, Dr M. Sakthivel, Dr Anikuttan K. K., Dr P. Rameshkumar, Ms. Bavithra R., Dr B. Santhosh, Shri Ambarish P. Gop, Dr Anuraj A., Dr Rathi Bhuvaneswari, Dr Suresh Babu P. P., Mr. Tanveer Hussain, Dr Imelda Joseph, Dr Rema Madhu, Dr Krupesha Sharma S. R., Dr Chandrasekar S., Dr Sumithra T. G., Dr C. Kalidas, Dr M. Sankar, Dr Naveen Kumar B. T., Dr Raju Baitha, Dr Biju Sam Kamalam J., Dr Vikas P. A.
24	MD/MTI/31	Socio Economic Impact Evaluation of Mariculture Technology Interventions	2024-2027	Dr Saju George	Dr Imelda Joseph, Dr V. V. R. Suresh, Dr K. Madhu, Dr Bobby Ignatius, Dr Shoji Joseph, Dr N. Rajesh, Dr Shyam S. Salim, Dr G. Tamilmani, Dr Joe K. Kizhakudan, Dr A. K. Abdul Nazar, Dr C. Kalidas, Shri Ambarish Gop, Dr Shilta M. T., Dr A. P. Dineshbabu, Dr Geetha Sasikumar, Dr Vidya R., Dr Somy Kuriakose, Dr A. Anuraj, Dr D. Divu, Dr Johnson B., Dr Subal Kumar Roul, Shri Tanveer Hussain, Dr Sunil Kumar S. Ail
25	MD/MGT/19	Translational Mariculture Grow-out Technologies: Bridging Innovation and Sustainability for Blue Growth and Greener Future	2025-2030	Dr Imelda Joseph	Dr Shoji Joseph, Dr Rema Madhu, Dr Bobby Ignatius, Dr Saju George, Dr Suresh Babu P. P., Dr Geetha Sasikumar, Dr Vidya R., Dr Anil M. K., Dr Santhosh B., Dr Krishna Sukumaran, Dr Rathi Bhuvaneswari G., Dr Anuraj A., Shri Ambarish P. Gop, Dr Shilta M. T., Dr C. Kalidas, Dr Kurva Raghu Ramudu, Shri Tanveer Hussain, Dr G. Tamilmani, Dr Rameshkumar P., Dr M. Sakthivel, Dr B. Johnson, Dr Anikuttan K. K., Ms. Bavithra R., Dr Abdul Nazar, Dr Jayasree Loka, Dr Ritesh Ranjan, Dr Biji Xavier, Dr Sekar Megarajan, Dr Bhendekar Santosh Nagnath, Dr Divu D., Dr Rajesh Kumar Pradhan, Dr Sunil Kumar S. Ail, Dr Kavitha M., Dr Rajan Kumar, Dr M. Sankar, Dr P. Gomathi, Dr Raju Baitha, Dr Rajkumar M., Dr Joe K. Kizhakudan, Dr Mini K. G., Dr Vikas P. A., Dr Ajina S. M.
Marine Biotechnology, Fish Nutrition and Health Division					
26	MBFNHD/DNA/27	eDNA Metabarcoding for a Comprehensive Analysis of Species Diversity in Various Ecosystems	2024-2026	Dr Pradeep M. A.	Dr Mini K. G., Dr Vinod K., Dr Shelton Padua, Dr Gokhlesh Kumar, Dr Mohammed Koya K. (on deputation)
27	MBT/CA/26	Cellular aquaculture and the refinement of in-vitro pearl formation	2020-2026	Dr Srinivasa Raghavan V.	Dr D. Linga Prabu
28	MBFNHD/HM/23	Health Monitoring and Management strategies for Marine Finfish and Shellfish	2025-2030	Dr Krupesha Sharma S. R.	Dr Pradeep M. A., Dr Santhosh B., Dr Ritesh Ranjan, Dr Rameshkumar P., Dr Sumithra T. G., Dr Saima Rehman, Dr Kurva Raghu Ramudu, Dr Suresh Babu P. P., Dr Divu D., Dr S. Chandrasekar, Shri Ambarish P. Gop, Dr Shoji Joseph, Dr Anil M. K., Dr Sanal Ebenezar, Dr Naveen Kumar B. T., Dr Raju Baitha, Dr Gokhlesh Kumar, Dr Ashish Khandelwal

No.	Project code	Title	Project duration	Principal Investigator	Co-Principal Investigators/Project Associates
29	MBFNHD/NGA/24	Marine fish and shellfish nutrition research with nutrigenomic approach	2025-2030	Dr D. Linga Prabu	Dr S. Chandrasekar, Dr Sanal Ebenezar, Dr Adnan H. Gora, Dr Sumithra T. G., Dr Saima Rehman, Dr Bobby Ignatius, Dr Joe K. Kizhakudan, Dr Kalidas C., Dr Rathi Bhuvaneswari G., Mr. Tanveer Hussain, Dr J. Jayasankar, Dr Rameshkumar P., Dr Biju Sam Kamalam J., Dr Ashish Khandelwal
30	MBFNHD/GNM/25	Leveraging genetic and genomic tools for advancing marine fisheries, mariculture and conservation	2025-2030	Dr Sandhya Sukumaran	Dr Srinivasa Raghavan V, Dr Jeena N. S., Dr Sekar Megarajan, Dr Gokhlesh Kumar
Marine Biodiversity and Environment Management Division					
31	MBEMD/EFH/29	Understanding the Essential Fish Habitats (EFHs) for sustainable management of coastal and marine ecosystem	2024-2029	Dr. Vinod K. (27.06.2025 onwards)/ Dr. L. Ranjith	Dr P. S. Asha, Dr K. S. Sobhana, Dr Miriam Paul Sreeram, Dr Rekha J. Nair, Dr K. R. Sreenath (on deputation), Dr Shelton Padua, Dr Ratheesh Kumar R., Smt. Ramya Abhijith, Dr Vaisakh G., Dr Bindu Sulochanan, Dr Divya Viswambharan, Dr S. Ramkumar, Dr Loveson Edward L., Dr Pralaya Ranjan Behera, Dr R. Saravanan, Dr S. Thirumalaiselvan, Dr K. R. Veera Venkhan, Dr Vinaya Kumar Vase, Dr Subal Kumar Roul, Dr Abdul Azeez P, Dr Rajesh Kumar Pradhan, Dr Rajeev Ranjan
32	MBEMD/BYC/30	Assessment and evaluation of the marine biodiversity with emphasis on bycatch from an ecosystem perspective	2024-2029	Dr Rekha J. Nair	Dr Grinson George, Dr Miriam Paul Sreeram, Dr Sreenath K. R. (on deputation), Dr Ratheesh Kumar R., Dr Vaisakh G., Dr Divya Viswambharan, Dr S. Ramkumar, Dr Pralaya Ranjan Behera, Dr L. Ranjith, Dr Shinoj P., Dr R. Narayana Kumar, Dr Swathi Lekshmi P. S.
33	MBEMD/MMD/39	Marine microbial diversity in relation to ecosystem functioning and environmental changes	2023-2027	Dr K. S. Sobhana	Dr Ratheesh Kumar R., Smt. Ramya Abhijith, Dr Anil M. K., Dr L. Ranjith, Dr Loveson Edward L., Dr Pralaya Ranjan Behera
34	MBEMD/MPC/28	Impact of coastal marine pollution on the ecosystem's health, biodiversity and mitigation measures	2023-2027	Dr P. S. Asha	Dr Grinson George, Dr Sobhana K. S., Dr Rekha J. Nair, Dr Jeyabaskaran R., Dr Pralaya Ranjan Behera, Dr Miriam Paul Sreeram, Dr D. Prema, Dr Bindu Sulochanan, Dr Loveson Edward L., Dr Shelton Padua, Dr R. Ratheesh Kumar, Dr S. Thirumalaiselvan, Smt. Ramya Abhijith, Dr S. Ramkumar, Dr V. Srinivasa Raghavan, Dr Adnan H Gora, Dr R. Saravanan, Dr L. Ranjith, Dr G. Vaisakh, Dr T. G. Sumithra, Dr Krupesha Sharma S. R., Dr Ashish Khandelwal, Dr Rajeev Ranjan
35	MBEMD/MHW/34	Ecological impacts of abnormal weather events: A spatio-temporal analysis of the Indian coast	2025-2030	Dr Shelton Padua	Dr Rajeev Ranjan, Dr K. S. Sobhana, Dr Asha P. S., Dr Bindu Sulochanan, Dr Loveson Edward L., Dr Ramya Abhijith, Dr Vaisakh G., Dr Miriam Paul Sreeram, Dr R. Ratheesh Kumar, Dr Mini K. G., Dr Anuja A. R., Dr Pralaya Ranjan Behera, Dr S. Thirumalaiselvan, Dr Rajan Kumar, Dr Nakhawa Ajay Dayaram
36	MBEMD/GZB/32	Gelatinous zooplankton blooms and their ecological interplay in the Indian coastal waters	2025-2030	Dr R. Saravanan	Dr K. S. Sobhana, Dr K. Vinod, Dr Miriam Paul Sreeram, Dr R. Jeyabaskaran, Dr L. Ranjith, Dr Pralaya Ranjan Behera, Dr Divya Viswambharan, Dr S. Ramkumar, Dr S. Thirumalaiselvan, Dr G. Vaisakh, Dr Subal Kumar Roul, Dr Gyana Ranjan Dash, Dr S. S. Raju, Dr C. Kalidas, Dr Surya S., Dr Rajan Kumar, Dr M. Rajkumar, Dr Abdul Azeez P., Dr D. Linga Prabu, Dr Saima Rehman

Projects

Externally Funded

No.	Title	Project Coordinator/ Principal Investigator	Funding Agency	Start year	End year
1	CO ₂ Assimilation off Cochin and Mandapam Coast	Dr. Shelton Padua	NRSC	2018	2026
2	E G Silas Centre of Excellence and Innovation (EGS-CoEI) in marine fish microbiome and nutrigenomics	Dr Krupesha Sharma S. R. (Project Coordinator) Dr Sumithra T. G. (Sub Project-I-PI) Dr Sanal Ebeneezar (Sub Project-II-PI)	DBT	2020	2026
3	De Novo whole genome and transcriptome sequencing of Asian Green Mussel, <i>Perna viridis</i>	Dr A. Gopalakrishnan (Project Coordinator) Dr. Sandhya Sukumaran (PI)	DBT	2021	2025
4	Evaluation of immune-enhancing polysaccharides of edible chlorophyten seaweed <i>Ulva lactuca</i> (sea-lettuce) and development of functional polysaccharide nanoparticle	Dr Kajal Chakraborty	DST/SERB	2022	2025
5	Development of small molecular weight bioactives and polysaccharides from marine and costal bivalves to develop prospective nutraceutical products	Dr Kajal Chakraborty	NASF	2022	2025
6	Establishment of marine ornamental fish aquaculture enterprises in Lakshadweep as a technology demonstration project in operationalization of ornamental fishery	Dr Anikuttan K. K.	NCDC	2022	2025
7	Covid pandemic and marine fisheries sector in India: Impacts, externalities and stakeholders reflection on adaptation and mitigation	Dr Shyam S. Salim	ICSSR	2022	2025
8	Science, Technology and Innovation Hub in fisheries sector, Kochi corporation, Ernakulam District, Kerala State.	Dr Vipinkumar V. P.	DST-SEED	2022	2025
9	Development of seed production technology for the high value marine food fish, the Giant trevally <i>Caranx ignobilis</i> to enhance the seafood production and nutritional security	Dr Sakthivel M.	DBT	2023	2026
10	The changing dynamics of labour migration on employment, livelihoods and resource productivity patterns in Indian marine fisheries sector	Dr Shyam S. Salim	NASF	2023	2026
11	Phytoplankton diversity in Indian Ocean using OCM-3: Collection and Analysis of In-situ datasets for studying phytoplankton diversity	Ms Shikha Rahangdale	ISRO-SAC	2023	2025
12	Algal Blooms estimation and associated bio-optical properties in Indian Ocean region using OCM-3 and sea-truth measurements	Dr Vinaya Kumar Vase	ISRO-SAC	2023	2025
13	Computer vision based monitoring of fishes in marine cage farming	Dr V. V. R. Suresh	iHub Drishti Foundation	2023	2025

No.	Title	Project Coordinator/ Principal Investigator	Funding Agency	Start year	End year
14	Development of Polyketide and Oligosaccharide analogues from economically important seaweeds as prospective angiotensin converting enzyme inhibitors	Dr Kajal Chakraborty	DBT	2023	2026
15	Bio-inventorying and documentation of marine species in coastal and marine ecosystems of Andhra Pradesh	Dr Pralaya Ranjan Behera	APSBB	2023	2025
16	Environmental sustainability through Integrated Multi-Trophic Aquaculture (IMTA): A participatory approach for the socio-economic upliftment of coastal fishers of Thoothukudi District, Tamil Nadu	Dr L. Ranjith / Dr Loveson Edward L. (09.09.2025 onwards)	NABARD-FSPF	2023	2025
17	Standardization of mass production and evaluation of resting egg production in tropical marine copepods for the use as live feed for fish larval rearing	Dr B. Santhosh	DBT	2023	2026
18	Development of breeding and supply centre for damselfishes	Shri Ambarish P. Gop	DBT-BIRAC	2024	2025
19	Integrating risk assessment and future projections for sustainable coastal resilience	Dr Shinoj P.	MoEF&CC	2024	2027
20	Establishment of STI Hub for primitive "Sidi" Adivasi Tribes of Gujarat for socio-economic upliftment through mariculture entrepreneurship	Dr Divu D.	DST-SEED	2024	2027
21	Omics approaches in the Indian pompano, <i>Trachinotus mookalee</i> and the Indian edible oyster, <i>Crassostrea bilineata</i> (<i>Magallana bilineata</i>) to develop genomic resources for ensuring sustainable aquaculture	Dr Sandhya Sukumaran (Project Coordinator) Dr Sekar Megarajan (PI)	DBT	2024	2027
22	Development of a sustainable aquafeed with docosahexaenoic acid-rich <i>Aurantiochytrium</i> sp., as an alternative to fish oil for enhancing Silver pompano nutrition	Dr Adnan H. Gora (Project Coordinator & PI)	DBT	2024	2027
23	Deep-sea metagenomics for enhanced next generation bioethanol production	Dr Sumithra T. G.	DoM-MoES	2024	2026
24	Promotion of a Fish Farmers Producer Organization (FFPO) in Ernakulam District	Dr Saju George	NABARD	2025	2030
25	Farming of commercially important marine finfishes in seacages integrated with seaweeds at Puducherry	Dr Johnson B.	DoF-Govt. of Puducherry	2025	2026
26	Identification and removal of ghost fishing nets in the selected fishing zones of Trivandrum coast for developing strategies for regular monitoring of marine ecosystems	Dr Asha P. S.	KSBB	2025	2026
27	Exploring the harvest and post-harvest potential of mesopelagic resources from the Indian EEZ-A pilot study towards commercial exploitation for blue economy	Dr Sujitha Thomas	NFDB	2025	2026
28	On-farm demonstration of nursery rearing and seed production of captive-bred Giant trevally using natural and artificial feeds	Dr Ambarish P. Gop	NFDB	2025	2026
29	Nucleus Breeding Centre for Marine Fish Species	Dr Vinod K.	DoF-PMMSY	2025	2028
30	Pilot scale seaweed farming and demonstration for enhancement of fishermen livelihood in Srikakulam coast, North Andhra Pradesh coast	Dr Joe K. Kizhakudan (Project Coordinator) Dr Sekar Megarajan (PI)	DoF-Andhra Pradesh	2025	2026
31	Fishery Management Regimes: Optimization and Innovation for the Blue Economy in the Bay of Bengal Region	Dr Shyam S. Salim	BIMReN (BIMSTEC-India Marine Research Network)	2025	2027

No.	Title	Project Coordinator/ Principal Investigator	Funding Agency	Start year	End year
32	Automated identification of marine species with artificial neural networks to enhance the exploration and sustainable utilisation of deep sea marine fishes	Dr Rekha J. Nair	DoM-MoES	2025	2027
33	Strengthening Macro-Economic Aggregate and Gross Value Added (GVA) Estimation in the Indian Marine Fisheries Sector	Dr Shyam S. Salim	MoSPI	2025	2026
34	Climate change risk appraisal for coastal regions and fisheries	Dr Grinson George	BIMReN (BIMSTEC-India Marine Research Network)	2025	2027
35	Understanding the molecular mechanisms that confer adaptation to deep-sea habitats in selected fishes through whole genome and transcriptome sequencing	Dr Sandhya Sukumaran	DoM-MoES	2025	2027
36	Seed-to-farm: Enabling bivalve aquaculture in coastal villages of Maharashtra through hatchery linkage and nursery development	Dr Anil M. K.	Mangrove Foundation, Maharashtra	2025	2026
37	Impact assessment on the use of water jet pumps for chank exploitation on marine fisheries and its ecosystem for sustainable fishing	Dr Kavitha M.	DoF&FW-TN	2025	2025
38	Matsya Shakti: Empowering coastal minority communities through training on leadership enhancement and Fisheries-Based Livelihood Technologies in Trivandrum, Kerala	Dr Surya S.	PM VIKAS-MoMA	2025	2026
39	GIS-Driven Spatial Zonation and Sea-Space Governance Framework for Sustainable Mariculture Development in Gujarat	Dr Divu D.	DoF-Gujarat	2025	2029
40	Scaling up of seed production of Seabream, <i>Acanthopagrus berda</i> employing nanotechnological interventions for enhancing its farming potential	Dr Suresh Babu P. P.	DBT-BIRAC	2025	2027
41	Demonstration of mechanized pineapple leaves silage production in plastic drums for rural employment generation	Dr Shinoj Subramannian	NABARD	2025	2026
42	Scientific assessment of water pollution levels in Thane and Panvel creek and its effect on coastal fishery resources.	Shri Nakhawa Ajay D.	MPCB	2025	2027
43	Scoping report of FMU: EAFM project on Coringa Mangrove Ecosystem	Dr Muktha M.	BoBP-IGO	2025	2026
44	Sea ranching of green tiger shrimp (<i>Penaeus semisulcatus</i>) Post Larvae (PL) in Palk Bay and Gulf of Mannar, Tamil Nadu for sustainable production	Dr Tamilmani G.	DoF-PMMSY	2022	2026
45	Integrated Multi-Trophic Aquaculture for the alternate livelihood of fishers and augmenting fish production of coastal waters in Karnataka	Dr Rajesh K. M.	NFDB-PMMSY	2023	2025
46	Seaweed farming feasibility assessment and exploration of promotional activities along Kori, Padala and other selected locations along Kutch Coast, Gujarat	Dr Divu D.	NFDB-PMMSY	2023	2026
47	Marine mammal stock assessments in India	Dr Grinson George (Project Coordinator) Dr Ratheesh Kumar R. (PI)	DoF-PMMSY	2023	2026
48	Development of pilot scale open sea eco mussel farms in India-A blue growth project	Dr Anil M. K.	NFDB-PMMSY	2024	2026

No.	Title	Project Coordinator/ Principal Investigator	Funding Agency	Start year	End year
49	Standardization and demonstration of farming methods for Marine finfish, John's Snapper <i>Lutjanus johnii</i> in marine cages and earthen ponds – Towards species diversification	Dr Sekar Megarajan	NFDB	2025	2028
50	Transit seaweed seed retention activities for bridging the seasonal gap and climate uncertainties for sustaining seaweed farming along Kutch Coast, Gujarat	Dr Divu D.	DoF-PMMSY	2025	2026
51	Development of high-value pharmacophores and nutraceutical products from marine macroalgae for human health management and combating lifestyle diseases	Dr Kajal Chakraborty	ICAR-Norman Borlaug Award 2020	2023	2028
52	Genomic approaches in the Golden trevally, <i>Gnathanodon speciosus</i> and Silver pompano <i>Trachinotus blochii</i> to augment aquaculture productivity	Dr Sandhya Sukumaran	ICAR-CRP Genomics	2024	2026
53	National Innovations in Climate Resilient Agriculture (NICRA)	Dr Grinson George	ICAR	2012	2026
54	AINP on Mariculture	Dr Boby Ignatius	ICAR	2017	2025
55	AINP on Fish Health	Dr Krupesha Sharma S. R.	ICAR	2017	2025
56	Network programme on Assessment of Antimicrobial Resistance (AMR) in microorganisms associated with fisheries and aquaculture in India	Dr Krupesha Sharma S. R. Dr Sumithra T. G. (09.04.2025 onwards)	ICAR	2018	2026
57	Network project on ornamental fish breeding and culture	Dr Madhu K.	ICAR	2018	2026
58	Eco-systems, Agribusiness and Institutions Component 1: "Impact assessment of agricultural technology"	Dr Shinoj P.	NIAP Network project	2021	2026
59	National surveillance programme for aquatic animal diseases	Dr Krupesha Sharma S. R.	PMMSY	2022	2026
60	Marine Fisheries Census of India – 2025 (MFC-2025)	Dr Grinson George (National Coordinator) Dr J. Jayasankar (PI)	DoF-PMMSY	2025	2026
61	Mitigation of climate change to the blue ecosystem of Lakshadweep: A science-based social federal outreach study	Dr Abdul Azeez P. (Co-PI) Dr Surjit Mahalanobis (PI-Institute of Social Science)	ICSSR (Vision Viksit Bharat@2047)	2024	2025
62	Rapid Impact Assessment Survey (RIAS) on oil and gas leakage incident at the ONGC site, in and around Daryalitippa, Tallarevu Mandal, Kakinada	Dr Pralaya Ranjan Behera (PI) Dr Joe K. Kizhakudan (Coordinator)	ONGC, Kakinada	2025	2025

Projects Consultancy

No.	Project	Client	Amount (₹ lakh)
1	Technical backstopping for strengthening sustainable harvest of shrimp and cephalopod trawl fishery of Kerala	The Seafood Exporters Association of India, Kochi	49.74
2	Impact assessment of proposed sand mining on the marine fisheries and fishermen community of Daman (Union Territory)	Jawaharlal Nehru Port Authority (JNPA), Navi Mumbai – 400 707	188.36
3	Bivalve seed supply for mangrove conservation and livelihood generation	The Executive Director, Mangrove & Marine Biodiversity Conservation of Maharashtra,	8.21
4	Fishery and stock assessment of small pelagics (Indian mackerel, Oil sardine, lesser sardines, and other small pelagics) in purse seines along Karnataka coast	Yashaswi Fish meal & Oil Company, Udupi, Karnataka	35.51
5	Restoration and conservation of mangrove stands of the coastal areas of Vypin along Pallipuram, Kuzhippilly, Njarakkal and Kadamkkudi Grama Panchayats	Planatearth Aluva	17.81
6	Monitoring, Evaluation, and Impact Assessment of Deployed Artificial Reefs in 49 Villages (200 sites) in Coastal Tamil Nadu Phase I under PMMSY/DOF.	Director of Fisheries Govt of TN	49.0
7	Seawater monitoring study at marine outfall discharge point of MSEZ	Mangalore SEZ Ltd. Mangalore	20.65
8	Case study on monitoring evaluation and impact assessment of deployed Artificial Reefs in coastal Maharashtra under PMMSY/DOF	Dept of Fisheries, Govt of Maharashtra	20.19
9	Habitat restoration and fisher livelihood improvement by developing Artificial Reefs in coastal waters of Palk Bay Districts, Tamil Nadu-Phase-II	Director of Fisheries Govt of TN	43.0
10	Hatchery unit at Puthiangadi, Kannur, Kerala Technology support for Mussel	Dept of Fisheries, Govt of Kerala	5.55
11	Site selection and coordinating deployment, of Artificial Reefs in 22 sites across northern coastal districts of Andhra Pradesh	M D , KSCADC	11.35
12	Baseline study on Impact of Revas-Redi Coastal Highway on Marine Fisheries and fisher livelihood Parcel-I (Dharamtar and Revdanda, creek)	MSRDC Ltd. Mumbai-400036	49.97
13	Baseline study on Impact of Revas-Redi Coastal Highway on Marine Fisheries and fisher livelihood Parcel-II (Agardanda and Bankot creek)	MSRDC Ltd. Mumbai-400036	49.99
14	Assessing the Impact of Revas-Redi Coastal Highway on Marine Fisheries and fisher livelihood Parcel-I (Kelsi, Dabhol and Jaigad creek)	MSRDC Ltd. Mumbai-400036	49.96
15	Assessing the Impact of the Revas-Redi Coastal Highway on Marine Fisheries and fisher livelihood Parcel-II (Kalabadevi and Kunkeshwar creek)	MSRDC Ltd. Mumbai-400036	49.98
16	Baseline study on impact of Ulwe coastal road on marine fisheries and fisher livelihood	City and Industrial Development Corporation of Maharashtra Ltd (CIDCO), Navi Mumbai-400614	49.98
17	Impact study on the development of Murbe Port on Fishermen at Murbe, Palghar, Maharashtra.	JSW Infrastructure Ltd. Santacruz (E) Mumbai-400098	115.54
18	Baseline study on impact of Versova Bandra Sea link project on marine fisheries and fisher livelihood	MSRDC, MUMBAI	266.96

Human Resource Development

The programme demonstrated notable progress in human resource development through targeted training and capacity-building initiatives across the marine fisheries sector. Key areas included mariculture, ornamental fish breeding, and seed production, benefiting diverse stakeholders. Institutional and academic training strengthened skills, research, and innovation, contributing to improved technology adoption and sectoral growth.

Training and capacity building

ICAR-CMFRI accords high priority to training and capacity-building as an integral component of its mandate, recognising their critical role in strengthening the marine fisheries sector. The Institute places a sustained emphasis on human resource development by regularly organising a diverse range of training programmes for fishermen, fish farmers, entrepreneurs, professionals, students, and research scholars, in addition to capacity

enhancement initiatives for its scientific, technical, and administrative personnel.

The training portfolio encompasses short-term training programmes, skill-oriented workshops, winter and summer schools in specialised disciplines, postgraduate dissertation research, and post-doctoral training. These programmes are designed to provide a balanced blend of theoretical inputs and hands-on exposure, facilitating effective transfer of knowledge, technologies and best practices in emerging and priority areas of marine fisheries.

Through these concerted efforts, ICAR-CMFRI continues to make significant contributions to sustainable development, innovation, and capacity enhancement across the marine fisheries sector. During 2025, the Institute organised a total of 27 training programmes, benefitting 1,247 participants. Additionally, the Institute, including its Headquarters, Regional Centres, and Stations, has also conducted other short training/awareness sessions benefiting over 9500 stakeholders.



Training for the administrative and finance staff of ICAR-CMFRI, Kochi

Regular in-house trainings organised by ICAR-CMFRI during 2025

No.	Topic	Place
1	Cage, pen, ornamental, biofloc and mussel culture	CMFRI, Kochi
2	Marine ornamental fish breeding and aquarium maintenance	Vizhinjam RC of CMFRI
3	Breeding, seed production, and farming of the maze rabbitfish (<i>Siganus vermiculatus</i>)	Karwar RS of CMFRI
4	Various aspects of marine ornamental fish breeding, larval rearing, nursery rearing, packaging, and transportation	Kavaratti, Lakshadweep
5	Participatory Rural Appraisal (PRA)	CMFRI, Kochi
6	Advancing India's blue economy: the role of the fisheries sector	CMFRI, Kochi
7	Tropical fish ageing using hard parts: core techniques, Trop FACT – Training Series-I	CMFRI, Kochi
8	Conservation of sharks in India: moving ahead with the Indian Wildlife (Protection) Act and CITES	CMFRI, Kochi
9	Trvevor Platt Science Foundation – MATHS workshop 2025	CMFRI, Kochi
10	Identification of clam species	CMFRI, Kochi
11	Fish feed preparation	CMFRI, Kochi
12	Grow-out culture and fattening of mud crabs in HDPE boxes	Digha RS of CMFRI
13	Poly-culture of <i>Mugil cephalus</i> with <i>Penaeus monodon</i>	Digha RS of CMFRI
14	Integrating mussel farming with sea cage and seaweed farming	Vishakhapatnam RC of CMFRI
15	Advances in marine macroalgal research for functional food and nutraceutical development	CMFRI, Kochi
16	Organic waste valorisation using black soldier fly larvae in fish feeds	CMFRI, Kochi
17	Hands-on training programme on hatchery practices for marine finfishes	Vizhinjam RC of CMFRI
19	Recent advances in mariculture technologies in India	Vishakhapatnam RC of CMFRI
20	Recent advances in mariculture technologies in India	
21	Recent advances in mariculture technologies in India	
22	Coastal cage farming of finfishes and shellfish for beginners	Karwar RS of CMFRI
23	Intensive coastal aquaculture farming practices	Karwar RS of CMFRI
24	Training programme for the administrative and finance staff members	CMFRI, Kochi
25	Homestead: commercial vegetable cultivation & fish farming (cage, pen, ornamental fish, biofloc, mussel, oyster, and BSF culture)	CMFRI, Kochi
26	Fosmid clone preparation	CMFRI, Kochi
27	Rashtriya Karmayogi Training	CMFRI, Kochi

Capacity-building programs for employees

During 2025, a total of 111 personnel from ICAR-CMFRI, including 15 scientists, 1 technical staff member, and 95 administrative and finance personnel, participated in various training programmes organised by ICAR-CMFRI and other organisations. Capacity-building initiatives for different categories of employees were implemented in accordance with the Annual Training Plan (ATP), which

was formulated based on a systematic assessment of the individual training needs of staff members. The ATP was

designed to ensure that approximately 20-25% of employees receive training each year, thereby enabling every

Training modes included short-term courses, workshops, winter/summer schools, dissertation support and post-doctoral training.

employee to attend at least one training programme once in four years, to enhance professional skills, efficiency, and overall performance.

Short-term training for students/scholars

Forty-three students/research scholars benefited from short-term training programs, which were conducted at various Divisions/ Centres of ICAR-CMFRI for durations ranging from one to three months. These trainings equipped the trainees for skill enhancement in frontier areas such as fish taxonomy, microbiology, molecular biology and biotechnology, breeding and hatchery techniques, data analysis and modelling and so on.

Doctoral and post-doctoral programs

Scientists of ICAR-CMFRI serve as recognised research guides under several reputed universities, including the Kerala University of Fisheries and Ocean Studies, Cochin University of Science and Technology,



Participants of the training on marine food fish breeding and seed production at Vizhinjan RC of CMFRI

List of scholars who received PhD degree in 2025

Name	Guide	University
Sayooj P	Dr K K Vijayan	CUSAT
Priyanka Paulose	Dr K S Sobhana	CUSAT
Vineetha Valsalan K C	Dr V Kripa	CUSAT
Azar Shehansha	Dr Pradeep M A	Mangalore
Aswathi Joshi	Dr Krupsha Sharma, PS	Mangalore
Sreelakshmi S	Rekha Devi Chakraborty	CUSAT

Mangalore University, Mahatma Gandhi University, Andhra University, the University of Madras, and the University of Kerala. Through this strong academic linkage, CMFRI plays a pivotal role in advanced research and human resource development in marine fisheries and allied disciplines.

Currently, 123 research scholars are pursuing their doctoral degree programmes at ICAR-CMFRI, Kochi, and its regional stations and centres under the guidance of ICAR-CMFRI scientists with academic affiliations

of various universities. These scholars are actively engaged in frontier and applied research addressing key issues in marine fisheries, coastal ecosystems, and sustainable resource management. During 2025, 15 PhD theses were submitted, of which six were awarded, and others are in various stages of evaluation. This reflects the institute's continued commitment to high-quality research training and academic excellence.

Two postdoctoral fellows joined the Institute to pursue their research.

Additionally, eleven research fellows were granted permission to apply for various prestigious postdoctoral fellowship schemes, with ICAR-CMFRI serving as the host institution. These included the DST-WISE Post-Doctoral Fellowship, KSCSTE *Back-to-Lab* Post-Doctoral Fellowship, and the DBT-BIOCARE Post-Doctoral Fellowship. These initiatives highlight the active role of ICAR-CMFRI in promoting advanced research and providing a supportive academic environment for early-career scientists.

M.Sc. dissertation program

The Institute provides opportunities to final-year Master's degree students from various universities and colleges to undertake their project and dissertation work across its different scientific divisions. Students were permitted to apply for three- or six-month dissertation programmes in a wide range of subjects through the institute's online application portal. These programmes were conducted at ICAR-CMFRI Headquarters, Kochi, as well as at its regional and research centres.

During 2025, a total of 51 students completed their post-graduate dissertation work at the institute. In addition to contributing to academic training and research exposure, these programmes generated a revenue of ₹10.5 lakhs through dissertation-related fees.



Dr G. Gopakumar, former head, Mariculture Division, speaking on marine ornamental fish seed production and management at Vizhinjam RC of CMFRI



Training on integrating mussel farming with sea cage and seaweed farming held at Vishakapatnam RC of ICAR-CMFRI

Library and Documentation Centre

The Library and Documentation Centre of ICAR-CMFRI contributed measurably to knowledge management and dissemination by strengthening its services, digital repositories, and research support systems. Integration of physical and digital resources enhanced access to global scientific literature, while open-access platforms improved the visibility and impact of research. Core services such as plagiarism screening, publication support, and media archiving ensured research quality and traceability. The Centre also advanced design support for publications and documentation, strengthening research communication.



View of the library of ICAR-CMFRI, Kochi

Activities of the Library and Documentation Centre

The Library and Documentation (L&D) Centre at ICAR-CMFRI sustained its vital services through advanced facilities, empowering researchers and academics to reach their goals.

As a referral library for the fisheries sector, the Library and Documentation Centre maintains a comprehensive repository of global scholarship developed over decades. Its holdings include journals dating

Open-access dissemination through Eprints@CMFRI and digital preservation via DSpace@CMFRI have significantly enhanced the global visibility, reach, and impact of institutional research outputs.

from 1947, over 16,500 books, and more than 200 specialised theses and dissertations, alongside CDs,

expedition reports, navigation charts, and rare monographs. This multidisciplinary collection underpins research in marine biology, oceanography, biotechnology, and environmental sciences.

The ICAR-CMFRI digital library complements these resources with institutional repositories (Eprints@CMFRI and DSpace@CMFRI), a searchable catalogue, ONOS journal access, ASFA abstracts, NDLI resources, and Wiley eBooks via the intranet. The Centre also conducts user awareness programmes and provides internships and practical training for Library Science graduates as per ICAR norms.



The CMFRI Library and Documentation Centre fosters a dynamic learning environment for its fraternity. It serves as the central information hub for CMFRI and is intended to be the crux of academic data. The goal of the L&D Centre is to offer cutting-edge data backup. The CMFRI Library, specializing in fisheries, curates a vast collection of both physical and digital resources. These resources encompass fisheries and allied subjects, authored by leading scholars and published by prestigious institutions worldwide. The library has been meticulously building this collection for several decades. Providing assistance with its research and knowledge-building procedures through top-notch materials and value-added information services in fisheries science and allied subjects, the Library and Documentation Centre has made great strides throughout the years and has contributed to the Institute's rise to international recognition. The CMFRI Library boasts a comprehensive collection of physical resources exceeding thousands of journals dating back to 1947. It encompasses a staggering 16,500+ books and a wealth of other materials, including theses, dissertations, CDs, reports, proceedings, conference volumes, monographs, expedition and cruise reports, encyclopedias, e-books, navigation charts, posters, and miscellaneous publications. These resources delve into a vast array of subjects, including fisheries, marine sciences, oceanography, marine biology, ecology, nuclear sciences, environmental sciences, biochemistry, genetics, and biotechnology. CMFRI's Digital Library functions as an array of digital, audio, and video resources, catering to the needs of faculty, students, and researchers. This cutting-edge platform utilizes the latest technologies to provide seamless access to a wealth of information. The library leverages a robust discovery service that integrates with internal resources like Eprints@CMFRI, DSpace@CMFRI and external resources such as JSTOR, J-Gate, ASFA, IndiaGate, and the Head and Agriculture Organization's Aquatic Sciences and Fisheries Abstracts (ASFA). The Wiley e-Book database available in the CMFRI Intranet and the OPAC-CMFRI Library Catalogue available on the internet also add to its resources. Over decades, the CMFRI Library has meticulously assembled a vast repository of resources encompassing fisheries, marine sciences, microbiology, aquaculture, marine biodiversity, climate change, fish biology, fish nutrition, and marine ecology. This collection, meticulously sourced from across the world, serves as an invaluable resource for researchers and scholars. The library's core strength lies in its comprehensive collection of marine fisheries data. This curated archive forms the bedrock of research endeavors undertaken at CMFRI. The meticulously compiled data empowers scientists and researchers to delve deeper into critical aspects of marine fisheries. The CMFRI Library primarily caters to the needs of scientists and scholars affiliated with fisheries research institutes in India. The library's hereditary collection serves as a focal point for research and knowledge dissemination within these institutions. Library coordinates the publication and printing of CMFRI publications. Stock and sale of CMFRI Publications is also maintained by the Library. ISBN, ISSN numbers, CMFRI publications etc. are also provided by the Centre. The CMFRI Library stands as a testament to the institute's dedication to fostering excellence in marine fisheries research. Through its unparalleled collection of resources and commitment to accessibility, the library empowers researchers and scholars to unlock new frontiers in understanding and managing our vital marine ecosystem. Eprints@CMFRI is the Open Access Institutional Repository of ICAR-Central Marine Fisheries Research Institute. Research outputs of CMFRI - journal articles, conference papers, reports, theses, patents etc. are uploaded/linked/available by CMFRI scientists who do research on fisheries and related areas. Download users can freely download and use documents as it is indicated by the major search engines and scientific databases.

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- Q 1st in national level & 5th in global level among the Marine Science Institutional Repositories;
- Q 2nd Rank among the Indian Institutional Repositories;
- Q 25th Rank in Asia among 500 Repositories;
- Q 283rd Place in world rank among 2000 Repositories;
- Q India's Best Institutional Award for the year 2012 conferred on CMFRI Institutional Repository by the Krishna Kumar Handiqui State Open University, Assam.

Homepage of the CMFRI digital library



Homepage of Eprints@CMFRI

Eprints@CMFRI

Eprints@CMFRI is the institutional repository of ICAR-CMFRI, recognised for its robust open-access framework and comprehensive coverage of the institute's scholarly output. It currently hosts over 18,785 publications, spanning research papers, conference proceedings, theses, books, posters, brochures, videos, and popular science articles produced by CMFRI scientists and scholars since inception. The repository is systematically organised, easily accessible, and indexed by major platforms including Google, Google Scholar, J-Gate, ASFA, and OAIster. By facilitating open access, it enhances the visibility, reach, and impact of scientific research. Over 15 years, Eprints@CMFRI has recorded more than 5.4 million global downloads, strengthening knowledge dissemination and interdisciplinary collaboration.

DSpace@CMFRI

Another Institutional Repository, the DSpace@CMFRI, is a digital archive of ICAR-CMFRI developed for archiving rare and old publications procured at the ICAR-CMFRI library. Six thousand old and rare documents like memoirs, catalogues, reports and expedition

reports are archived in "DSpace@CMFRI". Full text of the documents can be freely accessed at HQ and RCs of ICAR-CMFRI, as it is an Intranet resource.

One Nation One Subscription

The ONOS facility, enabled through the ICAR-CMFRI intranet, provides seamless access to over 13,000 high-impact journals from 30 leading international publishers. Through the One Nation One Subscription initiative, researchers gain unified access to premier titles from Elsevier, Springer Nature, and Wiley, including leading fisheries and marine science journals, thereby enhancing research quality and global scholarly engagement.

Online Public Access Catalogue

The ICAR-CMFRI Library digital catalogue (OPAC) is accessible online from any location, serving as a web-based interface to in-house holdings and linking users to key strategic information sources.

In addition, FAO's Aquatic Sciences and Fisheries Abstracts (ASFA) database is available through the CMFRI intranet, with access restricted to authorised users at the Headquarters and Regional Centres.

ICAR-CMFRI in the media

News on fisheries, aquaculture, and allied sectors published in newspapers is compiled monthly as a reference magazine. Media coverage related to ICAR-CMFRI is archived and uploaded under the 'ICAR-CMFRI in Media' section of the website, while sector-specific clippings are systematically preserved for future reference. In 2025 alone, over 250 news items were added to the 'CMFRI in Media' archive.



Opening of the Creative Design and Documentation Suite

Plagiarism/ Similarity check service

The library ensures academic integrity through plagiarism and similarity checks using iThenticate for all staff manuscripts. This screening also applies to the institute's flagship

Core services, including plagiarism screening, document delivery, media archiving, user training, internships, and publication control, strengthen research quality, integrity, and accessibility.

journals, the Indian Journal of Fisheries and the Marine Fisheries Information Service, safeguarding their quality and credibility.

Publication control and printing coordination

The Library and Documentation Centre functions as the official custodian of ICAR-CMFRI publications, managing the entire publishing cycle from printing and bibliographic registration (ISBN, ISSN and series

numbers) to stock control and global distribution. It also oversees digital dissemination through the official website to ensure wider accessibility. In 2025, the Centre issued 10 ISBNs, 24 pamphlet numbers, 22 training manual numbers, 8 special publication numbers, 4 poster numbers and 12 policy series numbers.

Creative Design and Documentation Suite

The Creative Design and Documentation Suite (CDDS), inaugurated on 25 March 2025, strengthens ICAR-CMFRI's outreach and publication support. Integrated with the Library and Documentation Centre, it serves as the central hub for in-house design of books, quarterlies and official print materials. The facility was inaugurated by Dr S. Ayyappan, former DG, ICAR, in the presence of Dr Grinson George.

Indian Journal of Fisheries

The Indian Journal of Fisheries is a peer-reviewed quarterly, published by ICAR-CMFRI. In 2025, 4 issues of Vol. 72 of the Journal were published. Worldwide usage statistics of the Journal for the year show more than 7000 users. The Journal has a NAAS rating of 6.3 and an International Impact Factor of 0.3.

Marine Fisheries Information Service

The Marine Fisheries Information Service, Technical & Extension Series (MFIS) is a quarterly publication that features research-based technical articles. These articles highlight significant advancements in marine fisheries and ecosystems, covering topics such as new concepts and technologies in marine fish nutrition, hatchery and larval rearing, fish pathology, fish health management, the application of genetics in fish conservation and farming, sea farming technologies, seafood trade, and fisheries governance. Visit: <http://eprints.cmfri.org.in/view/subjects/MFIS.html>

Online Library Information Service

Release of new publications from the institute, activation of online

databases and journals, new books purchased, etc., are intimated regularly to scientists and researchers in headquarters and outstations through email.

Online Document Delivery Service

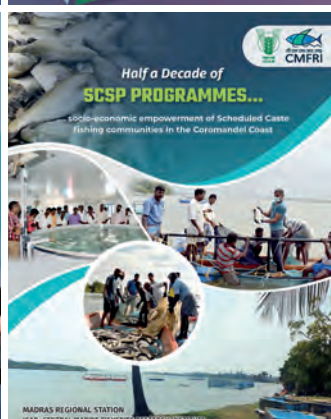
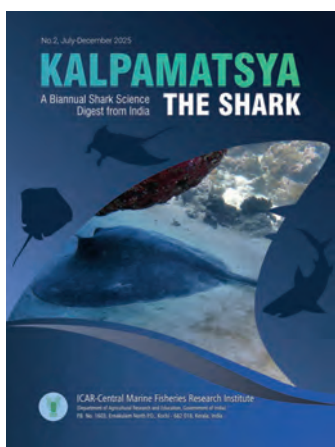
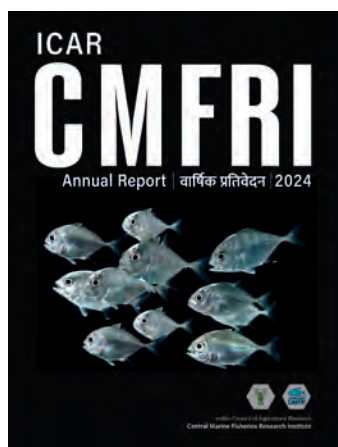
Resource sharing and document delivery services provide access to materials beyond the local collection through national and international networks. Electronic articles and special resources are supplied via consortia memberships, supporting students and scholars from ICAR-recognised institutions.

Internship programme

The library is providing internship facilities to Library Science students as part of their academic programme.

ICAR-CMFRI publications 2025

The centre functions as a key knowledge hub, publishing authoritative works that support research, policy and stakeholder engagement. Recent publications include the CMFRI Annual Report 2024, Marine Fish Landings in India-2024, the Illustrated Guide to Protected Elasmobranchs in Indian Waters, and Impact of Climate Change on India's Marine Fisheries and Ecosystems. Outreach and documentation efforts are reflected in *Kalpamatsya – The Shark* (Jan-Jun 2025), the Duodecennial Report 2012-2024, and the Field Guide for Digitally Smart Marine Fisheries Production Data Management. Collectively, these outputs reinforce CMFRI's commitment to evidence-based management, climate resilience and marine conservation. Besides the above, 7 training manuals and 27 pamphlets were also published.



Important publications brought out through the Library and Documentation Centre

Marine Biodiversity Museum

The biodiversity museum made considerable strides in strengthening marine biodiversity documentation, research, and outreach. Expansion of curated collections and inclusion of new taxa enhanced its value as a national reference repository for taxonomy and systematics. The museum also played a key role in education and awareness, attracting large numbers of students and visitors. These efforts supported biodiversity conservation awareness and public engagement on the importance of marine biodiversity and its conservation.



Students exploring the 3D digital images in the museum

Activities of the marine biodiversity museum

The CMFRI Marine Biodiversity Museum continued to strengthen its role as a national repository of marine life during 2025, with a significant

Museum holdings expanded to 2,841 curated specimens, covering Chordata (1,361), Mollusca (610), Arthropoda (275) and Cnidaria (273), strengthening the repository.

expansion of its curated collections. The museum now holds close to 3,000 specimens representing fish, echinoderms, molluscs, crustaceans and other marine groups. These collections serve as vital reference material for taxonomy, systematics and marine biodiversity research, supporting scientists and students at both national and international levels.

Collections overview

As of date, the museum houses a total of 2,841 specimens encompassing a wide taxonomic range. The Chordata group constitutes the largest share of the collection, followed by Mollusca and Arthropoda, reflecting the museum's emphasis on ecologically and economically important marine taxa.

Summary of collections by major taxonomic groups

Collections	Total (No.)
Algae	100
Porifera	100
Cnidaria	273
Platyhelminthes	1
Rotifera	1
Nematoda	1
Acanthocephala	8
Annelida	2
Arthropoda	275
Mollusca	610
Bryozoa	2
Echinodermata	58
Chordata	1361
Miscellaneous	49
Total	2841

Newly added taxa include *Thryssa* spp., two new *Xenentodon* species, *Petrarctus jeppiaari*, *Conchoderma virgatum*, and new species *Myxobolus* and *Ceratomyxa*.

New species acquisitions

During 2025, the museum's inventory was enriched through the addition of several new specimens, including new species (n. sp.) and newly described species (sp. nov.), further enhancing its scientific value. Notable additions among fishes included *Thryssa* species and two new species of *Xenentodon* (*X. changanacheriensis* and *X. ashberchmanii*). The crustacean collection was strengthened with specialised specimens such as *Petrarctus jeppiaari* and *Conchoderma virgatum*. Under Cnidaria (Myxozoa), a significant number of new



Students enthralled with the whale bone and whale jaw on display

Myxobolus and *Ceratomyxa* species were recorded. Additions were also made to algal and molluscan collections, including *Sargassum plagiophyllum* (Algae) and *Meiocardia cumingi* (Mollusca).

Catalogue 2025

The 2025 edition of the Marine Biodiversity Museum Catalogue was released during the MBI International Symposium MECOS-4, held during 4-6 November 2025. The catalogue provides an updated and comprehensive account of the specimens curated and preserved by the Marine Biodiversity Division of CMFRI, underscoring the institute's sustained commitment to marine biodiversity documentation, research and conservation.

Visitor analysis

The Marine Biodiversity Museum attracted a total of 12,466 visitors during 2025, with footfall largely driven by educational institutions, reinforcing its role as an important learning and outreach centre. Student engagement remained strong, with 11,253 students visiting the museum, comprising 4,873 school students and 6,380 college

Recorded 12,466 visitors, including 11,253 students, strengthening biodiversity awareness and conservation relevance.

students. February recorded the highest visitation, with 3,758 visitors, followed by September with 2,236 visitors, largely due to organised group visits from schools and colleges. The period from March to June witnessed the lowest footfall, marked by the absence of school visits. Public visitation peaked in May with 238 visitors and remained steady during the final quarter of the year.

List of specimens added to the collection in 2025

No.	Species Fish	Accession number
1.	<i>Hyporhamphus limbatus</i> (Valenciennes, 1847)	GB.10.4.7.15.1
2.	<i>Hyporhamphus quoyi</i> (Valenciennes, 1847)	GB.10.4.7.26.1
3.	<i>Cubiceps pauciradiatus</i> Günther, 1872	GB.31.99.1.2
4.	<i>Thryssa dussumieri</i> (Valenciennes, 1848)	GB.13.4.16.19
5.	<i>Thryssa kammalensis</i> (Bleeker, 1849)	GB.13.4.16.17
6.	<i>Thryssa gautamiensis</i> (Babu Rao, 1971)	GB.13.4.16.16
7.	<i>Thryssa kammalensisoides</i> (Wongratana, 1983)	GB.13.4.16.14
8.	<i>Thryssa setirostris</i> (Broussonet, 1782)	GB.13.4.16.20.1
9.	<i>Thryssa purava</i> (Hamilton, 1822)	GB.13.4.16.8
10.	<i>Thryssa mystax</i> (Bloch & Schneider, 1801)	GB.13.4.16.15.1
11.	<i>Thryssa serena</i> (Hata & Motomura, 2019)	GB.13.4.16.12
12.	<i>Thryssa hamiltonii</i> (Gray, 1835)	GB.13.4.16.11
13.	<i>Thryssa baelama</i> (Fabricius, 1775)	GB.13.4.15.18.1
14.	<i>Thryssa polybranchialis</i> Wongratana, 1983	GB.13.4.16.18.1
15.	<i>Thryssa stenosoma</i> (Wongratana, 1983)	GB.13.4.16.10
16.	<i>Thryssa dayi</i> Wongratana, 1983	GB.13.4.16.9
17.	<i>Gymnocranius microdon</i> (Bleeker, 1851)	GB.31.86.2.7
18.	<i>Xenentodon cancila</i> (Hamilton, 1822) (6 NOs)	GB.10.3.1.1.1
19.	<i>Xenentodon changanacheriensis</i> sp.nov (6 NOs)	GB.10.5.1
20.	<i>Xenentodon ashberchmanii</i> sp.nov (2 NOs)	GB.10.6.1
21.	<i>Hyporhamphus xanthopterus</i> (Valenciennes, 1847)	GB.10.4.7.27.1
22.	<i>Hemiramphus archipelagicus</i> Collette & Parin, 1978 (4 No.)	GB.10.4.6.1.1
23.	<i>Hemiramphus far</i> (Fabricius, 1775) (3 NOs)	GB.10.4.6.6.1
24.	<i>Hemiramphus lutkei</i> Valenciennes, 1847 (4NOs)	GB.10.4.6.7.1
25.	<i>Rhynchorhamphus georgii</i> (Valenciennes, 1847) (3NOs)	GB.10.4.10.2.1
26.	<i>Rhynchorhamphus malabaricus</i> Collette, 1976 (3 NOs)	GB.10.4.10.3.1
27.	<i>Rhynchorhamphus santonii</i> sp.nov (4 NOs)	GB.10.4.11
28.	<i>Rhynchorhamphus icaria</i> sp.nov (4NOs)	GB.10.4.12
Crustaceans		
29.	<i>Petrarctus jeppiaari</i> Yang, Kumar & Chan, 2017	ED.3.3.2.2.2
30.	<i>Charybdis (Archias) truncata</i> (Fabricius, 1798)	ED.5.5.2.2.1
31.	<i>Incultus tuberculosus</i> (A. Milne-Edwards, 1861)	ED.5.5.9.1
32.	<i>Pilumnus minutus</i> De Haan, 1835	ED.5.14.1.2
33.	<i>Cycloachelous levigatus</i> Koch, 2021	ED.5.5.10.1
34.	<i>Lupocyclus tugelae</i> Barnard, 1950	ED.5.5.2.10
35.	<i>Conchoderma virgatum</i> Spengler, 1789	EG.7.1.1.1
36.	<i>Chelonibia testudinaria</i> (Linnaeus, 1758)	EA.1.1.1.2
37.	<i>Pennella instructa</i> Wilson C.B., 1917	EF.6.2.1.1
Mollusca		
38.	<i>Meiocardia cumingi</i> (A. Adams, 1864)	DC.4.1.1.1
Algae		
39.	<i>Sargassum plagiophyllum</i> C. Agardh, 1824	AB.3.1.1.5
40.	<i>Spirulina platensis</i> (Gomont) Geitler 1925	AD.1.1.1.2
Cnidaria		
41.	<i>Myxobolus</i> GF1 n. sp.	CG.3.2.1.48
42.	<i>Myxobolus</i> GBK n. sp.	CG.3.2.1.49
43.	<i>Myxobolus</i> GO n. sp.	CG.3.2.1.50
44.	<i>Myxobolus</i> ST n. sp.	CG.3.2.1.51
45.	<i>Myxobolus</i> DFI n. sp.	CG.3.2.1.52
46.	<i>Myxobolus</i> CM n. sp.	CG.3.2.1.53
47.	<i>Myxobolus</i> IMD n. sp.	CG.3.2.1.54
48.	<i>Myxobolus</i> IME n. sp.	CG.3.2.1.55
49.	<i>Myxobolus</i> PF1 n. sp.	CG.3.2.1.56
50.	<i>Myxobolus</i> SCMI n. sp.	CG.3.2.1.57
51.	<i>Ellipsomyxa</i> GA n. sp.	CG.3.1.1.2
52.	<i>Ceratomyxa</i> A n. sp.	CG.3.2.1.45
53.	<i>Ceratomyxa</i> B n. sp.	CG.3.2.1.46
54.	<i>Ceratomyxa</i> C n. sp.	CG.3.2.1.47
55.	<i>Kudoa</i> I n. sp.	CG.3.2.1.58

Major Events

ICAR-CMFRI marked a dynamic year through major scientific events, policy engagement, and community-oriented initiatives. It hosted MECOS4, bringing together global experts on marine ecosystems, climate resilience, biodiversity, and sustainable fisheries. The institute inaugurated the Centre of Excellence for Seaweeds at Mandapam. It launched India's first fully digitised Marine Fisheries Census 2025 and conducted water-quality and disease-monitoring workshops. ICAR-CMFRI also strengthened national and international collaborations, stakeholder consultations, and capacity-building programmes on biodiversity conservation, fisheries welfare, entrepreneurship, and sustainable coastal development.



Dr S. Somnath, former Chairman of ISRO, inaugurating the MECOS4

Global symposium on opportunities and challenges of marine ecosystems (MECOS4)

The Marine Biological Association of India (MBAI), in collaboration with the ICAR–Central Marine Fisheries Research Institute (ICAR–CMFRI), organised the Fourth International Symposium on Marine Ecosystems: Challenges and Opportunities (MECOS4) from 4 to 6 November 2025 at ICAR–CMFRI, Kochi. The symposium was formally inaugurated by Dr S. Somnath, Vikram Sarabhai Distinguished Professor and former Chairman of ISRO, in the presence of Dr J. K. Jena, Deputy Director General (Fisheries Science & Education), ICAR, New Delhi; Shri Dodda Venkata Swamy, IAS, Chairman, MPEDA, Kochi; Shri C. S. R. Ram, IFS, Joint Secretary, Ministry of External Affairs, Government

of India; Dr Bijay Kumar Behera, Chief Executive, NFDB, Hyderabad; Dr Cherdasak Virapat, Regional Director for Asia, TIMES, Thailand and former Director General, NACA; Dr P. Krishnan, Director, BOBP-IGO, Chennai; and Dr A. Gopalakrishnan, former Director, ICAR–CMFRI and Immediate Past President, MBAI; Dr Grinson George, President, MBAI and Director, ICAR–CMFRI and over 600 delegates from India and abroad. The programme comprised four major themes: Ecosystems and Biodiversity Conservation, Sustainable Fisheries and Mariculture, Climate and Environmental Resilience, and Products, Value Chains, and Livelihoods, along with three special sessions on Marine Fisheries and Aquaculture in Amritkal, Women Leaders in Marine Biology, and Marine Mammals and Seabirds. It also included two side events- an Institute–Industry Meet and a Seafood Expo- with participation from 21 organisations,

Hosted the Global symposium on Opportunities and Challenges of Marine Ecosystems, organised major seminars and stakeholder consultations focusing on climate change, marine biodiversity, and sustainable fisheries management.

facilitating interaction among scientists, policymakers, and industry stakeholders. The Valedictory Session, presided over by Dr Biju Kumar, Vice-Chancellor, Kerala University of Fisheries and Ocean Studies, highlighted key outcomes of MECOS4 and future directions. Overall, the MECOS4 reinforced the importance of healthy marine ecosystems and collective action towards a resilient and



Dr J. K. Jena, DDG, speaking on the MECOS4



Valedictory function of MECOS4



Shri George Kurian, Union Minister, inaugurating the CoE for seaweeds

sustainable ocean future.

Centre of Excellence for Seaweeds at ICAR-CMFRI Mandapam

Shri George Kurian, Hon'ble Union Minister of State for Fisheries, Animal Husbandry and Dairying, inaugurated the Centre of Excellence (CoE) for Seaweeds at the Mandapam Regional Centre of ICAR–CMFRI on 9 January 2025. Speaking on the occasion,

the Minister highlighted that the CoE would significantly facilitate seaweed cultivation and strengthen the sector's growth through research and development efforts. The function was presided over by Dr Grinson George, Director, ICAR-CMFRI. Over 150 fishers, fish farmers, and seaweed farmers from Ramanathapuram and Pudukottai districts of Tamil Nadu participated in the program. Interacting with fishers and farmers, the Minister outlined the government of India's initiatives for supporting the sector's development.

Research initiatives on water quality assessment

Dr Soumya Swaminathan, former Chief Scientist of WHO, visited ICAR-CMFRI on 24 January 2025 and unveiled key initiatives under the REVIVAL project on water quality and water-borne infectious diseases in Vembanad Lake. The initiatives included Water Clinics, an integrated disease database, and the CLEANSE and AQUADIP mobile applications, aimed at microbial water quality monitoring, sanitation assessment, and citizen science-based surveillance. The project is a joint

initiative of CMFRI, NIO, and Nansen Environmental Research Centre-India (NERCI). Dr Swaminathan highlighted emerging health challenges related

Marine Fisheries Census 2025 marked a transformative shift in India's fisheries governance as the country's first fully digitised marine fisheries census.

to climate change, antimicrobial resistance, zoonotic diseases, and poor diets, and emphasised the potential of marine resources in improving nutrition through integrated, collaborative and community-driven research.

Launch of the Marine Fisheries Census 2025

The National Marine Fisheries Census 2025, India's first fully digitised marine fisheries census, was launched on 31 October 2025 at ICAR-CMFRI by the Union Minister of State for Fisheries, Animal Husbandry and

Dairying, Shri George Kurian. The Minister called for active cooperation from State Fisheries Departments and community organisations to ensure the success of the "Smart Census, Smarter Fisheries" initiative.

Conservation and Sustainable Use of Marine Biodiversity of Areas Beyond National Jurisdiction

ICAR-CMFRI hosted a national stakeholder consultation on the BBNJ Agreement (Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction) on 12 December 2025, convened by the Ministry of Earth Sciences (MoES) in collaboration with CMLRE and other national and international partners. The consultation reviewed India's preparedness for implementing the BBNJ Agreement, adopted under UNCLOS in March 2023, a landmark global treaty for conserving biodiversity in the high seas. The consultation brought together policymakers, legal experts, scientists, fisheries and maritime stakeholders to assess the scientific, legal and institutional requirements for effective implementation. Senior Advocate Sanjay Upadhyay, inaugurating the event, highlighted the Agreement's potential to address governance gaps in high seas biodiversity, including marine genetic resources and environmental accountability.



Dr Soumya Swaminathan, former Chief Scientist, WHO unveiling key initiatives on water quality assessment



National stakeholder consultation on the BBNJ agreement



National Farmers Day celebration



International women's day celebration



Launch of Deep Ocean Mission project



Launch of vigilance awareness campaign 2025



Minister of State, Shri George Kuriyan, convening a meeting on Kuttanad fisheries development



Signing of MoU with private firm for product commercialisation



National scientific hindi webinar



Launch of ICAR short course on Integrated Taxonomic Techniques



QRT meeting of ICAR-CMFRI



Seminar on mitigating climate change impacts



Stakeholders meet



Viksit Krishi Sankalp Abhiyan launch meeting



Winter school on genetic and genomic tools



Inauguration of the National Marine Data Centre



Workshop on food and nutraceuticals



Workshop on safe and sustainable ocean economy

Viksit Krishi Sankalp Abhiyan

ICAR-CMFRI's outreach to farmers across six coastal states has been strengthened through the nationwide *Viksit Krishi Sankalp Abhiyan* conducted during May–June 2025. Through farmer–scientist interactions, the campaign identified key priorities and concerns in fisheries and aquaculture, including cage farming disease management, improved paddy–fish farming returns, seaweed cultivation, quality seed supply, post-harvest value addition, and climate-smart technologies. The programme gathered valuable farmer feedback for guiding future research, development interventions, and policy support.

Empowering farmers nationwide

The *Viksit Krishi Sankalp Abhiyan* (VKSA), spearheaded by the Union Minister of Agriculture and Farmers' Welfare, Shri Shivraj Singh Chouhan, was conducted across the country from 28 May to 12 June 2025. Launched on 29 May 2025 at Puri, Odisha, the campaign aimed to sensitise farmers to modern technologies in crops, livestock and fisheries, tailored to regional needs; promote relevant Government schemes; and collect field-level feedback to strengthen farmer-led innovations and research.

ICAR–Central Marine Fisheries Research Institute (ICAR-CMFRI) played a key role in VKSA by engaging farmers in Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Odisha and Gujarat from 29 May to 12 June 2025. A total of 62 CMFRI scientists interacted with farmers, disseminated fisheries-related

technologies developed under the ICAR system, and documented feedback on field performance. These interactions also helped identify major constraints and emerging research priorities in the fisheries and allied sectors, which will inform future research planning.

In Kerala, the campaign reached approximately 2,56,000 farmers across all 14 districts over 15 days. A

major highlight was the programme organised by ICAR-CMFRI on 4 June 2025, which was attended by Dr Raghavendra Bhatta, DDG (Animal Sciences), ICAR and VKSA Coordinator for Kerala, Karnataka and Lakshadweep. Dr Bhatta interacted with farmers, and fishing gear was distributed to tribal and Scheduled Caste farmers, underscoring the campaign's commitment to inclusive development.



VKSA farmer scientist interaction in Thrissur district

Research and developmental Issues identified

Based on stakeholder feedback received during the VKSA, CMFRI scientists identified three priority researchable issues in aquaculture and fisheries:

Farmers reported EUS-like symptoms in cage-reared fish, indicating the need for improved disease surveillance and practical, target-specific therapeutic delivery systems that are feasible under cage farming conditions.

Pokkali farmers and farmers of the Kuttanad region in Kerala highlighted constraints in paddy-fish rotational farming and emphasised the need to increase profitability from the fish component to compensate for low returns from paddy cultivation.

The VKSA programme was conducted across the country from 28 May to 12 June 2025 to promote modern technologies in the farming sector and to collect feedback from farmers.

Farmers expressed interest in seaweed farming in high-rainfall coastal regions, suggesting scope for developing resilient and economically viable cultivation models for native seaweeds and introduced species adapted to local environmental conditions.

Key developmental issues identified

Stakeholder feedback in the campaign highlighted three priorities for future development activities.

1. Fish seed availability and production emerged as a major



Dr Raghavendra Bhatta, DDG (Animal Sciences), ICAR, distributing inputs to fishers

constraint, particularly the non-availability of cost-effective, quality seed. Farmers suggested establishing Government hatcheries to serve clusters of 2–3 districts.

2. Post-harvest processing and marketing were flagged as weak areas due to limited adoption of value addition technologies and marketing constraints. Farmers' families expressed interest in training on processing and value addition.
3. Need for new aquaculture technologies were identified and prioritised, including identification of new species for coastal cage farming, development of leasing policies for cage farming in open waters and farming in ponds and rivers, and standardisation and validation of biofloc technology for inland aquaculture, along with climate-smart aquaculture innovations.

Overall, VKSA represents an important step towards empowering farmers through improved access to knowledge, technologies and institutional support, while strengthening mechanisms for farmer-driven feedback to guide future agricultural and fisheries research. The stakeholder consultations provided clear field-level evidence on the urgent need to strengthen the fisheries and aquaculture sector through improved seed supply systems, practical health and disease management solutions, enhanced post-harvest value addition and marketing support, and accelerated development of new, climate-resilient aquaculture technologies. Collectively, these priorities offer a strong roadmap for demand-driven research, policy interventions and capacity-building programmes that can improve farm profitability, reduce production risks, and ensure inclusive and sustainable growth of the sector.

Swachh Bharat Abhiyan

Swachh Bharat Abhiyan resulted in significant improvements in cleanliness, nutrition awareness, and community engagement. Programmes such as *Poshan Pakhwada* and *Swachhta* campaigns promoted fish-based nutrition, sanitation, and sustainable practices. Activities, including clean-up drives, health initiatives, waste management, and plantation, strengthened environmental stewardship and public health awareness. Community participation, outreach programmes, and awareness campaigns reinforced institutional responsibility towards cleanliness and well-being.



Community participation at the beach clean-up organised by Vizhinjam Regional Centre at Veliyathura Beach

Swachh Bharat Abhiyan 2025

Poshan Pakhwada and Swachhta Initiatives

The *Poshan Pakhwada*, *Swachhta Hi Sewa* and *Swachhta Pakhwada* are national initiatives aimed at strengthening nutritional security,

Observed *Poshan Pakhwada* 2025 from 8–22 April 2025 through nutrition outreach promoting fish-based diets, including awareness drives, quizzes, education sessions, health check-ups, supplementation, walkathons and digital outreach.

promoting cleanliness, and fostering sustainable hygiene practices through coordinated action. In alignment with these objectives, the ICAR-CMFRI implemented integrated programmes combining awareness generation, community outreach, adoption of institutional best practices,



Student interaction organised by Mumbai Regional Station at Lokmanyaa Tilak Vidhyalaya, Ratnagiri

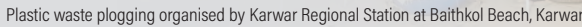
and stakeholder participation to advance public health, environmental stewardship, and social responsibility.

Following directives from the Ministry of Women and Child Development,

Government of India, and ICAR, the ICAR-CMFRI observed the 7th *Poshan Pakhwada* 2025 from 8 to 22 April 2025 through a series of nutrition-focused outreach and health activities. The programme



Human chain formation at ICAR-CMFRI, Kochi

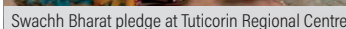


Swachhta Hi Seva campaign and Gandhi Jayanthi celebrations

distribution of 250 saplings, and waste-to-wealth art and murals supporting the Black Soldier Fly larvae-based bioconversion system. Through this coordinated effort, *Swachhotsav* 2025 translated institutional commitment into tangible collective impact. Gandhi Jayanthi was celebrated on 2nd October 2025.

ICAR-CMFRI celebrated the *Swachhta Pakhwada* 2025 from 16 to 31 December at its Headquarters, Regional Centres, and Stations, in accordance with national directives. The campaign emphasised cleanliness, sanitation, waste management, and sustainability through initiatives such as the administration of the Swachhta Pledge, awareness programmes, including in-house videos

demonstrating best practices in waste management, record-keeping and digitalisation, cleanliness drives, tree plantation, and reduction of single-use plastics. Community engagement was strengthened through beach clean-ups, signature campaigns, street plays, plastic waste Shramdaan, and media outreach. The programme also incorporated *Rashtriya Kisan Diwas* on 23rd December 2025 to foster farmer–scientist interaction and promote sustainable fisheries. Collectively, the initiative reinforced cleanliness as both an institutional and social responsibility.



Official Language

Programs on the promotion and implementation of the Official Language in ICAR-CMFRI included Hindi fortnight, scientific webinars, and workshops, which enhanced language proficiency and scientific communication among participants. Internship programmes strengthened compliance and capacity building. Publication of Hindi materials and recognition through national awards reflected effective implementation of Official Language in ICAR-CMFRI. These efforts improved administrative efficiency, promoted inclusive communication, and the use of Hindi in scientific and official domains.

राजभाषा विभाग

म एवं दक्षिणी क्षेत्रों का संयुक्त क्षेत्रीय राजभाषा सम्मेलन

स्थान - देवी अहिल्या विश्वविद्यालय, इंदौर (मध्यप्रदेश)

तिथि- 20 जनवरी 2026



Kshetriya Rajbhasha Award 2024-25

Activities of the Official Language Section

Hindi fortnight

As part of strengthening the use of Hindi in official work and promoting wider participation among staff, Hindi Fortnight was observed at ICAR-CMFRI from 15 to 29 September 2025. A variety of programmes and competitions were organised in hybrid mode, ensuring active participation from different sections. The valedictory function was conducted at Conference Hall 201 on 15 October 2025. Dr P. Shalini, Hindi lecturer and writer, attended as the chief guest. Dr Grinson George, Director, ICAR-CMFRI, delivered the presidential address and highlighted



Observance of Hindi Fortnight at ICAR-CMFRI, Kochi

Hindi Fortnight was observed from 15 to 29 September 2025, promoting Hindi use with various activities, and the Coordination section won the *Rajbhasha* Rolling Trophy.

the importance of sustained efforts in *Rajbhasha* implementation. Prizes were distributed to the winners by the

Chief Guest, and the Coordination section received the *Rajbhasha* rolling trophy. Similar Hindi week and Hindi fortnight activities were also observed across all Regional centres and Regional stations of the institute through diverse programmes.

National scientific Hindi webinar

In continuation of scientific outreach and promotion of Hindi as a medium for knowledge dissemination, a

national scientific Hindi webinar on the theme "Importance of marine fisheries census in fisher development" was organised at ICAR-CMFRI, Kochi, on 13 August 2025. The webinar was inaugurated online by Ms Neetu Kumari Prasad, IAS, Joint Secretary (Marine Fisheries), Department of Fisheries, New Delhi. Dr Ajay Srivastava, Economic Adviser, and Dr Mohammed Koya, Fisheries Development Commissioner, Department of Fisheries, New Delhi, also attended the programme. The event contributed



Releasing the abstract of the National Scientific Hindi webinar



Interns, along with the Director, ICAR-CMFRI, in the internship program

towards strengthening scientific communication in Hindi and highlighted the relevance of the marine fisheries census in policy and development planning.

Capacity building

Internship for postgraduate students

To sensitise students and strengthen awareness on official language implementation in central government offices, an internship programme titled 'Official Language Implementation in Central Government Offices' was organised for eleven postgraduate students of Cochin University. The programme was conducted at

ICAR-CMFRI, Kochi, in two phases from 6 to 20 January 2025 and from 15 to 31 December 2025. Certificates were distributed to participants on successful completion of the programme, thereby promoting structured learning on *Rajbhasha* rules, practices and official language procedures.

Hindi workshops

Capacity building in Hindi was undertaken through a series of workshops organised for staff during the year. Hindi workshops were conducted on 13 January 2025, 30 June 2025, 30 September 2025 and 24 December 2025. These workshops focused on improving proficiency, enabling effective drafting in Hindi, and

encouraging increased use of Hindi in day-to-day official functioning.

Monitoring and review

Official Language Implementation Committee meetings

To ensure periodic review and monitoring of progress, Official Language Implementation Committee (OLIC) meetings were conducted regularly during the year. Meetings were held on 20 March 2025, 19 June 2025, 9 August 2025 and 10 December 2025, during which implementation status, targets and compliance requirements were reviewed, and necessary follow-up actions were initiated across all the Institute, Divisions and Sections.

Official Language Inspection

As part of institutional monitoring, an Official Language Inspection was conducted by Shri Nirmal Kumar Dube, Deputy Director, Regional Implementation Office, Kakkannad, Ministry of Home Affairs. The inspection was carried out on 18 September 2025 and included a review of language practices, compliance under the Official Language Act, and overall progress



Hindi workshop at ICAR-CMFRI



Official Language Inspection

in the implementation of *Rajbhasha* in the institute.

Awards and recognitions

Rajbhasha award

During the year, ICAR-CMFRI, Kochi, achieved a significant milestone in the implementation of the Official Language by receiving the *Kshetriya Rajbhasha Puraskar* instituted by the Department of Official Language, Ministry of Home Affairs, Government of India, for the period 2024–25. The award was conferred under the category of central government organisations in the south-west region. The *Rajbhasha* shield and

certificate were received by Dr Grinson George, Director, and Shri P. Muraleedharan, SAO, from Shri. Bandi Sanjay Kumar, Honourable

ICAR-CMFRI received the *Kshetriya Rajbhasha Puraskar* and TOLIC awards for outstanding Official Language implementation.

Minister of State for Home Affairs, Government of India, in an award function held at Devi Ahilya Viswavidyalaya, Indore.



ICAR-CMFRI, receiving the TOLIC award

TOLIC awards

ICAR-CMFRI, Kochi, continued to demonstrate consistent performance in Official Language implementation by securing recognition from TOLIC, Kochi, for the period 2023–24. The institute received the rolling trophy and was placed second for excellent implementation of the Official Language. It also secured second position for the institute's Hindi magazine *Matsyagandha* among central government organisations in Kochi. In addition to the achievements at headquarters, the regional units of the institute also received notable recognition. The Karwar Regional Station and Mangalore Regional Centre were awarded first prize for excellent implementation of the Official Language for the year 2024–25 by the respective TOLIC units at Karwar and Mangaluru.

Other activities

Official Language promotion was strengthened through a set of regular and compliance-oriented measures. Daily displays of '*aaj ka shabd*' encouraged language enrichment and regular engagement. Documents covered under section 3(3) of the Official Language Act, 1963, were issued bilingually as per the statutory requirement. Further, all communications received in Hindi were replied to in Hindi, reinforcing the institute's commitment to *Rajbhasha* implementation.

The institute continued its efforts in Hindi publications during the year. Issues 14 and 15 of the Hindi magazine *Matsyagandha* were brought out. In addition, a pamphlet on the sawfish *Soochana Bulletin* and an abstract book on the theme 'Importance of marine fisheries census in fisher development' were published, supporting scientific outreach and public awareness in Hindi.

Women's Cell

The Women's Cell in ICAR-CMFRI conducted gender equity and women empowerment awareness through targeted programs and welfare initiatives. Activities such as the observance of International Women's Day highlighted the role of women in fisheries and honoured their contributions. Health and hygiene awareness sessions, along with welfare programmes, supported well-being and inclusivity. Outreach initiatives and recognition of women entrepreneurs and fish workers further strengthened participation, leadership, and empowerment of women in the fisheries sector.



International Women's Day celebration at ICAR-CMFRI, Kochi

Activities of Women's Cell

ICAR-CMFRI, Kochi

International Women's Day was celebrated at ICAR-CMFRI on the 10 March 2025. The event was organised by the Women's Cell of ICAR-CMFRI, with the theme 'Accelerate Action', highlighting the importance of advancing gender equality and empowering women. Dr Sandhya Sukumaran, Chairperson of the Women's Cell, welcomed the esteemed guests. Dr Grinson George, Director, acknowledged the efforts of women and their invaluable contributions to the field of

International Women's Day 2025 was celebrated on 10 March 2025 with the theme "Accelerate Action", highlighting gender equality and women's empowerment.

fisheries. As part of the celebrations, awards were presented to two women fisheries entrepreneurs, Smt. Akhilamole M. A. and Smt. Sangeetha Sunil, in recognition of their innovation, resilience, and leadership in the sector. Women staff retiring before the next International Women's Day were honoured for their dedicated service to ICAR-CMFRI. The Chief Guest, RJ (Radio Jockey) Neena (Neena Prabhavathy Menon), delivered an inspiring speech, advocating gender equality and the empowerment of women.

An awareness session titled 'Freedom with menstrual cups' was held on 8 October 2025, by the ICAR-CMFRI Women's Cell. The Women's Cell Committee of ICAR-CMFRI, Kochi, also hosted an awareness talk on 15 October 2025, by Dr Valsaladevi K, an Ayurvedic physician and



Dr Valsaladevi K., conducting an awareness session on 'Women's Health'

accreditation coordinator, on 'Women's Health: Navigating the Stages from Menstruation to Menopause and Beyond.'

Vizhinjam Regional Centre of ICAR-CMFRI

The International Women's Day celebrations on 7 March 2025 at Vizhinjam Regional Centre were marked by cultural performances by the staff and students, and group photographs, which captured the memories of the day. In continuation with the celebrations on 10 March 2025, an eye check-up camp was also organised in association with Deva's Eye Clinic and Opticals, Thiruvananthapuram, for the benefit of all scientists, staff and students of the centre.

Karwar Regional Station

The Karwar Regional Station of ICAR-CMFRI celebrated International Women's Day on 10 March 2025. The Chief Guest of the programme, Smt. Snehal C. Harikantra, Municipal Member of Karwar City Municipal Council, delivered a speech on gender equality. Guest of honour, Smt. Sushila Harikantra, President of the Fisher Women's Union in the fish market, Karwar, was felicitated in the programme. Smt. Sushila has guided thousands of fisherwomen in the Karwar region, helping them navigate the fish-selling business with confidence and success. Her leadership and dedication were recognised by the Karwar Regional Station of ICAR-CMFRI, and she was honoured with a special recognition for her contributions to the welfare of fisherwomen in the community.



International Women's Day celebration at Vizhinjam Regional Centre

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Participations

Conferences/Meetings/Workshops/Symposia/Trainings/Deputations

Dr Grinson George, Director

- Exhibition-cum-National Seminar on Harnessing Plantation Sector for Sustainable Development Goals, Panel discussion on 'Gearing Plantation Sector for 2030s', ICAR-CPCRI, Kasaragod, 03 January 2025
- Regional Official Language Conference and Award Distribution Ceremony, Karnataka State Open University, Mysuru, 04 January 2025
- 29th RAC meeting of ICAR-CMFRI, Mandapam RC of ICAR-CMFRI, 09-10 January 2025
- International Workshop on Aquaculture Medicine and Aquatic Animal Health Management in Asia-Pacific (AQUAMAP25), CUSAT, Kochi, 16 January 2025
- Delivered felicitation address in the programme "Noorumeni Nandi" organised as part of Professor M. S. Swaminathan Centenary Year Celebrations, to commemorate his unparalleled contributions to agriculture, particularly in Kuttanad, and his efforts in achieving the prestigious Globally Important Agricultural Heritage Systems (GIAHS) sponsored by Malayala Manorama, at M. S. Swaminathan Rice Research Station, Mankompu, Alappuzha, 23 January 2025
- India International Seaweed Expo and Summit (IISES-2025), NIOT Campus, Chennai, 29 January 2025
- Workshop on Sustainable Marine Fisheries Management in a Changing Climate, KUFOS Campus, Panangad, 31 January 2025
- Ninth National Conference of Ocean Society of India (OSICON-25), CSIR-NIO, Goa, 06 February 2025
- 14th Asian Fisheries and Aquaculture Forum (AFAF), ICAR Convention Centre, NASC Complex, New Delhi, 12-15 February 2025
- High-Level Meeting on Policy Guidance for Mainstreaming Ecosystem-Based Fisheries in Small-Scale Fisheries, Male, Maldives, 20-22 February 2025
- Meeting with Lt. Governor of Puducherry on Deep-Sea Fishing Prospects, Raj Nivas, Puducherry, 03 March 2025
- 38th Convocation Ceremony (Guest of Honour), IGNOU Regional Centre, Kochi, 05 March 2025
- International Conference on Fisheries Biotechnology, ICAR-CIFE, Mumbai, 17-18 March 2025
- International Conference on Climate Adaptation and Resilience (CARE-25), CUSAT, Kochi, 24 March 2025
- Mangrove planting programme in the presence of Dr S. Ayyappan (Former DG, ICAR and Secretary, DARE), as a part of the global campaign, Plant4Mother, at Manjanakkadu, Njarakkal, Kochi, 25 March 2025
- Inauguration and Foundation Stone Laying Ceremony of Indian Maritime University Projects, IMU Kochi Campus, 08 April 2025
- Interaction Meeting with Hon'ble Governor of Kerala and GoI Institutions, Raj Bhavan, Thiruvananthapuram, 11 April 2025
- Launching Ceremony of the Project on Marine Finfish Cage Farming Integrated with Seaweeds, Puducherry and Karaikkal, 15-16 April 2025
- International Seminar on Vision 2047: Prosperous and Great India, NAAS, New Delhi, 25 April 2025
- Meeting of Fisheries Ministers of Coastal States/UTs under PMMSY, Taj Hotel, Mumbai, 28 April 2025
- International Workshop on Marine Litter, Climate Change and Biodiversity Loss: A Global Challenge – Talk on "Ghost Fishing Gears: A Threat to Marine Ecosystems", National Centre for Coastal Research (NCCR), NIOT Campus, Chennai, 05 May 2025
- 2nd Research Advisory Committee (RAC) Meeting of ICAR-CCARI, Goa, 08-09 May 2025
- International Exhibition on Poultry, Aquaculture and Animal Feed Industry (IPAAF)-Talk on Climate Smart Marine Fisheries and Mariculture for Viksit Bharat, Adlux International Convention Centre, Kochi, 10 May 2025
- Satellite Training Programme on Advancing India's Blue Economy: Role of Fisheries Sector (in collaboration with World Ocean Science Congress), ICAR-CMFRI, Kochi, 13 May 2025
- Annual Meet of Vice-Chancellors of Agricultural Universities and Directors of ICAR Institutes on Convergence in Action: Shaping Viksit Bharat @2047, NASC Complex, New Delhi, 20 May 2025
- Second Blue Talks Session organised by Ministry of Earth Sciences (MoES), Government of India, Prithvi Bhawan, New Delhi, 20 May 2025
- NOSBCP Meeting on Pollution Response Action Plan for MSC Elsa-3 Shipwreck and Fisheries Impact (Video Conference), 30 May 2025.
- 110th Foundation Day of Zoological Survey of India and Animal Taxonomy Summit 2025–Special Lecture on Blueprint for Blue Growth, Zoological Survey of India, Kolkata, 01-03 July 2025
- Stakeholder Consultation on Deep Sea Resources and Conservation of Endangered, Threatened and Protected Species, Mangalore Regional Centre of ICAR-CMFRI, ICAR-CMFRI, 05 July 2025
- Meeting on Carbon Footprint, Carbon Credits and Carbon Trade in Fisheries and Aquaculture, Krishi Bhawan, New Delhi (Hybrid mode), 07 July 2025
- Interactive Workshop on Conservation of Sharks in India and CITES Implementation, ICAR-CMFRI, Kochi, 14 July 2025
- 97th Foundation Day of ICAR, NASC Complex, New Delhi, 16 July 2025
- Selection Committee Meeting of Agricultural Scientists Recruitment Board (ASRB), New Delhi, 18 July 2025
- Brainstorming Workshop on Climate Science Delivery: Reaching the Unreached, ICAR-CRIDA, Hyderabad (Online), 19 July 2025
- Policy Dialogue and Leadership Conclave–Gyan Sabha on "Viksit Bharat through Education", Amrita Institute of Medical Sciences, Kochi, 27 July 2025
- Seminar on Mitigating Climate Change Impact on Blue Ecosystems: Integrated Approach of Science, Community and Nature, ICAR-CMFRI, Kochi, 05-06 August 2025
- First Meeting of the National Steering Committee for World Seafood Congress 2026 (Online), 05 August 2025
- Technical Committee Meeting on Uniform Fishing Ban Period Review and Conservation Measures, ICAR-CMFRI, Kochi (Hybrid mode), 08 August 2025
- International Conference AQUASEM'25–Advancing Sustainable Aquatic Ecosystems, CUSAT, Kochi, 11 August 2025
- State-Level Policy Dialogue on Inclusive Fisheries Governance for SDG 14, Mumbai, 21 August 2025
- Visit of Hon'ble Union Minister of State for Fisheries, Animal Husbandry and Dairying and Meeting on Integrated fish cultivation in rice fields, ICAR-CMFRI, Kochi, 22 August 2025
- Visit of Norwegian Environment Agency Delegation on Marine Spatial Planning

- Collaboration, ICAR-CMFRI, Kochi, 29 August 2025
- Kerala-EU Conclave on Blue Economy, Industrial Clusters, Skill Development and Migration, Thiruvananthapuram, 19 September 2025
 - Stakeholder Consultation Workshop on Development of Fisheries Sector in Lakshadweep Islands, Taj Cochin International Airport Hotel, Kochi, 20 September 2025
 - 12th Symposium on Diseases in Asian Aquaculture, Hotel Leela Palace, Chennai, 23–24 September 2025
 - Golden Jubilee Celebration of Seafood Exporters Association of India and India International Seafood Show (IISS) 2025, Bharat Mandapam, New Delhi, 25–26 September 2025
 - FSI-IOTC Species Identification International Workshop, Fishery Survey of India, Kochi, 29 September 2025
 - Launch Workshop of the Deep Ocean Mission Project, ICAR-CMFRI, Kochi, 13 October 2025
 - Curtain Raiser of Emerging Science & Technology Conclave (ESTIC), NIOT, Chennai, 17 October 2025
 - National Workshop on Marine Fisheries Census 2025 – Household Enumeration Launch, ICAR-CMFRI, Kochi, 31 October 2025
 - International Symposium on Marine Ecosystems Challenges and Opportunities (MECOS-4), ICAR-CMFRI, Kochi, 04–06 November 2025
 - BIMREN Regional Conclave and Special Session on Ecosystem Approach to Fisheries, ICAR-CMFRI, Kochi, 05 November 2025
 - World Aquaculture India 2025 Conference, HICC-Novotel Convention Centre, Hyderabad, 11–13 November 2025
 - SaGAA VIII Leadership Conference on Agricultural Leadership and Governance, India International Centre, New Delhi, 24 November 2025
 - Brainstorming Session on Strengthening Market Intelligence in Indian Agriculture, ICAR-NIAP, New Delhi, 25 November 2025
 - 8th Annual Food Systems Dialogue by Bharat Krishak Samaj, India International Centre, New Delhi, 25 November 2025
 - Lecture on Sustainable Development of Fishery Management and Coastal Ecosystems, ICED, Jaipur, 27 November 2025
 - Pre-Investor Meet on Fisheries Investment Opportunities in Lakshadweep (Online), 01 December 2025
 - International Science Festival 2025 (Invited Speaker), Panjab University, Chandigarh, 06 December 2025
 - National Stakeholder Consultation on BBNJ Agreement Ratification, ICAR-CMFRI, Kochi, 12 December 2025
 - EAFM Centre Strategic Meeting on Ecosystem Approach to Fisheries Management (Hybrid mode), Kochi, 12 December 2025
 - Investor Meet on Fisheries and Aquaculture Investment Opportunities in Lakshadweep, Bangaram Island, Lakshadweep, 13 December 2025
 - Farmers' Awareness Training Programme on Fisheries Development Initiatives, Ezhupunna, Alappuzha, 16 December 2025
 - Brainstorming Session on Fisheries Research and Development Priorities in South Asia, (Hybrid mode), 27 December 2025
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- Abdul Azeez, P., Abdussamad, E. M., Ajay D. Nakhawa, Akhilesh, K. V., Anil, M. K., Anuraj, A., Anulekshmi, C., Divu, D., Divya Viswambharan, Krupesha Sharma, S. R., Livi Wilson, Mahesh, V., Manas, H. M., Muthu Rathinam, M. A., Muktha, M., Najmudeen, T. M., Purushottama, G. B., Rajkumar, M., Rajesh, N., Rajesh, K. M., Rathi Bhuvanawari Govindarajan, Ramkumar, S., Rekha J. Nair, Remya, L., Roul, S. K., Santosh N. Bhendekar, Sanal Ebenezer, Shikha Rahangdale, Shelton Padua, Shoba J. Kizhakudan, Sobhana, K. S., Srinivasa Raghavan, V., Sujitha, T., Sunil Kumar Ail, Sumitra, T. G., Surya, S., Tanveer Hussain, Veera Venthana, K. R., Venkatesan, V. and Vidya R.**
- 14th Asian Fisheries and Aquaculture Forum (14 AFAF), ICAR Convention Centre, NASC Complex, New Delhi, 12–15 February 2025
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- Abdussamad, E. M., Akhilesh, K. V., Anuja A. R., Anuraj, A., Ajina Mary, Anil, M. K., Anulekshmi, C., Aswathy, N., Asha, P. S., Bindu Sulochanan, Charles Jeeva, J., Divu, D., Divya Viswambharan, Eldho Varghese, Ganga, U., Jayasankar, J., Jeyabaskaran, R., Kavitha, M., Krupesha Sharma, S. R., Krishna Sukumaran, Lakshmi S. Pillai, Livi Wilson, Loveson Edward, Mahesh, V., Manas, H. M., Mini, K. G., Miriam Paul Sreeram, Muktha, M., Najmudeen, T. M., Nakhawa, A. D., Pralaya Ranjan Behera, Prema, D., Purushottama, G. B., Rajesh Pradhan, Rajkumar, M., Rajan Kumar, Rajesh, N., Raju, S. S., Ramkumar, S., Ramya Abhijith, Ranjith, L., Rajeev Ranjan, Rajesh, K. M., Rahangdale, S., Ratheeshkumar, R., Rekha J. Nair, Remya, L., Roul, S. K., Santosh N. Bhendekar, Saravanan, R., Shelton Padua, Shilta, M. T., Shoba J. Kizhakudan, Sobhana, K. S., Srinivasa Raghavan, V., Sujitha, T., Sumitra, T. G., Sunil Kumar Ail, Surya, S., Swathi Lekshmi, P. S., Shyam S. Salim, Tanveer Hussain, Thirumalaiselvan, S., Vaisakh, G., Veera Venthana, K. R., Vidya R., Vinay Kumar Vase, Vinod, K. Chandrasekar S, Gomathi P., Jasmin F., Josileen Jose and Swatipriyanka Sen Dash, Eldho Varghese, Charles Jeeva, J., Jayasankar, J., Johnson, B., Narayana Kumar, R., Mini K. G., Raju, S. S., Somy Kuriakose and Vinay Kumar Vase**
- 4th International Symposium on Marine Ecosystems Challenges and Opportunities (MECOS-4), Kochi, 4–6 November 2025
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- Abdul Azeez, P.**
- Workshop on Seaweed Cultivation Cluster in Lakshadweep scheduled to be held at Lakshadweep on 27th February 2025
 - Orientation Workshop on "Mission Karmayogi" being organised by DARE/ICAR on 27th February, 2025 at A. P. Shinde Symposium Hall, NASC Complex, New Delhi (online).
 - PMMSY meeting under the chairmanship of the Chief Executive, NFDB, on 17 Nos. of cluster approach, 01 April 2025 at 15.00 hrs in virtual mode.
 - 27th Working Party on Tropical Tunas Data Preparatory meeting [WPTT27-(DP)] scheduled from 11-13 June 2025 through virtual mode
 - 7th IOTC Working Group on FADs (WGFAD07) scheduled from 09-10 June 2025 through virtual mode
 - 15th IOTC Working Party on Neritic Tunas (WPNT14) scheduled from 07-11 July 2025 at Seychelles
 - The Honourable Minister for Agriculture and Farmers Welfare and Rural Development interacted online with all the teams of Viksit Krishi Sankalp Abhiyan (VKSA) on 24th May 2025
 - Two-Day Workshop on Developing a Framework for Implementation of Voluntary Carbon Markets in Fisheries and Aquaculture – 2-3 June 2025
 - NABARD stakeholders meeting for the Development of Climate Resilient Coastal Fishermen Villages (CRCFV) and Fisheries Clusters under PMMSY in Kerala and Lakshadweep on 18 June 2025.
 - Meeting on Marine Stewardship Council (MSC) Certification of Lakshadweep tuna fisheries under the Chairmanship of Joint Secretary (Marine Fisheries), DoF, Gol, on 19th June 2025
 - Consultative meeting on promotion of seaweed cultivation is scheduled to be held on 27th June, 2025, at 03:00 PM under the chairmanship of the Secretary, Ministry of Environment, Forest and Climate Change (MoEFCC) at Kaveri Conference Hall, Indira Paryavaran Bhawan, MoEFCC, New Delhi (online).
 - FAO BOBP-IGO National Workshop on Fisheries Management Inventory (FMIInv), BOBP-IGO Secretariat, Chennai, 28th to 30th July 2025.
 - Meeting on promotion of seaweed cultivation on 18th July, 2025, under the chairmanship of the Secretary, EF&CC, in hybrid mode at the Ministry of Environment, Forest and Climate Change (MoEFCC), Kaveri Conference Hall, Indira Paryavaran Bhawan, New Delhi.
 - 21st Working Party on Ecosystems and Bycatch (WPB21) of the IOTC, during 9-13 September 2025.
 - 23rd Working Party on Billfish (WPB) of the IOTC during 15-18 September 2025.
 - 27th Working Party on Tropical Tunas (WPTT27) of the IOTC during 21-25 October 2025.
 - 16th Working Party on Methods (WPM) of the IOTC during 27-28 October 2025.
 - 21st Working Party on Data Collection and Statistics (WPDCS21) of the IOTC during 25-29 November 2025.
 - 28th Session of the Scientific Committee (SC28) of the IOTC during 1-5 December 2025.
 - A review meeting on promotion of seaweed cultivation is scheduled to be held on 14th August, 2025, at 1200 hours under the chairmanship of Shri Amandeep Garg, Additional Secretary,

Ministry of Environment, Forest and Climate Change (MoEFCC), in virtual mode from the Ministry of Environment, Forest & CC, New Delhi.

- National seminar on Mitigating Climate Change Impact on Marine Ecosystems: An Integrated Approach of Science, Community, and Nature, 5-6 August 2025
- online meeting as an expert for the NBSSLUP scientists and stakeholders of Lakshadweep on 14th August 2025 (Thursday).
- VC under the Chairmanship of the Secretary, Department of Fisheries, GoI to discuss the status of the Fisheries Clusters notified in Inland States/UTs under the Pradhan Mantri Matsya Sampada Yojana (PMMSY) on 6th October, 2025
- Virtual meeting "To discuss the status of Fisheries Clusters of North Eastern Region notified under PMMSY" on 10 October 2025.
- Meeting to discuss the status of Fisheries Clusters of Inland States/UTs notified under the Pradhan Mantri Matsya Sampada Yojana (PMMSY) on 14 October 2025.
- Virtual Workshop on Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PM-MKSSY) for the Verification and Monitoring Consultants Hosted by Department of Fisheries, GoI on 30th October, 2025
- Orientation of Lead Agency & Partnering Centres on use of NFDIP platform for carrying out Verification and Monitoring activities, hosted by Department of Fisheries, GoI on 13 November 2025
- Meeting on Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PM-MKSSY) for the Verification and Monitoring Consultants (V&MCs) hosted by the Department of Fisheries, GoI, 28 November 2025
- Meeting on Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PM-MKSSY) for the Verification and Monitoring Consultants (V&MCs) hosted by the Department of Fisheries, GoI, 09 December 2025

Abdussamad, E. M., Ganga, U., Najmudeen, T. M., Remya, L., Livi Wilson and Mahesh, V.

- Attendance in the talk on "ICAR – Digital Agriculture" delivered by Dr Anil Rai, ADG (ICT), held at ICAR-CMFRI Headquarters, Kochi, 18 March 2025.

Adnan Hussain Gora

- Indian Arctic Expedition at Ny Alesund, Svalbard during 1-30 June 2025, funded by National Centre for Polar and Ocean Research, Ministry of Earth Sciences, Government of India

Akhilesh, K. V.

- Participated in the workshop on "India's Data Submission to IOTC" at FSI, Kochi, on 4-5 October 2025.
- FSI-IOTC Species Identification Workshop, Kochi, 29 September to 03 October 2025
- National Symposium on Species and Aromatic

Crops" (SYMSAC XI) at ICAR- IISR, Kozhikode. 07- 09 January 2025

- Training of Coordinators for the Marine Fisheries Census 2025 during 8-10 October 2025

Anil, M. K.

- Attended the Faculty Board of Studies meeting on 29 January 2025 and 12 December 2025 by the Faculty of Fisheries Science, Kerala University of Fisheries and Ocean Studies, Panangad, Kochi.

Anuja, A. R.

- LPNG Bunkering Summit on 18 September 2025
- Working Group on Marine Fisheries, Mariculture and Brackish Water Aquaculture on 01 September 2025, hosted by the Department of Fisheries
- Kerala Government Blue Economy Conclave – Individual Institute Meeting with Department of Fisheries (Assistant Director) on 08 April 2025
- International Colloquium: Australia-India Deepening Maritime Cooperation for a Resilient Indo-Pacific Region on 12 March 2025 through hybrid mode

Anuja A. R., Charles Jeeva, J.

- Online brainstorming session on "Filling the gaps: Leveraging data for reliable estimates of fish and fish meal production" organised by ICAR-CMFRI on 19 May 2025.

Anuja, A. R., Aswathy, N., Charles Jeeva and Shyam S. Salim

- Online meeting conducted by the Honourable Minister for Agriculture and Farmers Welfare and Rural Development with the teams of Viksit Krishi Sankalp Abhiyan (VKSA) on 24 May 2025

Anuja A. R., Aswathy, N. and Johnson, B.

- Meeting on Carbon footprint, Carbon credits and Carbon trade in Fisheries and Aquaculture under the Chairmanship of Joint Secretary (Marine Fisheries) through Hybrid mode on 07 July 2025.

Anuja A. R., Aswathy, N., Jayasankar, J., Somy Kuriakose, Shyam S. Salim and Swathi Lekshmi, P. S.

- Sensitisation Workshop during 20–21 May 2025 at ICAR-CMFRI, Kochi
- National Workshop on Marine Fisheries Census 2025 on 31 October 2025 at ICAR-CMFRI, Kochi.
- Training Workshop of DLCs and FLCs during 8–10 October 2025 at CMFRI, Kochi
- Training workshop for the state-level coordinators conducted in connection with the Marine Fisheries Census 2025 at CMFRI, Kochi, from 06–10 October 2025.

Anuja, A. R., Aswathy N. and Mini K. G.

- Meetings of the Working Group on IT for Traceability in the Fisheries Sector in India, 1, 8, 18–19 September 2025

Anuja, A. R., Aswathy, N., Shyam S. Salim and Somy Kuriakose

- FAO & BoBP-IGO Expert Briefing for Fishing Fleet Techno-economic Performance Reviews in Asia on 06 November 2025

Anuja, A. R., Aswathy, N., Narayana Kumar, R. and Shyam S. Salim

- Two-Day Workshop on Developing a Framework for Implementation of Voluntary Carbon Markets in Fisheries and Aquaculture, 2–3 June 2025 at CMFRI, Kochi

Anuja, A. R., Jayasankar, J., Narayana Kumar, R. and Shyam S. Salim

- First Inception Workshop of the BoBP project entitled "Fishery Management Regimes: Optimisation and Innovation for the Blue Economy in the BOB Region" through hybrid mode on 8th July 2025
- First Inception Cum Scoping Workshop BoBP project entitled "Fishery Management Regimes: Optimisation and Innovation for the Blue Economy in the BOB Region" through hybrid mode on 26 September 2025
- BoBP Mid-term Review Meeting on 11 November 2025
- Project Review Meeting of BIMReN Twinning Research Projects (BoBP-IGO; attended by Amb. Ram, Joint Secretary, MEA) on 10 March through hybrid mode
- BIMSTEC-India Marine Research Network (BIMReN) first regional partners conclave during 04–06 November 2025 at ICAR-CMFRI, jointly organised by BoBP, Ministry of External Affairs and ICAR-CMFRI.

Anuja A. R., Narayana Kumar, R. and Shyam S. Salim

- Third Advisory Committee Meeting of ICAR-NASF project entitled "The changing dynamics of labour migration on employment, livelihood and resource productivity patterns in Indian marine fisheries sector" at ICAR-CMFRI, Kochi on 11–12 September 2025
- First Stakeholder Labour Welfare Meet "Samudrasangamam" of ICAR-NASF project entitled "The changing dynamics of labour migration on employment, livelihood and resource productivity patterns in Indian marine fisheries sector" at ICAR-CMFRI, Kochi on 27 August 2025

Anuja, A. R. and Shinoj, P.

- Pre-budget Discussions with Kerala Finance Minister on 16 December 2025
- VKSA State-level Meeting on 03 September 2025
- Sub-committee Meeting on Voluntary Carbon Market (VCM): Implementation in Fisheries and Aquaculture on 01 August 2025
- ISED International SME Day 2025 (Institute of Small Enterprises and Development) International Small and Micro Enterprises Day

2025 & Conference on SME Value Chains, Grand Hotel, MG Road, Cochin, 20th June 2025

- National Workshop on Evolving a Traceability Framework for Fisheries Value Chain, ICAR-CIFT, 26th June 2025
- Secretary-level Meeting: Marine Fisheries Conclave (Kerala Government Blue Economy Conclave – EU Investment Preparatory Meeting) on 04 April 2025
- Blue Economy EU Conclave – Meeting with the Director of Fisheries, Government of Kerala, on 30 April 2025 through hybrid mode

Anuja, A. R. and Somy Kuriakose

- Pre-census workshop of Marine Fisheries Census 2025 on 11-12 August 2025

Anuraj, A.

- State Credit Seminar 2025-26, 22 January 2025, NABARD, Thiruvananthapuram.
- Sustainable Marine Fisheries Management in a Changing Climate, 31 January 2025, COFPAA, Kochi.

Aswathy, N. and Narayana Kumar, R.

- Regional Workshop on Strengthening Sustainable Aquatic Food Value Chains for Enhanced Food Security and Nutrition in Asia from 02-04 December 2025 at the Fortune Beach Resort, ECR, Chennai, jointly organised by Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO) and the Food and Agriculture Organisation of the United Nations (FAO)

Anuja, A. R. and Mini K. G.

- Marine Fisheries Census (MFC) Review Meeting on 11-12 December 2025
- Viksit Krishi Sankalp Abhiyaan (Kharif campaign)
- Census trainers training on 07 October 2025
- Census coordinators training – Kerala enumerator training on 08-09 October 2025
- MFC enumerator training for Ernakulam district was conducted on 29 October 2025
- Census Review Meeting with all HoDs and SICs & Census Inception Meeting with Joint Secretary (Marine Science) on 09 April 2025 through hybrid mode

Anulekshmi Chellappan

- Online meeting of the Purse Seine Expert Committee on comments from States and UTs, convened by JS (Marine), Department of Fisheries, Government of India, 02 January 2025.
- National Symposium on Species and Aromatic Crops (SYMSAC XI) at ICAR- IISR, Kozhikode. 07- 09 January 2025
- Training of Coordinators for the Marine Fisheries Census 2025 during 08th to 10th October 2025
- National Workshop on Aligning academic research with national marine fisheries resource

assessment needs, organised by BoBP in collaboration with FAO and the Department of Fisheries, 29-31 May 2025.

- Attended "Swasraya Bharat", a mega science and technology seminar aligned with India's vision for Atma Nirbharata, –A roadmap for Kerala in Amrit Kaal during 15-17 October 2025, at NIT-Calicut.

Asha, P. S.

- Participated in the "Red Data Book Consultation Meeting" organised by Kerala State Biodiversity Board, Thiruvananthapuram, held at the Govt. Guest House, Thycaud, Thiruvananthapuram, in connection with the International Day for Biological Diversity 2025.
- Participated in the two-day workshop on Developing a Framework for the Implementation of Voluntary Carbon Markets in Fisheries and Aquaculture on 2-3 June 2025 at ICAR –CMFRI, Kochi.
- Participated in the Nationwide campaign Viksit Krishi Sankalp Abhiyan, Pre Kharif 2025 during the period 3-5 June 2025 at KVK Kollam and interacted with farmers of various sectors and presented the activities of CMFRI at three locations, like Pavithreswaram, Inchakkad and Ezhukon.
- Participated in the World Environmental Day celebrations held at Irumpanganadu Higher Secondary School, Kollam, on 5th June 2025 by planting trees inside the school campus.
- Participated in the "3rd National Workshop on 'Coalition of Coastal Cities to Combat Marine Litter' organised by the Centre for Science and Environment, New Delhi, at the Anil Agarwal Environment Training Institute, Tijara, Rajasthan, from 24-26 June 2025.
- Participated in the workshop on the Sustainability of Marine Environment and Resources being held on 30 July 2025, organised by the Marine Biodiversity and Environment and Management Division, CMFRI, Kochi.
- Participated in the online workshop on Advancing Marine Biodiversity and Ecosystem Conservation through Standardisation: Bridging Science, Policy and Practice, organised by the Environment and Ecology Department of the Bureau of Indian Standards (BIS) and the Central Marine Fisheries Research Institute, Kochi, on 07-10-2025 at 2:30 PM. In Hybrid Mode.
- Participated in the online meeting convened by the Fisheries Science Division of ICAR to discuss the species listed in Schedules I and II of WPA 1972 on 08-10-2025.
- Participated in the consultation workshop organised by the Centre for Water Resources Development and Management at Sahakaran Bhavan, Thiruvananthapuram, on 14 October 2025.
- Participated in the Pollution Response Workshop on 24-October 2025 to ascertain preparedness, resource agencies and other stakeholders in responding to marine pollution / major oil spill off the Kerala coast.
- Participated in the online meeting under the Chairmanship of the Director General of Forest and Special Secretary, MoEFCC and the CITES Management Authority, India, on 24th AND 28th October, 2025, at 03:00 PM, and at 05:00 PM in hybrid mode to discuss and comments the proposals for amendment to the Appendices to be considered at CITES CoP 20 and other matters related to CITES. And submitted the duly filled format with comments on the Country Positions on Proposals to Amend the Appendices for the 20th meeting of the Conference of the Parties to CITES to be held in Samarkand, Uzbekistan, 24 November–05 December 2025.
- Participated and presented a poster, "A pan-India based assessment of beach litter load and cleanliness status along the Indian coast" at the International Symposium MECOS-4 (Marine Ecosystem Challenges and Opportunities) held at CMFRI Kochi during 04-06 November 2025.
- Participated in the consultative round-table meeting with key stakeholders of Kerala on Sustainable Development Goal (SDG 14) (Life Below Water) at SP Grand Days, Thiruvananthapuram, organised by The Energy and Resources Institute (TERI), New Delhi.
- Participated in the launch workshop for the Kerala State Biodiversity Board (KSBB)-funded project titled "Identification and Removal of Ghost Fishing Nets in Selected Fishing Zones of the Trivandrum Coast for Developing Strategies for Regular Monitoring of Marine Ecosystems" was conducted on 09 April 2025, at the Vizhinjam Regional Centre of ICAR-CMFRI. The workshop was attended by more than A total of 90 participants representing a wide range of stakeholders.
- Participated and delivered an awareness lecture on "Marine litter and Ghost net impact" Awareness Workshop for school children of Vizhinjam area on Marine Litter and Ghost net under the Kerala State Biodiversity Board (KSBB)-funded project titled, at the Vizhinjam Regional Centre of ICAR-CMFRI on 25 July 25 for more than 100 students, teachers, and guests from KSBB.
- Participated and delivered an awareness lecture on "Marine litter and ghost-net impact" to the students of the Government Regional Fisheries Technical High School and Vocational Higher Secondary School, and participated in the coastal clean-up drive and awareness workshop on marine litter and ghost-net impacts at Valiyathura Beach, Thiruvananthapuram, on 23 September 2025.
- Participated and delivered an awareness lecture on "Marine litter and ghost-net impact" at the awareness workshop on "Impact of Marine Litter and Ghost Nets on the Marine Ecosystem", conducted at the Conference Hall, Govt. H. A. U. P. School, Vizhinjam, Thiruvananthapuram, on 30 October, 2025, for 72 fisherwomen, to raise awareness among the local community about the increasing threat of marine litter and its detrimental effects on marine biodiversity and coastal livelihoods under the Kerala State Biodiversity Board (KSBB)-funded project.
- Participated and delivered an awareness lecture on "Impact of Marine litter and Ghost Nets on

Marine ecosystem" at the Sindhu Matha church Auditorium, Vizhinjam, Thiruvananthapuram on 10th December, 2025

- Participated in the webinar on "Plastic Waste Management in Kerala: Role of Clean Kerala Company" given by Mrs Remya Sudhy G., Nodal Officer, Clean Kerala Company, Thiruvananthapuram, on 19 December 2025 at 03:00 PM in connection with the implementation of the Action Plan for Swachhta Pakwada (16-31 December 2025).
- Participated and delivered an awareness lecture on "Marine Litter and its Impacts" on 14 November 2025 for the National Service Scheme volunteers of P. R. William Higher Secondary School under the programme "Uppu 2025", organised by the Non-Government Organisation Ocean Science Community at the Government L. P. School, Poovar, Thiruvananthapuram.

Aswathy, N.

- Forum on Resilient Coasts, Thriving Communities: A Sea of Solutions Date: 18-19 August 2025 by the Asian Development Bank at Grand Hyatt, Kochi, Kerala, India.
- One-day workshop on "Capacity Building of Coastal States on Development of Ocean Accounts" in Kochi, Kerala, on 29 August 2025, organised by The Ministry of Statistics and Programme Implementation (MoSPI), Government of India, in collaboration with the Directorate of Economics and Statistics (DES), Government of Kerala, and served as Resource person for the technical session.
- Two-day seminar on Vision Viksit Bharat @ 2047 organised by ICAR-CMFRI and Institute of Social Science, New Delhi, from 05-06 August 2025 at CMFRI, Kochi and served as rapporteur for the session on Community-led adaptation and Socioeconomic resilience
- Panellist in Maritime Conclave 2025 on 16 September 2025 at Crowne Plaza, Kochi

Aswathi, N., Najmudeen, Prema, D., Shelton Padua and Sobhana, K. S.

- An online meeting has been called by the Chairman, KSPCB, for the Evaluation of the project proposal submitted by NIO-Environmental Damage Assessment and Long-term Study related to the shipwreck incident of the vessel, MSC Elsa 3, on 01 July 2025
- Meeting at CIFT on MSC Elsa – Protocol for Monitoring – discussion on 02 July 2025.
- An online meeting has been called by the Chairman, KSPCB, for the Evaluation of the project proposal submitted by NIO-Environmental Damage Assessment and Long-term Study related to the shipwreck incident of the vessel, MSC Elsa 3, on 07 July 2025

Chandrasekar, S.

- Viksit Krishi Sankalp Abhiyan, Kharif 2025, from 29th May to 12th June 2025 at Kottayam district of Kerala.

- Two-Day Workshop on 'Developing a Framework for Implementing the Voluntary Carbon Markets in Fisheries and Aquaculture, held at ICAR-CMFRI Headquarters during 2-3 June, 2025.

Charles Jeeva

- Consultative Workshop on 'Implementation of the Ecosystem Approach to Fisheries Management (EAFM)' organised by BOBP-IGO at Chennai on 11 April, 2025.
- Multi-stakeholder Workshop organised by ICAR-CMFRI in collaboration with Ocean Centres India (established through a partnership between the UN Global Compact (UNGC) and Lloyd's Register Foundation) on 11 September 2025 in Hybrid Mode.
- Regional Capacity Development Workshop on Development of National Plan of Action for Small Scale Fisheries (NPOA-SSF) & Preparation of National Roadmaps organised by BOBP at Chennai during 17-19 September, 2025.
- 12th Symposium on Diseases in Asian Aquaculture, organised by ICAR-Central Institute of Brackishwater Aquaculture (ICAR-CIBA) in Chennai during 23-27 September, 2025.
- Resource Person during the ICAR-sponsored 21-day Winter School training programme on "Engendering agriculture with technological innovations and policies for women empowerment" organised at ICAR-Central Institute for Women in Agriculture, Bhubaneswar and delivered an online lecture on the topic "Engendering Farming System Research for Sustainable Food Systems and Enhancing Farm Income" on 21 January 2025.
- Organised the ICAR-CMFRI exhibition stall during the 'Seafood Expo Bharat 2025' organised by MPEDA at Chennai during 1-3 July, 2025.

Charles Jeeva, J., Jayasankar, J., Raju, S. S., Somy Kuriakose and Shyam S. Salim, Lakshmi S. Pillai, Linga Prabhu D., Mahesh V., Mini K G

- National Scientific Hindi Webinar on "Importance of Marine Fisheries Census in Fisher Development" hosted by ICAR-CMFRI, Kochi on 13th August, 2025.

Charles Jeeva and Raju, S. S.

- Virtual talk under 'Matsya Manthan' lecture series titled, 'Seaweed Aquaculture: Cultivation Technologies, Promises and Challenges in India, organised by the Department of Fisheries, Animal Husbandry and Dairying on 2nd September, 2025 (online).

Divu, D.

- Conference attended- World Aquaculture 2025, 10-13 November 2025, World Aquaculture Society, Hyderabad, India.
- Conference attended- Earth Summit 2025, 05-06 December 2025, National Bank for Agriculture and Rural Development (NABARD), Mahatma Mandir Convention & Exhibition Centre, Gandhinagar, Ahmedabad.

Divya Viswambharan

- Two-day workshop 'Kadalazham – Knowledge about the Sea and Its Biodiversity', held on 06-07 February 2025, jointly organised by Kannur University and the Kerala State Biodiversity Board.
- Participated and organised a Regional Workshop on "Developments in Deep-sea Resource Exploration and Endangered Threatened Protected (ETP) Species Conservation" conducted by Mangalore Regional Centre of ICAR-CMFRI on 05 July 2025.
- Participated and organised in the National Workshop on 'Advancing Marine Biodiversity and Ecosystem Conservation through Standardisation: Bridging Science, Policy and Practice' on 07 October 2025 at 2:30 pm in hybrid mode.
- 6th meeting of EEDC/ Panel 9 'Biodiversity and Ecosystem' at BIS Headquarters, New Delhi, on 24th July 2025.
- 21st Meeting of the Central Geological Programming Board Committee-VI on 'Marine Geology & Exploration and Coastal Geoscience', 17 September 2025, MCSD, GSI, Mangaluru, Karnataka.
- Two-Day Workshop on 'Developing a Framework for Implementing the Voluntary Carbon Markets in Fisheries and Aquaculture' held during 2-3 June 2025 at ICAR-CMFRI, Kochi, in hybrid mode.
- National Workshop on Marine Fisheries Census 2025 on 31st October 2025 at CMFRI HQs in Kochi

Eldho Varghese

- NAAS-YUVA (National Academy of Agricultural Sciences-Youth United for Visionary Agriculture) organised an Infographic Competition for Students pursuing agricultural sciences (BSc, MSc, and PhD) in ICAR institutes and State Agricultural Universities on 20-22, February 2025.
- De-briefing on the FAO's New Paradigm in Global Stock Status Reporting on 20 January 2025, coordinated by BoBP, Chennai.
- NAAS-YUVA-Writing a (Winnable) Research Grant Proposal webinar on 28 February 2025
- 75th Annual Conference of the Indian Society of Agricultural Statistics on the theme "Data Revolution in Agriculture: Innovative Statistical and Computational Methods for Viksit Bharat @2047", held at the Department of Statistics, Mathematics and Computer Applications, Dr Rajendra Prasad Central Agricultural University, Pusa, Samastipur, Bihar, during 20-22 March 2025.
- 15th Meeting of the Technical Committee on Allocation Criteria (TCAC15) scheduled during 14-17 July 2025 at Zanzibar, Tanzania, in virtual mode
- Meeting on the Sub-committee to review the duration of the Fishing Ban period on 23 July 2025

- Expert Consultation on the proposed Indian Council of Fisheries and Veterinary Sciences by NAAS on 4th July 2025
- Meeting with the Secretary, DoF, on 28 August 2025, as part of the review of the projects funded under the PMSSY scheme
- M. S. Swaminathan Centenary International Conference 2025 on Evergreen Revolution – The Pathway to Biohappiness (MSS@100) organised by MSSRF, Chennai, jointly with NAAS and ICAR at NASC Complex, New Delhi, during 7–9 August 2025.
- Scoping Mission Meeting for Marine Spatial Planning under the India-Norway Collaboration on Ocean Dialogue on 29 August 2025
- M. S. Swaminathan Centenary International Conference 2025 on Evergreen Revolution – The Pathway to Bio happiness (MSS@100) organised by MSSRF, Chennai, jointly with NAAS and ICAR at NASC Complex, New Delhi, during 7–9 August 2025.
- 22nd Session of the Compliance Committee of Indian Ocean Tuna Commission (IOTC) held during 07–09 April 2025, held at La Reunion.
- 9th Session of the Technical Committee on Management Procedures (TCMP) of Indian Ocean Tuna Commission (IOTC) held on 12th April 2025, held at La Reunion.
- Indian Ocean Tuna Commission (IOTC)- 29th Session of the Indian Ocean Tuna Commission held from 13–17 April 2025 at La Reunion
- 16th Working Party on Methods (WPM) held during 27–28 October 2025
- 21st Working Party on Data Collection and Statistics (WPDCS21), Indian Ocean Tuna Commission, Shanghai, China, on 25–29, November 2025.
- Annual meeting of our AARMS CRG held at the Department of Mathematics and Statistics, Memorial University of Newfoundland, St. John's, NL A1A 5C9 in virtual mode on 17th July 2025

Ganga, U.

- Attended De-briefing on FAO's New Paradigm in Global Stock Status Reporting by BoBP, online mode on 20-1-2025
- National Workshop on Port State Measures Agreement (PSMA) to Combat IUU Fishing, jointly organised by FAO, BOBP-IGO and Department of Fisheries, Animal Husbandry & Dairying, Government of India, Kochi, Kerala, 10–11 February 2025.
- Orientation Workshop on Mission Karmayogi (online) held in NASC Complex, New Delhi on 27-02-2025.
- Participation in Viksit Krishi Sankalp Abhiyan, organised in association with Krishi Vigyan Kendra, Malappuram District, 08–12 June 2025.
- 4th Meeting of the Expert Committee for Revalidation of Potential Fisheries Resources PY in the Indian EEZ held at ICAR-CMFRI on 23–6-2025.
- Webinar by Elsevier Publishing on Generative AI in Scientific writing and Scholarly Publishing

and ScienceDirect for ONOS held online on 09-09-2025

- India IOTC Fishery Data Review Meeting held at FSI, Kochi on 04-10-2025.
- Attended online in the First Meeting of the Committee for development of a template for updating MFRA, organised by the Department of Fisheries, Govt of India, on 30-10-2025.
- Visit to National Centre for Earth Science Studies (NCESS), Akkulam, Thiruvananthapuram, and discussions with scientists of the Solid Earth Research Group for collaborative research on isotope analysis of fish hard parts, 02 December 2025.

Ganga, U., Livi Wilson, Najmudeen, T. M., Remya, L. and Shoba Joe Kizhakudan

- Stakeholder Meeting on "Sustainable Development and Marine Fisheries of Kerala", organised at ICAR-CMFRI, Kochi, 28 February 2025, under the in-house research project Science for Sustainability: Developing an Integrated Assessment Framework (IAF) for Marine Fisheries of Kerala and Lakshadweep.
- Stakeholder Awareness Workshop at Munambam Fisheries Harbour, Kerala, conducted on 23 October 2025 under the CMFRI in-house research project entitled "Science for Sustainability: Developing an Integrated Assessment Framework (IAF) to support management decisions for marine fisheries of Kerala and Lakshadweep.

Geetha Sasikumar

- Participated in the 12th Indian Scientific Expedition to the Southern Ocean (ISE-SO), organised by the NCPOR, MoES, which commenced on 10th February 2025, onboard the chartered ice-class research vessel SA Agulhas. During the expedition, the team carried out extensive studies on cephalopod biodiversity up to 67°S and documented a wide range of marine fauna.
- Participate in the National Workshop on Aligning Academic Research with National Marine Fisheries Resource Assessment Needs, organised by BOBP-IGO in collaboration with ICAR-CMFRI during 29–31 May 2025 in Kochi.
- Participated and provided input in developing a Fisheries Management Inventory (FMInv) for Ashtamudi Clam Fishery in the National Workshop on Fisheries Management Inventory (FMInv) organised by Food and Agriculture Organisation (FAO) with BOBP-IGO, at Chennai, from 28–30 July 2025.
- Participate in the National Workshop on Strengthening the Science–Management Interface: Embedding Evidence and Technology in Marine Fisheries Governance, organised by BOBP-IGO in collaboration with ICAR-CMFRI during 09–10 September 2025 in Chennai, Tamil Nadu.
- Served as a Panelist in the session, Turning the Tables! From Novel Ideas to expert Insights in SaGAA VIII Leadership Conference – "Confrontation to Collaboration in a Fractured

World: Science | Business |Policy" at India International Centre, New Delhi, during 24–25 November 2025.

Gomathi, P.

- Attended the 4-day Capacity development course on "Planning and implementing Ecosystem Approach to Fisheries Management in India" organised by the Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO) under BOBLME project Phase-II during 11–14 November 2025 in Chennai, India.
- Served as a resource person for the Capacity Building Training Programme for the Scheduled Caste fishermen community at Kottaikadu fishing village, Chengalpattu District, on 06 December 2025, organised by the Marine Products Export Development Authority (MPEDA), Regional Division, Chennai. Conducted a training session on Oyster Culture for fisherwomen, and a total of 30 women oyster fishers participated in the training programme.

Gyanaranjan Dash

- Participated and delivered theory and hands-on practical classes on various stock assessment methodologies and their applicability in a 5-day HRD-approved training programme organised by Central Inland Fisheries Research Institute (ICAR-CIFRI) from 24–28 November 2025 on "Stock Assessment in Data Poor Inland Fisheries" at ICAR-CIFRI Barrackpore as the Resource Person of the programme.
- Delivered lectures and classes on Odisha Marine Fishing Regulation Act (OMFRA) and Coastal Regulation Zone (CRZ) in two 7-day residential training programmes organised by the Brackish Water Training Centre (BWTC), Paradeep, Government of Odisha, from 13–19 October 2025 and from 23–29 October 2025 to the coastal farmers as the Resource Person of the programme.
- Attended a 21-day Winter School on Ecosystem Health Monitoring and Fisheries Management in Inland Open Waters from 20 February to 12 March 2025, at ICAR-Central Inland Fisheries Research Institute (ICAR-CIFRI), Barrackpore, Kolkata.
- Participated and presented a paper in the National Conference 2nd Indian Fisheries Outlook-2025 (2nd IFO) from 12–14 July 2025, organised at the College of Fisheries, OUAT, Berhampur.
- Participated and presented a paper in the National Scientific Hindi Seminar (Webinar) on the Importance of Marine Fisheries Census in Fisheries Development on 13 August 2025, organised by ICAR-Central Marine Fisheries Research Institute at Kochi.
- Participated in the "7th International Conference on Agriculture for Food Security & Nutrition (AGRI VISION-2025)" organised from 17–19 January 2025 at Odisha University of Agriculture and Technology (OUAT), Bhubaneswar, Odisha.

- Participated in the "International Blue Economy Conference 2025" organised from 23-24 January 2025 at KIIT University, Campus 6, Bhubaneswar, Odisha.
- Participated in the international Workshop "Artificial Intelligence and Sustainability Applied in Aquaculture" organised during 03rd to 06th June 2025 at Tainan, Taiwan, Republic of China.

Gokhlesh Kumar

- Hands-on training on implementation of ISO/IEC 17025:2017 Laboratory Management System requirements, organised by the Training and Capacity Building (TCB) Division, NABET, Quality Council of India, Pune, 22-24 December 2025.
- Expert Consultation on Development of a Roadmap for Translational Genomics in Indian Aquaculture at ICAR-National Bureau of Fish Genetic Resources, Lucknow, 29 August 2025.
- Inspection of the in-house quarantine facility developed by the importers, Bengaluru, 13 September 2025.

Jasmin F

- International Symposium on Marine Ecosystems Challenges and Opportunities (MECOS4) 4-6 November 2025, Kochi, India

Jayasankar, J.

- Address by Secretary, DARE & DG, ICAR on 28 February 2025
- Fingent Training on mobile apps for census on 03 October 2025 at CMFRI, Kochi
- Training Workshop of DLCs and FLCs during 15-17 October 2025 at Veraval Regional Station of CMFRI
- Course on Accounting Standards-Concept and International Best Practices-IPSAS through the iGOT platform

Josileen Jose

- 14th Asian Fisheries and Aquaculture Forum (14AFAF), during 12-15 February 2025, New Delhi, India.
- Participated in an invited workshop on "Enhancing Fairness and sustainability in seafood supply chains: Data validation workshop conducted by Shreya Yadav (MSSRF) to share and validate the findings on BSC fishery as subject expert at Chennai, on 21st April, 2025.
- Participated and provided input in developing a Fisheries Management Inventory (FMInv) for Palk Bay Blue Swimmer crab in the National Workshop on Fisheries Management Inventory (FMInv) organised by Food and Agriculture Organisation (FAO) with BOBP-IGO, at Chennai, from 28-30 July 2025.
- Invited as a chief guest for the inauguration of Zoology association of St. Joseph's College Irinjalakuda and delivered a talk on Marine

Crustaceans of India: Biodiversity and commercial use" on 8th August, 2025.

- Attended a meeting and talk on "GST and its relevance in ICAR institutes on 11th August, 2025, at CMFRI, Cochín.
- Invited as a chief guest for the inauguration of the Zoology association of Assumption College at Changanassery and delivered a talk on "A Journey through India's Commercial Marine Crustaceans" on 12th September, 2025.
- Participated in a one-day workshop on Gear marking in Indian Fisheries- Opportunities and challenges" at ICAR-CIFT, Wellington Island, Kochi on 19th September, 2025.
- Participated in an invited one-day Blue Swimmer crab stakeholder workshop on 'Blue Swimming Crab Fishery Improvement programme (BSC FIP)' at Ramanathapuram, Tamil Nadu and delivered a lecture on the topic on 26th September, 2025. Also led an in-depth discussion session with the various stakeholders on the challenges encountered and the way forward.
- Participated in a meeting conducted by SEAI to discuss the progress and update on the Consultancy project titled 'Technical backstopping for strengthening the sustainable harvest of shrimp and cephalopod trawl fishery of Kerala' at Seafood House, Willingdon Island, Kochi, on 30 October 2025.
- Delivered a talk on "Best practices for waste management" for the staff of the entire CMFRI in connection with Swacchta Pakhwada 2025, on 17 December 2025

Jayasankar, J. and Mini K. G.

- Pre-census meeting online during 8-10 July 2025 at ICAR-CMFRI, Kochi

Jayasankar, J. and Shinoj P.

- Pre-Census Workshop during 11-12 August 2025 at CMFRI, Kochi
- Pre-Census Workshop during 18-19 September 2025 at Digha Regional Station of CMFRI.

Jayasankar, J., Mini K. G., Somy Kuriakose and Shyam S. Salim

- Trainers' Training on Marine Fisheries Census 2025 during 6-7 October 2025 at CMFRI, Kochi

Jayasankar, J. and Swathi Lekshmi, P. S.

- Pre-census workshop from 18-19 August, 2025, organised by ICAR-CMFRI at Veraval Regional Station of ICAR-CMFRI, Veraval.
- World Aquaculture Society 2025 at Hyderabad International Convention Centre - Novotel, Hyderabad, India from 10-13 November 2025

Jeyabaskaran, R

- Participated in the workshop on 'Mangrove Ecosystem in Chennai/Tamil Nadu' held at M. S. Swaminathan Research Foundation, Chennai, on 10th July 2025.

- Participated in the MBEMD Workshop on "Sustainability of Marine Environment and Resources" held on 30th July 2025 at ICAR-CMFRI, Kochi

- Participated in the stakeholder consultative workshop on "The TCMRM-Marine Biodiversity conservation framework (MBACF) for Tamil Nadu (under TNSHORE)" held at the office of the Principal Chief Conservator of Forest, Chennai, 01st September 2025.
- National Workshop on "Strengthening the Science-Management Interface: Embedding Evidence and Technology in Marine Fisheries Governance", organised by BOBP-IGO at Chennai on 9-10th September 2025
- Delivered a Guest Lecture titled "Fisheries and marine mammals in Seagrass Ecosystem of India" in the ANRF-Sponsored International Seagrass-Climate Resilience Conference 2025, held at Sathyabama University on 5th December 2025.
- Visited the Middle Andaman wildlife sanctuaries in the Rangat Division, i.e. Parkinson, Cone, Oyster and Long Island Sanctuaries on 13-17th April 2025.
- Visited six wildlife sanctuaries in Baratang Division and Rani Jhansi Marine National Park in South Andaman on 6-13th May 2025.
- Visited North Andaman Diglipur, Mayabundar, Barren Island and Narcondam Island Sanctuaries on 19-24th December 2025.

Johnson, B.

- Meeting of the Project Monitoring and Evaluation Unit (PMEU) of Pradhan Mantri Matsya Sampada Yojana (PMMSY) on 03rd January, 07th February and 30th December, 2025 through virtual mode.
- 6th edition of Indian International Seaweed Expo under the Session titled - "Panel Discussion - Seaweed Sector - Vision 2030" on 30th January 2025 at NIOT Campus, Chennai.
- Meeting to discuss the Zero Draft on Mariculture Policy Framework under chairpersonship of Joint Secretary (Marine Fisheries), Department of Fisheries, Govt. of India on 24th January, 2025.
- Review meeting to discuss the overall progress of Seaweed Cultivation and value chain in India under chairpersonship of Joint Secretary (Marine Fisheries), DoF on 24th January, 2025 through virtual mode.
- Meeting chaired by Hon'ble Lieutenant Governor Puducherry on 03rd March 2025 at Raj Bhavan, Puducherry on Fisheries-related issues.
- Presented the project on 'Farming of commercially important marine finfishes in sea cages integrated with seaweeds at Puducherry' to the Secretary, Department of Fisheries and Fishermen Welfare, Government of Puducherry, on 3rd March 2025
- Technical Expert and Procurement Committee for the establishment of laboratory and research facilities in Hub-I and II centres in Ramanathapuram and Pudukottai districts under the Establishment of Multipurpose Seaweed

Park by the Tamil Nadu Fisheries and Fishermen Welfare Department, and attended a virtual meeting in this regard on 3rd April, 2025.

- Seaweed Workshop organised by the Department of Fisheries, Andaman & Nicobar administration on 25th April, 2025.
- Seaweed R&D by ICAR-CMFRI was presented to the delegates from WorldFish Centre on 7th May, 2025.
- Virtual consultative meeting on Promotion of seaweed cultivation on 27th June, 2025, under the chairmanship of the Secretary, Ministry of Environment, Forest and Climate Change (MoEFCC).
- Meeting of the Expert Committee to review the Standard Operating Procedure for Mariculture Development in India under the chairpersonship of the Joint Secretary (Marine Fisheries), Department of Fisheries, Government of India, on 8th July, 2025
- Virtual meeting on the use of seaweed as a feedstock for making bio-crude oil under the chairpersonship of the Joint Secretary (Marine Fisheries), Department of Fisheries, Government of India, on 15th July, 2025.
- Meeting on promotion of seaweed cultivation under the chairmanship of Additional Secretary, Ministry of Environment, Forest and Climate Change (MoEFCC) on 18th July, 04th & 08th August, 2025
- Virtual meeting of the Inter-Ministerial Committee and Technical Advisory Committee, along with representatives from all Coastal States/UTs and Technical Institutes under the Chairmanship of the Secretary, Department of Fisheries, Government of India, on 5th August 2025.
- Virtual meeting under the Chairpersonship of Joint Secretary (Marine Fisheries), DoF, GoI, to discuss Pilot Site Identification and Regulatory Synchronisation for Industrial Scale Seaweed Farming on 12th August, 2025.
- Special address on "Seaweed Culture" in the Madurai Symposium 2025 on 18th September 2025 at Madurai.
- Virtual consultative meeting on Promotion of seaweed cultivation at Andaman on 22nd September, 2025, under the Chairmanship of the Secretary, Department of Fisheries, Andaman & Nicobar Islands.
- Virtual meeting under the Chairmanship of the Secretary, Department of Fisheries, GoI to discuss the status of the Fisheries Clusters notified in Inland States/UTs under the Pradhan Mantri Matsya Sampada Yojana (PMMSY) on 14th October, 2025.

Kalidas, C.

- State-level workshop to formulate a comprehensive and action plan to enhance marine product exports through market and product diversification, 31 December 2025, MPEDA, Fortune Resort, Salcette, Goa.
- One-day workshop on "Blue Economy – Aquaculture" on the topic "Marine crab culture and Seaweed culture", 23 December 2025, Sri

Samriddhi Village Forest Committee, Zonal Forest Officer, Honnavara Zone.

- National Conference on Green Business and Blue Revolution Pathways to Environmental Sustainability, 12th to 13th December 2025, Dept. of Marine Biology and Commerce, Post Graduate Centre (Karnatak University), Karwar.
- Coastal cleanup activities of ICC Day 2025, 29 September 2025, Centre for Coastal Research, Ministry of Earth Sciences, Karwar beach, Karnataka.
- Webinar session on Elsevier's National Capacity Building Programme (NCBP) workshop series, 24th and 26th September 2025, Science Direct–One Nation One Subscription (ONOS) session.
- Regional Workshop on "Developments in Deep-sea Resource Exploration and Endangered Threatened Protected (ETP) Species Conservation: Awareness and Way Forward", 05 July 2025, ICAR-CMFRI, Mangalore RC and Department of Fisheries, Government of Karnataka.
- Angling competition, 09 February 2025, Youth fisherman Sanghar Samiti, Uttara Kannada.
- Your Research with Science Direct: ONOS Onboarding Session, 25 June 2025, ELSEVIER: A Division of RELX India Pvt. Ltd, Gurgaon, India.
- National Symposium on "Building Climate – Resilient Forestry for Ecosystem Restoration, Sustainable Utilisation and Community Prosperity", 29 May 2025 to 30.05 2025, Canara Forest Circle, Sirsi, Karnataka Forest Department, Govt. of Karnataka and College of Forestry, Sirsi.
- National Seminar on "Technological Innovations for transforming Agriculture" and to showcase the ICAR-CMFRI technology, 23-24 January 2025, ICAR-CCARI, Goa.
- International Symposium on Marine Ecosystems Challenges and Opportunities MECOS4, 04-06 November 2025, ICAR-CMFRI, Kochi. Organised by The Marine Biological Association of India, Kochi.
- Training programme on Lobster and Mud Crab Fattening, 22 September 2025, Dr MGR Fisheries College and Research Institute (Tamil Nadu Dr J. Jayalalithaa Fisheries University), Ponneri, Tamil Nadu.
- Stakeholders meeting on Fish Farmers Day celebration, 10 July 2025, ICAR-CMFRI, Karwar Regional Station.
- Viksit Krishi Sankalp Abhiyan (VKSA) official programme & campaign-Kharif season-2025, 08-12 June 2025, ICAR- Agricultural Technology Application Research Institute, Zone XI, Bangaluru and ICAR-KVK, Shivamogga district.

- Cage Cluster & Marine finfish hatchery (Site selection, Hatchery design & technical details)-Vanalli, Kumta, 15 May 2025, Joint Director of Fisheries, Uttara Kannada, Government of Karnataka State.
- Turtle Excluder Device (TED) Onboard programme, 17 April 2025, MPEDA-NETFISH, Karwar Baithkol Fishing Harbour, Karwar.
- "Paddle for Planet" Marine Biodiversity Awareness programme, 04 April 2025, SPECIES INDIA NGO, Amdalli Jetty, Karwar.

- 62nd National Maritime Day celebration, 05 April 2025, Karnataka Maritime Board, Karwar.
- 9th Meeting of the Expert Committee for Zonation and Demarcation of Marine Waters for Mariculture in Goa, 26 February 2025, Director of Fisheries, Government of Goa, Panaji, Goa.
- 26th Scientific Advisory Committee meeting, 07 February 2025, Agricultural Science Centre, Uttara Kannada, Sirsi.

Kavitha, M.

- Attended the Enumerator Training Programme for the Marine Fisheries Census 2025, held from 14-17 October 2025. Organised by ICAR-CMFRI, Chennai.
- Attended a Capacity Development Course (CDC) organised by BOBP-IGO during 11-14 November 2025 at the BOBP-IGO Secretariat, Chennai, to facilitate the preparation and implementation of the EAFM plan for the Lobster Fishery Management Unit in Kanyakumari District.
- Attended the International Conference "Blue Horizon 2025" organised by Tamil Nadu Dr J. Jayalalithaa Fisheries University (TNJFU) during 17-18 December 2025.

Krishna Sukumaran

- Mitigating Climate Change to the Blue Ecosystem: An Integrated Approach of Science, Community and Nature, 5-6 August 2025, Institute of Social Sciences and ICAR-Central Marine Fisheries Research Institute, Kochi.
- Meeting on the 45th Governing Body of the Agency for Development of Aquaculture in Kerala, 20th June 2025, Agency for Development of Aquaculture in Kerala, Government of Kerala.
- EU Blue Economy Conclave 2025-Blue tides, 18-19th September 2025, Department of Fisheries, Government of Kerala.
- Bioconnect 3.0 – Kerala 2025, International life science conclave and Expo, 9-10th October 2025, Kerala Life Sciences Industries Park (KLIP), the Kerala State Industrial Development Corporation (KSIDC), Department of Industries & Commerce, Government of Kerala.
- Training of master trainer for Qualification Pack Fish hatchery production worker and Basics of cage culture fish farming, 24-25th November 2025, Agriculture Skill Council of India.

Krupesha Sharma, S. R. and Sumithra, T. G.

- 12th Symposium on Diseases in Asian Aquaculture: Transformative Innovations Shaping the Future of Aquatic Animal Health Management. Jointly organised by ICAR-Central Institute of Brackishwater Aquaculture, Asian Fisheries Society (AFS), Fish Health Section of AFS & Asian Fisheries Society-Indian Branch (AFSIB), and Society of Coastal Aquaculture and Fisheries (SCAFi), Chennai, 23-27 September 2025.
- International Workshop on Aquaculture Medicine and Aquatic Animal Health Management in Asia-Pacific: Status, Constraints

and the Way Forward. Organised by the National Centre for Aquatic Animal Health, Cochin University of Science and Technology, Kochi, India, at Kochi. 16-18 January 2025.

- Training programme on FAO Assessment Tool for Laboratories and Antimicrobial Resistance Surveillance Systems (FAO ATLASS) organised at ICAR-CIFT, Kochi from 20-22 January 2025, with the support from UN FAO, ECTAD India.
- Stakeholders' interaction meets with seed the inspectors of the Fisheries Department at ICAR-CMFRI, Kochi on 07 January 2025.

Lakshmi S. Pillai

- Member of the team of Viksit Krishi Sankalp Abhiyaan (VKSA) Programme of the Government of India, to Palakkad from 08-12 June 2025.
- Lecture on exploitation and conservation of shellfish fisheries resources for final year BSc (hons) agriculture students, KAU Thrissur on 17 July 2025, at ICAR CMFRI Kochi.
- Participated in the national Scientific Hindi Webinar on 'Importance of Marine Fisheries Census in Fisher Development' organised by ICAR CMFRI, Kochi, on 13 August 2025.
- Participated and presented the progress report related to the inshore shrimp of the Consultancy project titled 'Technical backstopping for strengthening the sustainable harvest of shrimp and cephalopod trawl fishery of Kerala' in the meeting held at Seafood House, Willingdon Island, on 30 October 2025.

Linga Prabhu, D.

- Brainstorming session on "Filling the Gaps: Leveraging Data for Reliable Estimates of Fish and Fish Meal Production" on 19 May 2025 (online)
- Talk by Dr Cornelia Jaspers, on "Jellyfish blooms in the ocean of tomorrow? Traits of gelatinous zooplankton to explain global change impact and potential responses of marine food web", on 21st May 2025, organised by CMFRI Journal Club (online).
- "Synergy for Sustainable Seas: A Collaborative Framework for CMFRI and MPEDA to Enhance India's Marine Export Value and Ecological Integrity" on 20th June 2025 (online)
- Knowledge Management Programme: invited talk on "Nutritional Management in Shrimp—Key for Shrimp and Human Health" by Dr P. Antony Jesu Prabhu, Senior Scientist, NOFIMA, Norway, 24th June 2025 (online).
- Two-day National Seminar on "Mitigating Climate Change Impact on Marine Ecosystems: An Integrated Approach of Science, Community, and Nature" jointly organised by ICAR-CMFRI and the Indian Institute of Social Sciences, scheduled for 5th–6th August 2025, organised by ICAR-CMFRI, Kochi (online)

Livi Wilson

- Marine Fisheries Census 2025 Sensitisation Workshop, organised by ICAR-CMFRI, 20–21 May 2025.

- Participation in Viksit Krishi Sankalp Abhiyan, organised in association with Krishi Vigyan Kendra, Thrissur District, 03–07 June 2025.
- Participated in the workshop on "India's Data Submission to IOTC" at FSI, Kochi, on 4-5 October 2025.
- Attended the Second Meeting of the Expert Committee along with the Regional Working Groups for the development of Marine Fisheries Management Plans in the Indian EEZ on 17 October 2025
- Organisation of one-day Training Workshop for Marine Fisheries Census (MFC) 2025 Enumerators, Thrissur District, 30 October 2025.
- Monitoring of Marine Fisheries Census activities in Thrissur District, December 2025.
- Attended the Department of Administrative Reforms and Public Grievances (DARPG) Video Conference on 3rd December 2025, chaired by Smt. Sarita Chauhan, Joint Secretary, who focused on the National Awards for e-Governance (NAeG) 2026 application process, clarifications, and promoting excellence in digital governance initiatives.

Livi Wilson; Remya, L.

- Participation in the Pre-Census workshop organised by FRAEED on 11 August 2025 in hybrid mode
- Participation in the Trainers Training programme of Marine Fisheries Census 2025 during 6th and 7th October 2025, and Training of Coordinators for the Marine Fisheries Census 2025 during 8th to 10th October 2025.

Mahesh V

- 8th Edition of Aqua Goa Mega Fish Festival-2025, Panjim, Goa, 10-12 January 2025.
- Farmers' Interaction Meeting, Karwar RS of ICAR-CMFRI, Karwar, 31 January 2025.
- Hindi workshop on Infusing Hindi into Everyday Office Communication: as an official language at office premises at ICAR-CMFRI, Karwar, 24 January 2025.
- Stakeholders Meeting, Karwar RS of ICAR-CMFRI, Karwar, 24 February 2025.
- Orientation Workshop on Mission Karmayogi" through an online session organised by DARE/ ICAR, A. P. Shinde Symposium Hall, NASC Complex, New Delhi, 27 February 2025.
- Hindi workshop on ऑन लाइन तिमाही प्रगति रिपोर्ट प्रविष्टि/On-line Quarterly Progress Report Submission at KRS, ICAR-CMFRI, Karwar 20 March 2025.
- Online meeting on reassessment of the MLS of different commercially important fishery resources to bring out a national list, hosted by ICAR-CMFRI, Kochi, 28 April 2025.
- International Workshop on Marine Litter, Climate Change and Biodiversity Loss: A Global Challenge Indo-Pacific Oceans, 5 -Initiative (IPOI) Hub National Centre for Coastal Research (NCCR), NIOT Campus, Chennai, India (online) 09 May 2025.

- Brainstorming session on Filling the gaps: Leveraging data for reliable estimates of fish and fish meal production, ICAR-CMFRI, Kochi, (online) 19 May 2025.
- Participated in Viksit Krishi Sankalp Abhiyan organised in association with Krishi Vigyan Kendra, Shivamogga district, Karnataka, from 29 May to 02 June 2025.
- Hindi workshop on the importance of Hindi in official work and explained the vital role that employees play in effectively implementing the use of Hindi in government offices, KRS, ICAR-CMFRI, Karwar, 19 June 2025.
- Interaction Meet: CMFRI – MPEDA, Synergy for Sustainable Seas: A Collaborative Framework for CMFRI and MPEDA to Enhance India's Marine Export Value and Ecological Integrity, ICAR-Central Marine Fisheries Research Institute, Kochi, (online) 20 June 2025.
- National Fish Farmers Day, Karwar Regional Station of ICAR-Central Marine Fisheries Research Institute (CMFRI), Karwar, Karnataka, India, 10 July 2025.
- An interactive workshop on "Conservation of Sharks in India – moving ahead with the Indian Wildlife (Protection) Act and CITES (on the occasion of World Shark Awareness Day), organised at ICAR-CMFRI, Kochi, (online) 14 July 2025.
- National Scientific Hindi Webinar on "Importance of Marine Fisheries Census in Fisher Development" hosted by ICAR-CMFRI, Kochi, (online) 13 August 2025.
- Two-day workshop on Marine Fisheries Census 2025 "Pre-census workshop" organised at Mangalore RC of CMFRI, Mangalore, 18-19 August 2025.
- 10th lecture in the series, titled 'Seaweed Aquaculture: Cultivation Technologies, Promises and Challenges in India', Krishi Bhawan, New Delhi, (online) 02 September 2025.
- Coastal Cleanup Day, Karwar RS of ICAR-CMFRI, Karwar, 29 September 2025.
- Trainers Training on Marine Fisheries Census 2025, organised at ICAR-CMFRI, Kochi, 06-07 October 2025.
- Marine Fisheries Census 2025 – a training workshop, organised at Mangalore RC of CMFRI, Mangalore, 15-17 October 2025.
- Swachhata Pakhwada, Kisan Diwas, and Harvest Mela, Karwar Regional Station of ICAR-CMFRI, Karwar, 23 December 2025.

Mini, K. G.

- Panel Member – Scientist student interaction, Foundation Day celebration of ICAR-CMFRI, 03 February 2025
- 11th Meeting of the Catch Documentation Scheme (CDS) Working Group–25 February 2025- online
- International Colloquium Australia: India Deepening Maritime cooperation for a resilient Indo-Pacific region organised at Kochi by the Centre for Public Policy Research (CPPR), India and Australia India Institute (CII), Australia, 12 March 2025

- Delivered an invited talk titled Investing in Quality, Informed Management, and Thriving Communities during the State Learning Week, Andaman and Nicobar Islands, organised by Karmayogi Bharat and the Capacity Building Commission, 19 March 2025–Online.
- FAO Regional Workshop on Strengthening Regional Representation in Global Stock Status Reporting at Kochi, India, during 29–31 May 2025.
- Delivered an invited talk in the National Workshop on Aligning Academic Research with National Marine Fisheries Resource Assessment Needs — a capacity development initiative by BOBP for Faculty of Fisheries Resource Management (FRM) Divisions of Fisheries Colleges from India's coastal states, Kochi, India, 29 May 2025.
- Panellist in Technical Session 1 on Research and Innovative Applications in Statistical Sciences for Viksit Bharat@2047: Status, Challenges and Roadmap at the XIX Annual Conference of Agricultural Research Statisticians 2025, 22 July 2025–Online.
- Nodal Officer in meetings of the Working Group on IT for Traceability in the Fisheries Sector to discuss the draft National Framework for Traceability Systems for IT in the Fisheries Sector in India, 1 and 18–19 September 2025
- Second Meeting of the Expert Committee and Regional Working Groups for development of Marine Fisheries Management Plans (FMPs) in the Indian Exclusive Economic Zone (EEZ), held virtually on 17 October 2025
- Meeting of Working Groups for the development of Marine Fisheries Management Plans in the Indian EEZ, 28 November 2025.
- Workshop on the Validation of Marine Fishing Villages for the Marine Fisheries Census (MFC) at the Puri Field Centre of CMFRI, 28–29 August 2025.
- Workshop on the Validation of Marine Fishing Villages for the Marine Fisheries Census (MFC) at the Visakhapatnam Regional Centre of CMFRI, 25–26 August 2025.
- Marine fisheries census app Training Workshop, Visakhapatnam Regional Station, 15–17 October 2025

Mini K. G. and Somy Kuriakose

- 16th Working Party on Methods (WPM16) organised by IOTC, during 27–28 October, Mahe, Seychelles

Miriam Paul Sreeram

- Led public outreach programme "Fish Walk": Visit to Puthenthodu beach and Chellanam Fisheries Harbour on 18 January 2025.
- Co-ordinated the conduct of the Ministry of Women and Child Welfare-directed nationwide campaign Poshan Pakhwada from 08–22 April 2025 in ICAR-CMFRI as Nodal Officer, Swachh Bharat Abhiyan.
- Online interaction cum felicitation event of Secretary (DARE) and DG (ICAR) by ARSSF on 15 May 2025.

- International Workshop on Marine Litter, Climate Change and Biodiversity Loss: A Global Challenge organised by Indo-Pacific Oceans Initiative (IPOI) Hub and National Centre for Coastal Research (NCCR), Chennai on 05–07 May 2025.
- Virtual talk by Dr Cornelia Jaspers, Senior Researcher, Technical University of Denmark, National Institute of Aquatic Resources, Kongens Lyngby, Denmark, on "Jellyfish blooms in the ocean of tomorrow? Traits of gelatinous zooplankton to explain global change impact and potential responses of marine food web", organised by the CMFRI Journal Club on 21 May 2025.
- Led the EU-India Consortium as Indian Co-ordinator for drafting a Project Proposal entitled "Cumulative effects Of Multi-Pollutants And integrative pathways for healthy Seas -COMPAS" (Project Code 101291204), in response to the call for Indian proposals by the Framework of EU-India Trade & Technology Council (TTC) Working Group 2: EU-India Cooperation on Cumulative Impacts of Marine Pollution on Marine Organisms and Ecosystems (HORIZON-CL6-2025-01-ZEROPOLLUTION-05), submitted for co-funding by the Ministry of Earth Sciences and attended preparatory meetings with EU partners from June to October 2025.
- Meeting of the Cochin University of Science and Technology-Departmental Research Committee (DRC) on 02 June 2025.
- Conducted the Viksit Krishi Sankalp Abhiyan Pre-kharif session in Palakkad district, Kerala, from 03–07 June 2025 by visiting 15 villages as part of Team 3 from KVK Pattambi.
- Awareness programme organised by the MBEMD for the students of the Government Fishery Lower Primary School, Panambukad, Ernakulam District, on 09th June 2025 in connection with World Ocean Day celebrations on 08 June 2025.
- PM Kisan Samman Nidhi programme held at ICAR-CMFRI, Kochi, on 02 August 2025.
- Chaired the session, Theme 1. Climate Change and Marine Ecosystem Dynamics at the Vision Viksit Bharat@2047 National Seminar on "Mitigating Climate Change to the Blue Ecosystems: An integrated Approach of Science, Community and Nature" at ICAR-CMFRI on 06 August 2025.
- Served as Rapporteur for the National Scientific Hindi Webinar on the topic "Importance of Marine Census in Fisher Development" organised at ICAR-Central Marine Fisheries Research Institute (ICAR-CMFRI), Kochi, on 13 August 2025.
- Co-ordinated the conduct of the Ministry of Jal Shakti and the Ministry of Housing and Urban Affairs directed nationwide campaign Swachhta Hi Sewa 2025 with the theme Swachhotsav from 17 September to 02 October 2025 in ICAR-CMFRI as Nodal Officer, Swachh Bharat Abhiyan.
- Delivered a lecture on seaweed taxonomy, diversity and conservation for the two-day workshop, "Advances in Marine Macroalgal Research for Functional Food and Nutraceutical

Development," hosted at ICAR-Central Marine Fisheries Research Institute (CMFRI), Kochi, on 25–26 September 2025.

- Co-ordinated the conduct of the Ministry of Jal Shakti-directed nationwide campaign Swachhta Pakhwada 2025 from 16–31 December 2025 in ICAR-CMFRI as Nodal Officer, Swachh Bharat Abhiyan.
- Virtual Brainstorming Session on 'Fisheries Research and Development Priorities for Partnership in South Asia' organised by NAAS, on 27 December 2025.

Miriam Paul Sreeram and Prema, D.

- Brainstorming session on fishmeal and bycatch at ICAR-CMFRI on 19 May 2025

Miriam Paul Sreeram, Ratheesh Kumar R., Rekha J. Nair and Sobhana, K. S.

- Meeting to review the aquatic species listed under the Wildlife (Protection) Act, 1972, organised by the Department of Fisheries, MoAHF&D, Govt. of India (Online), on 16 June 2025.

Muktha M

- Training programme on Online IP Awareness Programme, 'AqualP,' organised by the ZTM-ABI Centre, ICAR-CIFT, and the IP&TM Unit, ICAR, during 23–30 January 2025
- Stakeholder meeting at Visakhapatnam RC on 27 January 2025
- Monthly meeting of the Geo Blue Planet–Fisheries Working Group on 28 February 2025
- Meeting to discuss FAO–Fishery and Aquaculture Statistics 2023 and FAO 2024 SDG Indicator 14.4.1 on 03.03.25, organised by DoF, Govt of India
- Meeting of the Trawl Ban Committee, chaired by Director ICAR-CMFRI (online) on 06 March 2025
- 2nd National Workshop on Indian Ocean Biogeochemistry at INCOIS, Hyderabad during 07–09 April 2025
- Taxonomy workshop for FRAEED survey staff at Visakhapatnam RC during 21–23 April 2025
- 7th IOTC Working Group on FADs (WGFAD07) (online) during 9–10 June 2025
- Meeting to discuss amendments to APMFRA organised by SIFT Kakinada on 26 June 2025
- 15th Meeting of the Technical Committee on Allocation Criteria (TCAC) of the IOTC during 14–17 July 2025 virtually
- Meeting on Carbon footprint, Carbon credits and Carbon trade in Fisheries and Aquaculture organised by DoF, Govt of India on 23 July 2025 virtually
- Meeting of the Trawl Ban Sub-Committee of ICAR-CMFRI on 23 July 2025 virtually
- Census workshop at Visakhapatnam RC during 25–26 August 2025

- 10th lecture in Masya Manthan series, titled 'Seaweed Aquaculture: Cultivation Technologies, Promises and Challenges in India', on 02 September 2025, virtually
- 21st Working Party on Ecosystems and Bycatch of the IOTC during 09-13 September 2025 at Sete, France
- State-level small-scale fishers stakeholder consultation workshop held at Visakhapatnam RC on 9th October 2025, funded by NFDB
- Census workshop at Visakhapatnam RC during 15-17 October 2025
- Marine Fisheries Census of Visakhapatnam district from 03 November 2025-10 January 2026
- 21st Working Party on Data Collection and Statistics (WPDCS21) of the IOTC during 25-29 November 2025 virtually

Najmudeen, T. M.

- Participation in Viksit Krishi Sankalp Abhiyan, organised in association with Krishi Vigyan Kendra, Malappuram District, 29 May–04 June 2025.

Pralaya Ranjan Behera

- Attended a webinar on ICAR-Digital Agriculture delivered by Dr Anil Rai, Honourable ADG (ICT), on 18 March 2025 at ICAR-CMFRI Headquarters.
- Delivered a lecture on conservation of coastal and marine species of Andhra Pradesh to 40 nos. of Forest Department Officials (Beat Officers), of Yanam Forest Division, Puducherry, on 21 March 2025 at RC of ICAR-CMFRI, Visakhapatnam.
- Delivered a lecture on conservation of coastal and marine species of Andhra Pradesh to 40 nos. of Forest Officers of Andhra Pradesh State Forest Academy, Rajahmundry, on 19 February 2025 at RC of ICAR-CMFRI, Visakhapatnam.
- Delivered a lecture on the institute's contribution towards the development and conservation of coastal and marine species of Andhra Pradesh to 4 trainees from NIFPATT, Visakhapatnam, on 20 March 2025 at the RC of ICAR-CMFRI, Visakhapatnam
- Attended the meeting (online) on the introduction of the Marine Census 2025 conducted by the Joint Secretary of Fisheries, DoF, Gov. of India on 09 April 2025.
- Participated and exhibited ICAR-CMFRI technology/activities during the 3rd Utkal Krishi Mela 2025 at Centurion University, organised by CUTM, Paralakhemundi, Gajapati, Odisha, on 7-8 April 2025.
- Attended as a member of the interview Panel of the selection committee for engagement of a JRF under the NFDB-sponsored project entitled Standisation and demonstration farming methods for marine finfish, Johns Snapper *Lutjanus johnii* in marine cages and earthen ponds at RC of ICAR-CMFRI, Visakhapatnam, on 15 April 2025.
- Attended the project launching workshop (online) of the in-house project entitled Impact

of coastal marine pollution on the ecosystem's health, biodiversity and mitigation measures of the MBEMD division on 28 March 2025.

- Attended International Women's Day celebration at RC of ICAR-CMFRI, Visakhapatnam on 24.03.25.
- Attended an online meeting with the director of ICAR-CMFRI, Kochi, regarding financial issues in an externally funded project operated in ICAR-CMFRI, Kochi.
- Attended the project launching workshop (online) of the in-house project entitled Jellyfish project of the MBEMD division on 16 April 2025.
- Participated and exhibited ICAR-CMFRI technology/activities in the International Day for Biological Diversity (IDB)-2025 organised by A. P. State Biodiversity Board at Tummalapalli Kalakshetram, Vijayawada, on 22.05. 2025.
- Attended and presented a research paper entitled Species diversity of seaweeds along the coast of Andhra Pradesh in the national conference 2nd Indian Fisheries Outlook 2025" during 12-14, July 2025, at the College of Fisheries, Rangailunda, Odisha.
- Exhibited ICAR-CMFRI technology/activities in the national conference 2nd Indian Fisheries Outlook 2025" during 12-14 July 2025 at College of Fisheries, Rangailunda, Odisha.
- Co-ordinated the training programme on integrating mussel farming with sea cage and seaweed farming on 4th August, 2025, at VRC of ICAR-CMFRI, Visakhapatnam.
- Attended the roundtable workshop on Enhancing Mangrove ecosystem for climate resilience and livelihoods at Visakhapatnam, organised by Dhan Foundation at FRCCE office, Visakhapatnam on 13.07.25.
- Attended the mangrove saplings plantation drive in Bheemili, Visakhapatnam, in partnership with ICFRE-FRCCR, DHAN and Roots of Vizag on the occasion of International Day for Conservation of Mangrove Ecosystem on 26th July 2025.
- Participated in the exhibition conducted in connection with International Day for Biological Diversity-2025 at Tummalapalli Kalakshetram, Vijayawada, organised by Andhra Pradesh State Biodiversity Board on 22nd May 2025.
- Participated in the artificial reefs launching programme at Visakhapatnam Fishing Harbour on 19 May 2025
- Participated in a two-day seaweed survey in Chilika Lagoon for assessing the culture potential of native seaweed species in the Chilika Lagoon, arranged by Puri field centre of ICAR-CMFRI, Puri, from 25-29 May 2025.
- Attended a two-day workshop (online) on developing a framework for the implementation of voluntary carbon markets in fisheries and aquaculture during 2-3 June 2025, organised by ICAR-CMFRI, Kochi.
- Attended and presented a research paper entitled Species diversity of seaweeds along the coast of Andhra Pradesh in the national conference 2nd Indian Fisheries Outlook 2025" during 12-14, July 2025, at the College of Fisheries, Rangailunda, Odisha.

- Participated in the five-day IUCN Red List Assessor Training Workshop, jointly organised by the northern regional centre of BSI/ZSI, Dehradun, Uttarakhand, from 23-29 August, 2025.
- Participated and presented in a National Scientific Hindi Webinar on the topic "Importance of Marine Census in Fisher Development", which was organised at ICAR-Central Marine Fisheries Research Institute (ICAR-CMFRI), Kochi, on 13th August 2025.
- Visited the office of the district Collector and Magistrate, Kakinada, and ONGC, Kakinada, along with the HoRC, to discuss the oil and gas leakage incident at the ONGC site, Kakinada, near Daryalitippa, Tallarevu Mandal, Kakinada District on 03 September 2025.
- Participated in a beach cleaning programme at Jalaripeta, Visakhapatnam, on the occasion of the International Coastal Cleanup Day organised by INCOIS, Hyderabad, on 17.09.25.
- Rapid impact assessment survey on oil and gas leakage incident at the ONGC site, in and around Daryalitippa, Tallarevu Mandal, Kakinada, from 20-22 September 2025.
- Attended and presented the annual progress report for the externally funded project at Andhra Pradesh State Biodiversity Board office, Guntur, on 26.09.25.
- Attended a meeting with the district collector of Kakinada regarding issues on oil and gas leakage incident at the ONGC site, in and around Daryalitippa, Tallarevu Mandal, Kakinada on 07.10.25.
- Attended the State Level small-scale fisheries stakeholders' consultation workshop at RC of ICAR-CMFRI, Visakhapatnam, funded by NFDB on 09.10.25.
- Member of the selection committee of the interview panel for the selection of young professional-1 under the All India Network project on mariculture at RC of ICAR-CMFRI, Visakhapatnam, on 10.10.25.
- Attended the brainstorming session webinar on the in-house project titled "Ecological Impacts of Abnormal Weather Events: A spatio-temporal analysis of the Indian coast (MBEMD/ MHW/34)" on 26 November 2025
- Attended as an invited speaker to deliver a lecture on Ecosystem services and blue carbon potential-Carbon sequestration and valuation methods for the training programme titled Restoration and Management of mangrove and coastal ecosystem for climate resilience on 12th December 2025 at Green Park hotel, organised by ICFRE-Coastal Ecosystem Centre, Visakhapatnam.
- Scoping Survey at Coringa Mangrove ecosystem, Kakinada under BOBP funded project titled Scoping Report and Plan towards implementation of the Ecosystem Approach to Fisheries Management in Coringa Mangrove Ecosystem, Kakinada district, Andhra Pradesh, India on 23 December 2025.
- Participated and presented in the international conference on Marine Ecosystems Challenges

and Opportunities (MECOS 4) jointly organised by MBAI, Kochi and ICAR-CMFRI, Kochi, during 4-6 November 2025 at Kochi.

- Acted as High Level Coordinator (HLC) for conducting Marine Fisheries Census-2025 from 03 November to 10 January 2025 for the district of Srikakulam, Andhra Pradesh.
- Organised enumerator training programme at five different locations for providing training to 106 participants as enumerators for the Marine Fisheries Census-2025 during 23 to 31 October 2025 for the Srikakulam district.
- Acted as observer(server) for conducting online ASRB Examination for Combined CBT of NET-2025, Preliminary Examination for ARS, SMS (T-6) and STO (T-6) – 2025 held on 12 and 13 November 2025 at Visakhapatnam.

Prema, D.

- In connection with the World Wetlands Day celebrations 2025, participated as a Panel Member in the National Workshop and Panel Discussion on Wetland Awareness and Coastal Resilience, at Kerala University of Fisheries and Ocean Studies, Kochi, as per invitation, on 07 February 2025
- Meeting convened by the Special Secretary, Ministry of Environment, Govt of Kerala, to form the multidisciplinary team on Impact Assessment and Restoration related to MSC ELSA 3 shipwreck on 02 June 2025.

Prema, D., Ratheeshkumar, R. and Shelton Padua

- Meeting convened by the Special Secretary, Ministry of Environment, Govt of Kerala, to form the multidisciplinary team on Impact Assessment and Restoration related to MSC ELSA 3 shipwreck on 18 June 2025

Prema, D. and Shelton Padua

- Meeting called by the Special Secretary, Fisheries, Government of Kerala, to discuss the ongoing situation along the Kerala coast due to the sinking of MSC ELSA 3 and the resulting concerns in the Fisheries sector, on 27 May 2025 and 28 May 2025
- A meeting was convened by the Coast Guard to discuss the ongoing situation along the Kerala coast due to the sinking of MSC Elsa 3 and the resultant oil spill on 30 May 2025.

Prema, D., Shelton Padua and Sobhana, K. S.

- Meeting convened by the Coast Guard to discuss the ongoing situation along the Kerala coast due to the sinking of MSC ELSA 3 and the resultant oil spill, on 30 May 2025

Prema, D. and Sobhana, K. S.

- CMFRI Journal Club talk by Dr Geetha Sashikumar and Dr Saji Kumar on Southern Ocean Expedition, at ICAR-CMFRI, on 22 April 2025.

Rajeev Ranjan

- "Empowering Your Research with Science Direct: ONOS Onboarding Session" at One

Nation One Subscription, presented by Aishwarya Nayal, Customer Success Manager, on 25 June, 2025

- Organise Workshop on "Sustainability of Marine Environment and Resources" at CMFRI, Kochi, as a member of the organising Committee, 30 July 2025
- Presented a paper entitled "तूफानों की बढ़ती आवृत्ति और तीव्रता का समुद्री मत्स्य पालन पर प्रभाव" in the National Scientific Hindi Webinar on "Importance of Marine Fishery Census in Fisher Development" organised by ICAR-Central Marine Fisheries Research Institute, Kochi on 13 August 2025.
- National Conference on INDIAN COASTAL ALLIANCE CONFERENCE: Addressing Priorities and Challenges in the Indian Coastal Region: Environmental, Economic and Geospatial Perspectives, Organised by Centre for Public Policy Research, Kochi, In Collaboration with The Asia Foundation, during 21-22 August 2025
- Two-day seminar on "Mitigating Climate Change Impact on Marine Ecosystems: An integrated approach of Science, Community and Nature" organised by the Institute of Social Sciences, New Delhi & ICAR-Central Marine Fisheries Research Institute, Kochi. Collaborative research under the ICSSR Vision Viksit Bharat @2047.
- Conduct the "Swachhta Hi Seva" Campaign 2025 event for the children of Government Fishery LP School, Mulavukadu, Kochi, on 24 September 2025.

Rajesh, K. M., Surya, S. and Veera Venthana K. R.

- 7th Working Party on Tropical Tunas Data Preparatory Meeting (WPT27-DP), held from 11-13 June 2025

Raju, S. S.

- Inception workshop on Developing an IAF to inform management decisions for marine fisheries of Odisha and West Bengal at ICAR-CMFRI, Puri FC (Online), 22 January, 2025.
- Mariculture Farmers Stakeholders meeting at ICAR-CMFRI, Visakhapatnam, 27 February, 2025.
- Marine Fisheries Stakeholders meeting at ICAR-CMFRI, Visakhapatnam, 28 February, 2025.
- Consultative workshop and EAFM plan for fishery in Coringa Mangrove Ecosystem at Zibe Luxe Hotel, Kakinada, A. P, organised by BoBP, Chennai, 28-30 April, 2025.
- Capacity building programme under TCP between FAO and Department of Fisheries towards Blue Port Initiatives, New Delhi (Online), 18 September, 2025.
- P state level small scale fisheries stakeholders consultative workshop at ICAR-CMFRI, Visakhapatnam, 09 October, 2025.
- Meeting of working groups for EEZ management plans, ADG(MFY), New Delhi (Online), 28 November, 2025.

- State-level stakeholders consultative workshop for enhancing seafood exports by MPEDA and DoF, Gol at Welcome Hotel Davee Grand Bay, Visakhapatnam, 07 January, 2026.

Raju, S. S. and Shyam, S. Salim

- Meeting with the MOSPI team on Strengthening Macro-economic aggregate and GVA estimation in the Indian Fisheries Sector, New Delhi (Online), 11 November, 2025.
- Meeting with the Ministry of Fisheries (MoF) and ICAR-CMFRI through hybrid mode on 9th May 2025, towards the Project entitled "Strengthening Macro-Economic Aggregate and Gross Value Added (GVA) Estimation in the Indian Marine Fisheries Sector".

Rajan Kumar

- FAO Regional capacity building workshop on strengthening regional representation in global stock status reporting during 29-31 May 2025 at Kochi
- FAO-BoBP National Workshop on Aligning Academic Research with National Marine Fisheries Resource Assessment Needs during 29-30 May, 2025, at Kochi, India
- World Food India, 2025, organised by the Ministry of Food Processing Industries (MoFPI) during 25-28 September, New Delhi, India
- National Level Stakeholder Forum on Realising the full potential of the fisheries sector in Gujarat, conducted by DoF and GRIT on 20th December, 2025, at Gir Somnath, Gujarat, India

Ratheeshkumar, R.

- Invited as the Chief Guest for the science exhibition 'Science Expo-2025' at St Joseph's International School, Kollam on 27 January 2025.
- Co-Course Director for the ICAR-sponsored Short Term Training on "Integrated Taxonomic Techniques for Marine Biodiversity Conservation" held from 18-28, February 2025, at ICAR-CMFRI, Kochi
- Delivered an invited talk on the topic "Marine biodiversity and sustainable future" during the international conference on "Role of Aquaculture in Mitigating climate change and restoring critical habitats" at St. Albert's College, Kochi, on 06 February 2025.
- Delivered an invited talk on "Impacts of climate change on Marine biodiversity and fisheries" during the International Conference on Climate Adaptation and Resilience (CARE25) at CUSAT, Kochi, on 25 March 2025.
- 22nd meeting of BIS- TXD 18-Textile Materials for Marine/Fishing Purposes Sectional Committee on 17 January 2025.
- First Technical Committee meeting for drafting SOPs for Drone Technology in fisheries at NFDB, Hyderabad, during 04 to 05 March 2025.
- ICAR-CMFRI conducted a joint session on "Marine Biodiversity and Fisheries in a Warming Ocean" during the International Conference on Climate Adaptation and Resilience (CARE25) at CUSAT during 24-25 March 2025.

- Valedictory programme of National workshop on Aligning Academic research with National Marine Fisheries Resources Assessment Needs—A capacity development initiative for the Faculty of Fisheries Resource Management (FRM) Divisions of the Fisheries Colleges from the Coastal States in India, organised at Kochi during 29-31 May 2025.
- Fisheries SMD Meeting for discussions on the scheduled list of animals and collaborations with the Indian Space Research Organisation (ISRO) on 16 June 2025
- 3rd National Workshop of the Coalition of Coastal Cities to combat marine litter in India at the Anil Agarwal Environment Training Institute (AAETI), Rajasthan, during 24–26 June 2025.

Ratheeshkumar, R. and Shelton Padua

- Participated in the Workshop on Developing a Framework for Implementation of Voluntary Carbon Markets in Fisheries and Aquaculture at CMFRI on 02 June 2025

Ratheeshkumar, R., Shelton Padua and Sobhana, K. S.

- National Workshop on Developing a Framework for Implementation of Voluntary Carbon Markets in Fisheries and Aquaculture at CMFRI, on 02-03 June 2025
- Meeting convened by DDG, Fisheries, to discuss the development of a roadmap for collaborative projects with ISRO, that can be taken up in the short term, medium term and long term (Online), on 16 June 2025.

Rathi Bhuvaneswari Govindarajan

- District Level Committee (DLC) meeting on PMMSY Scheme, 27 June, 2025, District Collector, Trivandrum.
- Seminar on "Mitigating Climate Change Impact on Marine Ecosystems: An integrated approach of Science community and nature", 5-6 August, 2025, Asian Fisheries Society (AFS), Kuala Lumpur, Malaysia; Indian Council of Agricultural Research (ICAR), New Delhi, Asian Fisheries Society, Indian Branch, Mangalore, India; Department of Fisheries (DoF), Government of India, New Delhi, India.
- Meeting on the 45th Governing Body of the Agency for Development of Aquaculture in Kerala, 20th June 2025, Agency for Development of Aquaculture in Kerala, Government of Kerala.
- EU Blue Economy Conclave 2025-Blue tides, 18-19th September 2025, Department of Fisheries, Government of Kerala.
- Bioconnect 3.0 – Kerala 2025, International life science conclave and Expo, 9-10th October 2025, Kerala Life Sciences Industries Park (KLIP), the Kerala State Industrial Development Corporation (KSIDC), Department of Industries & Commerce, Government of Kerala.
- Training of Master Trainer for Qualification Pack Fish hatchery production worker and Basics of cage culture fish farming, 24-25th November 2025, Agriculture Skill Council of India.

Ramachandran, C.

- Expert Member in the committee for the selection of Guest faculty at KUFOS, Panangad, 28-5-2025
- Member of the Sub Committee constituted by the Director, ICAR-CMFRI, to review the duration of the Fishing Ban period to the TC of the DoF, MoFAHD, on 23-07-2025.
- DG's nominee as the outside expert for the assessment promotion of ARS scientist, ICAR-CIFT 18/6/25
- Member in the Committee constituted for suggesting measures to ensure the sustainable usage of fishery resources for fish meal and oil production, MPEDA 06-2-25 and 27-6-25
- Member of the committee discussing the communication plan of the Department of Fisheries under the chairmanship of the Secretary (Fisheries), DoF, Gol on 22 October 2025
- Director's nominee in the "Stakeholders Consultative Meeting" for RuTAG 2.0 Innovations on 24th September 2025 at ICAR-NAARM, Hyderabad

Rekha J. Nair

- WCCB Meeting to discuss the book on Protected Marine Animals on 03 January 2025
- Conducted ICAR Short Course on "Integrated Taxonomic techniques for Marine Biodiversity Conservation" as Course Director, 18 to 28 February 2025.
- Webinar on "Understanding the Biological Diversity of Areas Beyond National Jurisdiction by UNEP, 19 March 2025.
- Took part in Plant 4 Mother Nature Mangrove Plantation at Manjanakad, 25 March 2025.
- One Day National workshop on "Emerging Research Frontiers in Marine and Allied Sciences, with a spotlight on the Indian Journal of Geo Marine Sciences, and participated in the panel discussion for the session on 'Blue Horizons and Beyond' on 27 May 2025
- One-day interactive workshop on "Conservation of Sharks in India – Moving ahead with WLPAs and CITES, 14 July 2025.
- Attended Matsya Manthan, 10th Seaweed Aquaculture: Cultivation Technologies, Promises and Challenges in India on 02 September 2025.
- Seminar on "National Advancing Marine Biodiversity and Ecosystem Conservation through Standardisation; Bridging Service Policy and Practice on 07 October 2025.
- Conducted Deep Ocean Mission (DOM) Launch Workshop of the project and release of Pamphlet on 13 October 2025.
- Conducted International Symposium on Marine Ecosystems Challenges and Opportunities (MECOS 4) on 04 to 06 November 2025 as organising Secretary.
- Attended the DOM Review Meeting hosted by CMLRE, Kochi, on 27 November 2025.

Remya Abhijith

- Participated and presented at the 32nd Swadeshi Science congress on during 06-08, January, 2025, at the Central University of Kerala, Periya, Kasargod.

Remya, L.

- Participation in ICAR Winter School on "Genetics and Genomics Tools for Sustainable Aquaculture and Fisheries Management", conducted at ICAR-CMFRI Headquarters, Kochi, 15 January–04 February 2025.
- Organisation of one-day Training Workshop for Marine Fisheries Census (MFC) 2025 Enumerators, Ernakulam District, ICAR-CMFRI Headquarters, Kochi, 29 October 2025.
- Participate in the State-level Workshop on Rabi Season Campaign under Viksit Krishi Sankalp Abhiyan- 2025 (Kerala and Lakshadweep), Organised by ICAR-CMFRI on 3rd September 2025
- Attended the Viksit Krishi Sankalp Abhiyan 2025, online interaction with the SMDs and ICAR Institutes on 24 September 2025
- Monitoring of Marine Fisheries Census activities in Ernakulam District, December 2025.

Saima Rehman

- International Workshop on Aquaculture Medicine and Aquatic Animal Health Management in Asia-Pacific: Status, Constraints and Way forward (AQUAMAP25), held from 16-18 January 2025, at the National Centre for Aquatic Animal Health (NCAAH), Cochin University of Science and Technology (CUSAT).
- ICAR Winter School on Genetic and Genomics tools for Sustainable Aquaculture and Fisheries Management, 15th January to 4th February 2025, ICAR-CMFRI
- Acted as a resource person in the training programme 'Disease diagnostic techniques' to Seed Inspectors of the Fisheries Department, conducted under "E. G. Silas Centre of Excellence and Innovations (EGS-CoEI) in Marine Fish Microbiome and Nutrigenomics on 8th January 2025 at ICAR-CMFRI
- Acted as a resource person in a Two-Day Workshop on "Advances in Marine Macroalgal Research for Functional Food and Nutraceutical Development" under the ICAR Norman Borlaug Challenge Research Project in the Marine Biotechnology, Fish Nutrition and Health (MBFNH) Division during 25th–26th September 2025, under the ICAR-Norman Borlaug Challenge Research Project.

Sandhya Sukumaran

- Workshop cum Brainstorming session on "Current status and development of a road map on genome editing for aquaculture species in India" at ICAR-CIFA, Bhubaneswar on 14 June 2025.
- Expert consultation on development of a road map for translational genomics in Indian

aquaculture on 29 August 2025 at ICAR-NBFGRI, Lucknow.

- Stakeholders meeting on "Agriculture and marine biotechnology" organised by the Kerala Biotechnology Commission held at KSCSTE, Thiruvananthapuram on 26 September 2025.
- Cutting-edge genomic and transcriptomic tools for innovations in Marine Biology and Fisheries" on 03 July 2025 for the training programme on "Computational biology and bioinformatics" organised by the DBT Bioinformatics centre at the NCAAH, Cusat.
- Translating sequence to science: Bioinformatics Driven Marine Genomics Discovery" on 14 December 2025 for the Faculty Development Programme on "FDP- Big Data in Health Care and Environment" organised by the Department of Bioinformatics, VIGNAN foundation for Science, Technology and Research (VFSTR), Vadlamudi, Guntur (online)

Saravanan, R.

- Participated and presented at MECOS organised by ICAR-CMFRI on 4th -6th, November, 2025
- Participated and presented at the 32nd Swadeshi Science congress on during 06-08, January, 2025, at the Central University of Kerala, Periya, Kasargod.

Shelton Padua

- Present a paper titled "Marine Heatwaves: An emerging threat to the marine ecosystems" in the 14th Asian Fisheries Forum (14th AFAF) held at NAAS Complex, New Delhi, during 12 to 15 February 2025.
- Co-Course Director for the ICAR-sponsored Short-Term Training on "Integrated Taxonomic Techniques for Marine Biodiversity Conservation" held at ICAR-CMFRI, Kochi, from 18-28 February 2025
- Delivered a half-day session on "GIS Mapping" for the trainees of the ICAR short-term course on Integrated taxonomic techniques for marine biodiversity conservation, 27 February 2025.
- Participated in the Stakeholder meeting as part of the project "Science for Sustainability: Developing an Integrated Assessment Framework (IAF) to support management decisions for marine fisheries of Kerala & Lakshadweep," at CMFRI, Kochi, on 28 February 2025.
- Presentation on fishery variability and modelling by Dr Vinu Valsala and Dr Faseela from the Indian Institute of Tropical Meteorology, Pune, at CMFRI on 26 March 2025.
- Discussion convened by the Coastal Aquaculture Authority on Seaweed and Seagrass cultivation guidelines on 06 May 2025.
- Inception Workshop of the NFDB Project – Exploring the harvest and post-harvest potential of mesopelagic resources from the Indian EEZ- A Pilot Study towards Commercial Exploitation for Blue Economy, on 07 May 2025.
- Two-Day Workshop on Developing a Framework for Implementation of Voluntary Carbon Markets

in Fisheries and Aquaculture, at CMFRI on 2-3 June 2025

- Viksit Krishi Sankalp Abhiyan participation at Idukki, from 03-07 June 2025.
 - Interactive workshop on Conservation of Sharks in India – moving ahead with the Indian wildlife (Protection) Act and cites on 14 July 2025.
 - Rapporteur of the session, Theme 1. Climate Change and Marine Ecosystem Dynamics at the Vision Viksit Bharat@2047 National Seminar on "Mitigating Climate Change to the Blue Ecosystems: An integrated Approach of Science, Community and Nature" at ICAR-CMFRI on 6th August 2025.
 - Indian Coastal Alliance (ICA) Conference on "Addressing Priorities and Challenges in the Indian Coastal Region from Environmental, Economic and Geopolitical Perspectives", scheduled for 21-22 August 2025, at the Holiday Inn Cochin, National Highway Bypass, Chakkaparambu, Vennala, Kochi.
 - Meeting on Carbon footprint, Carbon credits and Carbon trade in Fisheries and Aquaculture, under the Chairmanship of Joint Secretary (Marine Fisheries) through Hybrid mode on 07 July 2025.
 - Meeting to discuss the use of seaweed as a feedstock for making bio-crude oil, hosted by the Department of Fisheries on 15 July 2025.
 - The first meeting of the Technical Committee constituted to develop guidelines for the marking and registration of fishing gears was hosted by the Department of Fisheries on 17 July 2025.
 - Meeting on Promotion of seaweed cultivation is scheduled to be held under the chairmanship of the Secretary, EF&CC, in hybrid mode at the Ministry of Environment, Forest and Climate Change (MoEFCC) at Kaveri Conference Hall, Indira Paryavaran Bhawan, MoEFCC, New Delhi, on 18 July 2025.
 - Brainstorming for preparation of concept note on utilisation of ISRO Satellite for Seaweed Cultivation, hosted by ICAR-CMFRI on 25 July 2025.
 - Meeting under the Chairmanship of the Secretary (Fisheries) on the subject "Review and Discussion on Satellite Application in Fisheries and Aquaculture" on 04 August 2025.
 - Meeting with Norwegian Delegates on Marine Spatial Planning at CMFRI, on 29 August 2025.
 - Virtual Meeting on 'Digitisation of Data in Fisheries Sector' Hosted by Economic & Statistical Division, Department of Fisheries on 07 October 2025.
- #### Santosh N. Bhendekar
- Participated in the National Workshop on Aligning Academic Research with National Marine Fisheries Resource Assessment Needs, a capacity development initiative for the Faculty of Fisheries Resource Management (FRM) Divisions of Fisheries Colleges from coastal states of India, held

during 28-30 May 2025 at Four Points by Sheraton, Kochi.

- Attended a meeting for the preparation of the Vision Document "Viksit Maharashtra 2047" and shaping the future of agriculture in Maharashtra on 16 July 2025, at the State Fisheries Department, Government of Maharashtra.
- Attended a one-day Space Technology Meet entitled "Research and Development in Space Technology for Agricultural Transformation by ICAR" held on 23 August 2025 at A. P. Shinde Symposium Hall, NASC Complex, New Delhi.
- Delivered an online lecture on "Mapping the Deep: GIS and Remote Sensing of Sustainable Marine Fisheries" on 21 September 2025, as part of the 21-Day National e-Refresher Course on "Blue Economy: Climate-Smart Strategies and Sustainable Innovations in Fisheries and Aquaculture – 2025" conducted during 6-26 September 2025.
- Participated in Sagarmathan: The Great Oceans Dialogue, held from 27-29 October 2025 at Jio World Convention Centre, Mumbai.

Shikha Rahangdale

- World Food India, 2025, organised by the Ministry of Food Processing Industries (MoFPI), from 25-28 September 2025, New Delhi, India.
- National Level Stakeholder Forum on Realising the full potential of the fisheries sector in Gujarat, conducted by DoF and GRIT on 20th December, 2025 at Gir Somnath, Gujarat, India.

Shilta, M. T.

- Workshop on Marine Oil Pollution, 09 October 25, Indian Coast Guard Station, Beypore, Kozhikode.

Shinoj, P.

- Meeting of the Expert Committee to review the Standard Operating Procedure for Mariculture Development in India under the chairpersonship of the Joint Secretary (Marine Fisheries), Department of Fisheries, Government of India, on 8th July, 2025

Shoba J. Kizhakudan

- Online meeting of the Purse Seine Expert Committee on comments from States and UTs, convened by JS (Marine), Department of Fisheries, Government of India, 02 January 2025.
- Second Meeting of the Expert Committee for the Revalidation of Potential Fishery Resources in the Indian EEZ, convened by the Director General, Fishery Survey of India, Kochi, 30 January 2025.
- Meeting on Carbon Footprint, Carbon Credits and Carbon Trade in Fisheries and Aquaculture, convened by Joint Secretary (Marine Fisheries), Department of Fisheries, Government of India, 18 March 2025.
- One-on-one online session on SDG Indicator 14.1 with FAO, convened by the Department of Fisheries, Government of India, 26 March 2025.

- Third Meeting of the Committee for Potential Yield Revalidation, convened online by the Director General, Fishery Survey of India, 03 April 2025.
- Participation in the 29th Session of the Indian Ocean Tuna Commission (IOTC), held in hybrid mode at La Réunion, 13–17 April 2025.
- Resource person in the Regional Capacity Building Workshop on Strengthening Regional Representation in Global Stock Status Reporting (FAO State of Stocks Index – FIRMS and SDG 14.4.1 Data Calls), organised by BOBP-IGO, Sheraton Hotel, Kochi, 29–31 May 2025.
- Meeting to discuss Marine Stewardship Council (MSC) certification of Lakshadweep fisheries, chaired by Joint Secretary (Marine Science), Department of Fisheries, Government of India, held through video conference, 19 June 2025.
- First ICAR-CMFRI ITMC meeting, 19 June 2025.
- Deputed to FAO Headquarters, Rome, Italy, to participate in the 8th Expert Advisory Panel on the assessment of proposals to amend CITES Appendices I and II, 21–25 July 2025.
- Keynote Address delivered at the Stakeholder Workshop “Commemorating International Whale Shark Day”, organised by Wildlife Trust of India, Kochuvelli, Thiruvananthapuram, 30 August 2025.
- Head of Delegation from India at the 28th Session of the Scientific Committee (SC28) of the Indian Ocean Tuna Commission (IOTC), Shanghai, China, 01–05 December 2025.

Shoba Joe Kizhakudan, Livi Wilson, Akhilesh K. V. and Veera Venthan K. R.

- Participated in the Stakeholder Consultation “Balancing Conservation and Livelihoods: A Strategic Consultation on the Wildlife (Protection) Act and Fisherfolk in light of the Thengapattinam Incident”, organised by Coastal Peace and Development (CPD) and Federation of Indian Fisher Organisations (FIFO), Nagercoil, Kanyakumari District, 09 September 2025.

Shoba Joe Kizhakudan and Remya, L.

- Two-day Workshop on Developing a Framework for Implementing the Voluntary Carbon Markets in Fisheries and Aquaculture, organised at ICAR-CMFRI, Kochi (hybrid mode), 02–03 June 2025.
- Meetings on Carbon Footprint, Carbon Credits and Carbon Trade in Fisheries and Aquaculture, convened in hybrid mode on 24 June 2025 and 07 July 2025.

Shoba Joe Kizhakudan, Remya, L. and Surya, S.

- Awareness programme on “Management and Conservation of Elasmobranchs in India” under the Institute Project Decoding the interplay of fisheries-dependent and fisheries-independent factors on elasmobranchs of India to improve conservation, sustainability, livelihood security and management, held at Thoothoor–Thengapattinam, Kanyakumari District, Tamil Nadu, 23 January 2025.

Shoba Joe Kizhakudan, Ganga, U., Remya, L. and Livi Wilson

- Served as a resource person in the Fourth Meeting of the Expert Committee for the Revalidation of Potential Fishery Resources in the Indian EEZ, held in hybrid mode at ICAR-CMFRI Headquarters, 23 June 2025.

Shyam S. Salim

- Meeting with ANH project proposal team (Transforming Agri-Aqua-Nutrition-Health Systems to address Malnutrition and Climate Stress in the Global South (Africa -South Asia) through hybrid mode on 20th April 2025
- Chairman of the Committee to coordinate the Corporate Social Responsibility (CSR) fund.
- Training Programme Cum Meeting of Advancing India's Blue Economy: The Role of the fisheries sector, organised by ICAR-CMFRI, Kochi and WOSC at ICAR-CMFRI, Kochi on 13th May 2025
- Organised a meeting with the Ministry of Statistics and Programme Implementation (MoSPI) through hybrid mode on 14th May 2025
- National Workshop on Aligning Academic Research with National Marine Fisheries Resource Assessment Needs; A capacity development initiative for the Faculty of Fisheries Resource Management (FRM) at ICAR-CMFRI, Kochi, on 29–31st May 2025
- International Workshop on Marine Litter, Climate Change and Biodiversity Loss: A Global Challenge Indo-Pacific Oceans Initiative (IPOI) Hub conducted by National Centre for Coastal Research (NCCR), MoES, Government of India & Australian Institute of Marine Science (AIMS) Australian Government through a hybrid mode on 5–9th May 2025.
- Second Expert Committee Meeting of ICAR-NASF project entitled “The changing dynamics of labour migration on employment, livelihood and resource productivity patterns in Indian marine fisheries sector” through hybrid mode on 16th June 2025
- Organised the MPEDA-CMFRI Interaction Meet at ICAR-CMFRI, Kochi, on 20th June 2025
- Moderator in Marine Fisheries Census Hindi Webinar at ICAR-CMFRI, Kochi.
- Interim Report Review Meet of MoSPI on the project entitled Strengthening Macro-Economic Aggregate and Gross Value Added (GVA) Estimation in the Indian Marine Fisheries Sector through hybrid mode on 11 November 2025.

Sobhana, K. S.

- Organised the 29th RAC meeting of ICAR-CMFRI at Mandapam RC of CMFRI in the capacity of Member Secretary RAC, during 09–10 January 2025.
- Attended Senior Officers' Committee (SOC) Meeting at ICAR-CMFRI, Kochi on 06 January 2025.
- Attended the meeting in connection with the visit of Shri George Kurian, Union Minister

of State for Fisheries, Animal Husbandry & Dairying and Minority Affairs at Mandapam RC of CMFRI on 09 January 2025.

- Attended Senior Officers' Meeting in connection with the joining of the new Senior Administrative Officer at ICAR-CMFRI, Kochi, on 13 January 2025.
- Served as a resource person for the ICAR-sponsored Short Term Training on “Integrated Taxonomic Techniques for Marine Biodiversity Conservation” at CMFRI, Kochi, on 18 & 21 January 2025.
- Attended the Online Division Meeting to review the status of preparation of the WCCB Identification Manual at ICAR-CMFRI, Kochi, on 20 January 2025.
- Attended meeting with Smt Thenmozhi, V., IFS, Regional Deputy Director, WCCB, MoEF&CC, Chennai at ICAR-CMFRI, Kochi, on 22 January 2025.
- The Round Table discussion on Biodiversity-friendly Marine Bio-resources Utilisation Practices and Access and Benefit Sharing (ABS) was organised by the Kerala State Biodiversity Board (KSBB) at MPEDA House, Kochi, on 22 January 2025.
- Served as a resource person for the ICAR-sponsored Winter School on “Genetic and Genomic Tools for Sustainable Aquaculture and Fisheries Management” at CMFRI, Kochi, on 28 January 2025.
- Served as a resource person for the ICAR-sponsored Winter School on “Genetic and Genomic Tools for Sustainable Aquaculture and Fisheries Management” at CMFRI, Kochi, on 28 January 2025.
- Participated in the Matsyamelam and Open house organised in connection with CMFRI Foundation Day held during 01–03 February 2025.
- Participated, presented a paper and served as Rapporteur for the Session on “Aquatic Biodiversity, Environment and Ecosystem Services” in the 14th Asian Fisheries Forum (14th AFAF) held at NAAS Complex, New Delhi, during 12–14 February 2025.
- Served as a resource person for the ICAR-sponsored Short Term Training on “Integrated Taxonomic Techniques for Marine Biodiversity Conservation” at CMFRI, Kochi, on 21 February 2025.
- Attended the online meeting convened by DDG Fisheries in connection with the successful conduct of 14AFAF at New Delhi, on 24 February 2025.
- Attended the “BeFirst to Aid and Save Lives – Mega BLS and First-Aid training” organised for the Employees and Students of ICAR-CMFRI, Kochi, by Volunteers from Aster Medicity, Kochi, on 21 March 2025.
- Attended the inauguration of the Creative Design Studio (CDS) unit of the Library and Documentation Centre of ICAR-CMFRI, by Padma Shri Dr S Ayyappan, Former Secretary, DARE and DG ICAR, on 25 March 2025.
- Attended the meeting with the scientific team from IITM, Pune, on 26 March 2025

- Attended Senior Officers' Committee meeting held on 27 March 2025.
- Conducted Marine Biodiversity and Environment Management Division meeting (Online) on 01 April 2025
- Attended the meeting convened by the Director, CMFRI, to discuss the organisation of MECOS4 on 04 March 2025.
- Served as a member (DG's Nominee) in the Assessment Committee of Scientists in the discipline of Fish Health at ICAR-CIFT, Kochi, on 07 April 2025.
- Participated in the Launch Workshop of the new MBEMD Divisional Project "Gelatinous zooplankton blooms and their ecological interplay in the Indian coastal waters (Online) on 16 April 2025.
- Participated in the Methodological Framework Workshop of the MBEMD Divisional Project "Understanding the Essential Fish Habitats (EFHs) for Sustainable Management of Coastal and Marine Ecosystems, MBEMD/EFH/29" (Online) on 16 April 2025
- Attended the meeting convened by Dr J. K. Jena, DDG (Fisheries), to discuss inputs for the PPT to be presented before the Hon'ble Agriculture Minister by the DDGs of ICAR in connection with the comparison of best practices in the world with respect to their respective divisions (online), on 17 April 2025.
- Attended the meeting with Director (Personal), ICAR; Undersecretary (ICT), ICAR and Deputy Director (Cash), ICAR, at ICAR-CMFRI, on 24 April 2025
- Served as Chairperson, Selection Committee for conducting an interview for the selection of Young Professional-1 for the Publishing Processing Unit of CMFRI, held at ICAR-CMFRI, Kochi on 25 April 2026
- Attended Senior Officers' Committee meeting at ICAR-CMFRI, Kochi, on 30 April 2025
- Attended the meeting on review of pollution response action plan in connection with sinking of MSC ELSA3 off Kochi, organised by the Indian Coast Guard (Online), on 30 May 2025.
- Attended the Workshop on "Developing a Framework for Implementation of Voluntary Carbon Markets in Fisheries and Aquaculture" at ICAR-CMFRI (Online), on 03 June 2025.
- Attended the meeting in connection with the implementation of Viksit Krishi Sankalp Abhiyan-Pre-Kharif (VKSA) 2025, with Dr Raghavendra Bhatta, DDG (Animal Science), ICAR and Dr Venkatasubramanian, Director ICAR-ATARI, at ICAR-CMFRI, on 04 June 2025
- Attended the meeting organised by the Department of Fisheries, MoAHF&D, Govt. of India, with Coastal States/UTs to review the progress of the projects sanctioned on Artificial Reef Proposals (Online), on 05 June 2025
- Meeting of the Official Language Implementation Committee (OLIC), held at ICAR-CMFRI, Kochi, on 19 June 2025.
- Attended the Meeting to review the aquatic species listed under the Wildlife (Protection)

Act, 1972, organised by the Department of Fisheries, MoAHF&D, Govt. of India, (Online), on 06 June 2025

- Attended the meeting of the Official Language Implementation Committee (OLIC), held at ICAR-CMFRI, Kochi, on 19 June 2025.

Somy Kuriakose

- 75th Annual Conference of the Indian Society of Agricultural Statistics at Pusa, Bihar, during 20-22 March, 2025
- Workshop on Phase 2 Integration of the SDG Dashboard organised by Programme Implementation Evaluation & Monitoring Department, Govt. of Kerala on 28th May 2025 at Thiruvananthapuram.
- Pre-Census Workshops- CMFRI, Kochi, during 11-12 August 2025, Visakhapatnam Regional Centre during 25-26 August 2025, Puri Field Centre of CMFRI during 28-29 August 2025, Mangalore Regional Centre during 18 & 19 August 2025 & Department of Fisheries, Panaji on 21st August 2025
- Training Workshop for Marine Fisheries Census 2025-Mangalore Regional Centre of CMFRI during 15-17 October 2025

Somy Kuriakose and Swathi Lekshmi, P. S.

- Online meeting organised by ICAR-CMFRI on "Synergy for Sustainable Seas: A Collaborative Framework for CMFRI and MPEDA to Enhance India's Marine Export Value and Ecological Integrity" on 20th June 2025

Surya S.

- Kadalanganu Shoreline Gathering on World Oceans Day, Ocean Students Community, 08 June 2025. Adimalathura, Thiruvananthapuram, India.
- Ocean love: Caring for the health of our ocean. Seminar and award ceremony, Uday Samudra Group of Hotels, 05 June 2025. India.
- Resource Person for World Fishermen Day 2025 celebration. Fisheries Ministry, Latin Archdiocese of Trivandrum, 13 December 2025. India.

Sumithra, T. G.

- National One Health Mission Assembly, New Delhi, 20-21 November 2025.
- 43rd Meeting of the National Committee on Introduction of Exotic Aquatic Species into Indian Waters. Organised by the Department of Fisheries, 11th April, 2025 (Online).
- Meeting to discuss the use of seaweed as a feedstock for making bio-crude oil. Organised by the Department of Fisheries, 15th April 2025 (Online).
- ICAR sponsored Winter School on "Genetic and Genomic Tools for Sustainable Aquaculture and Fisheries Management" ICAR-Central Marine Fisheries Research Institute, Kochi, 15 January 2025 to 04 February 2025.

- Two-Day National Seminar on Mitigating Climate Change to the Blue Ecosystems: An Integrated Approach of Science, Community and Nature held at ICAR-CMFRI, Kochi from 05-06 August 2025.

- World Antimicrobial Awareness Week Celebration, 2025, at College of Veterinary Science, Rampura Phul, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, Punjab, India, 18 November 2025 (online).
- Institute Biosafety meeting of ICAR-CIFT (Central Institute of Fisheries Technology), Kochi, 26th August 2025.
- Institute Biosafety meeting of College of Veterinary and Animal Sciences, Mannuthy, Thrissur, 11 November 2025

Sunil Kumar Ail

- Participated in the Regional Workshop on "Developments in Deep-sea Resource Exploration and Endangered Threatened Protected (ETP) Species Conservation" conducted by Mangalore Regional Centre of ICAR-CMFRI on 05 July 2025.

Swathi Lekshmi, P. S.

- Consultation Workshop on formulating the Regional Economic Master Plan for Gir Somnath district, Chaired by the District collector, Shri A. N. Upadhyay, at the Banquet Hall, Sagar Darsan guest house, Somnath, Veraval on 31-05-2025.
- State-level Workshop for Goa, Dadra Nagar Haveli, Daman and Diu on "Transforming India's Agriculture, Horticulture, Dairy, Fisheries, and Processing through Technology and Innovation" organised by ICAR-CCARI, Goa on 12-08-2025.
- 17th International Whale Shark Day celebrations organised by the Wildlife Trust of India at Veraval Bhidiya Harbour, Veraval, Gujarat on 30th August, 2025.
- TOLIC meeting on 29th August, 2025 & 30th January, 2025, convened by the Chairman, TOLIC, Veraval, Gujarat.
- DST Review on the project entitled "Establishment of STI Hub for Primitive 'Sidi' Adivasi Tribes of Gujarat for Socio-Economic Upliftment through Mariculture Entrepreneurship" on 6th October, 2025, at the Administrative Staff, College of India, Qutub Institutional Area, New Delhi.
- Training Programme for development of Master Trainers under Rashtriya Karmayogi Jan Seva Programme Phase II (Zone V) at ICAR-NAARM, Rajendranagar, Hyderabad from 15-17 December, 2025.
- Panel member in the session on "Policy, Governance & Sustainability Pathways" at the one-day national-level stakeholder forum entitled "Realising the Full Potential of the Fisheries Sector in Gujarat" organised by Gujarat Rajya Institution for Transformation (GRIT) under NITI Aayog's State Support Mission (SSM) on 20th December, 2025, at Somnath, Gir Somnath district, Gujarat.

Swatipriyanka Sen Dash

- Attended the 2nd Indian Fisheries Outlook, 2025 (national conference) at College of Fisheries, Rangailunda, Berhampur, Ganjam from 12-14 July 2025.
- Attended the one-day interactive workshop on "Conservation of sharks in India- moving ahead with the Indian Wildlife (Protection) Act and CITES" conducted at ICAR-CMFRI headquarters, Kochi, via online mode on 14 July 2025.
- Participated in the meeting on guidelines for sustainable harnessing of fisheries in the high seas by Indian flagged fishing vessels, 2025, organised at OPDC, Bhubaneswar, on 25 August 2025 by the state fisheries department, Govt. of Odisha.
- Attended the Pre-census workshop organised at Puri Field centre of ICAR-CMFRI from 28-29 August 2025.
- Attended the online meeting on fishing in deep-sea policy via online mode on 01 September 2025.
- Attended the 10th Lecture of Matsya Manthan Series – Seaweed Aquaculture: Cultivation Technologies, Promises and Challenges in India via online mode on 02 September 2025.
- Attended the multi-stakeholder Workshop in collaboration with Ocean Centres India (established through a partnership between the UN Global Compact (UNGC) and Lloyd's Register Foundation) via online mode on 11 September 2025
- Attended the Capacity Building Programme under TCP between FAO and the Ministry of Fisheries,
- Animal Husbandry and Dairying [Department of Fisheries] towards Blue Port Initiatives via online mode on 18 September 2025.
- Attended the First meeting of the Expert Committee for the development of Marine Fisheries Management Plans in the Indian EEZ via online mode on 08 October 2025.
- Attended the Expert Committee meeting along with the Regional Working Groups for the development of Marine Fisheries Management Plans in the Indian EEZ via online mode on 17 October 2025.
- Participated in the Odisha Vikas Conclave (OVC-2025) titled @2036 Pathways to Inclusive, Climate-Resilient and People-Centric Development " at the Regional Museum of Natural History, Bhubaneswar, as a panellist of the session on 27 November 2025.
- Conducted the Hands-on training programme under SCSP "Integrated training on responsible fishing, hygienic handling and value addition" at Puri from 03-05 December 2025.
- Attended the EAFM centre-Strategic meeting overview on 12 December 2025 via online.
- Conducted National Marine Fisheries Census, 2025 activity at Puri district in Odisha from 03rd November to 31st December, 2025.

Tanveer Hussain

- Biological Association of India and ICAR-CMFRI, Kochi.
- Attended a two-day workshop on Marine Fisheries Census 2025 ('Pre-census Workshop'), 21-22 August 2025, ICAR-CMFRI, Mumbai Regional Station.
- Attended the Marine Fisheries Census 2025 Sensitisation Workshop (Virtual), 20-21 May 2025, ICAR-CMFRI, Kochi.
- Attended the PMMSY Cluster Approach Review Meeting, 1st April 2025, NFDB and DoF.
- Attended a meeting to discuss the status of Fisheries Clusters of the North Eastern Region under the Pradhan Mantri Matsya Sampada Yojana (PMMSY), 10th October 2025, Department of Fisheries, Government of India.
- Participated in Viksit Krishi Sankalp Abhiyaan (VKSA), 26 to 28 May 2025, ICAR and Ministry of Agriculture & Farmers' Welfare, Government of India.

Vaisakh, G. P.

- Participated and presented a paper in the 4th edition of the International Symposium on Marine Ecosystems, held in Kochi, Kerala, from 04-06 November 2025
- Attended the 3-day training workshop on Ocean Sessions – Water Pollution, organised by Copernicus, the Copernicus Marine Service and Mercator Ocean International, held online on 16-18 December 2025

Veera Venthan, K. R.

- Participation in the Trainers Training programme of Marine Fisheries Census 2025 during 6-7 October 2025
- Meeting of the Trawl Ban Committee, chaired by Director ICAR-CMFRI (online) on 06 March 2025
- Meeting on the Marine Fisheries Census 2025, Review Meeting organised by ICAR-CMFRI on 9th April, 2025
- Meeting on the Reassessment of Minimum Legal Size organised by ICAR-CMFRI on 25th April 2025,
- Meeting on Marine Fisheries Census 2025, organised by ICAR-CMFRI on 28th April, 2025
- Sensitisation workshop (online) Marine Fisheries Census 2025, during 20-21 May 2025, at ICAR-CMFRI, Kochi.
- 27th Working Party on Tropical Tunas Data Preparatory Meeting (Online) (WPTT27-DP), organised by IOTC from 11-13 June 2025.
- Workshop on "Conservation of Sharks in India Moving Ahead with the Indian Wildlife (Protection) Act and CITES," organised by ICAR-CMFRI, Kochi, on 14th July 2025
- Meeting on the Sub-committee review meeting on the duration of the Fishing Ban period and

to suggest further measures to strengthen the conservation and management aspects on 23rd July, 2025

- Meeting of the Technical Committee for reviewing the duration of the uniform fishing Ban period and to suggest further measures to strengthen the conservation and management aspects, organised by ICAR-CMFRI, Kochi on 08th August 2025
- Pre-census workshop on Marine Fisheries Census 2025" organised by ICAR-CMFRI at Mandapam on 18-19th August 2025
- Webinar on the Capacity Building Programme under the TCP between FAO and the Ministry of Fisheries, Animal Husbandry and Dairying (Department of Fisheries) towards Blue Port Initiatives, organised by the Department of Fisheries, Government of India, on 18 September 2025
- Attended the Trainer trainee 2.0 workshop under the Marine Census 2025, organised by FRAEED, ICAR-CMFRI, Kochi, from 06-07 October 2025.
- Attended the Enumerator Training Programme for the Marine Fisheries Census organised by ICAR-CMFRI, Chennai, 14-17th October 2025
- Attended Second Meeting of the Expert Committee along with the Regional Working Groups for the development of Marine Fisheries Management Plans in the Indian EEZ on 17th October 2025.
- 27th Working Party on Tropical Tunas (WPTT27) organised by the Indian Ocean Tuna Commission, 21-25 October, 2025
- Attended the Fisheries Grievance Day meeting organised by the Kanyakumari District Administration on 28th October 2025
- Capacity Development Course (CDC) on developing EAFM plan organised by BOBP-IGO, 11-14 November 2025
- Review of the Marine Fisheries Census-2025, under the chairmanship of the Economic Advisor, DoF, Ministry of Fisheries, Animal Husbandry & Dairying, on 12 December 2025
- Interactive meeting with the Secretary, DARE and DG, ICAR on 08 December 2025
- Stakeholder Consultation meeting organised by MSSRF on "Minimising the Impact of Ghost Gear Through Community Collective Approaches in the Gulf of Mannar Region" on 27th November, 2025,
- Online Meeting of the Trawl Ban Sub-Committee of ICAR-CMFRI on 23rd July 2025
- Conducted the stakeholder meeting organised by ICAR-Tuticorin Regional Station of CMFRI, on 9th May 2025
- Conducted four days of Enumerator Training Programs for the Marine Fisheries Census-2025 at Marthandanthurai, Thengapattinam, Colachel, and Kanniyakumari 28th October-02nd November 2025
- Organised a six-day Hands-on training on "Wealth from underutilised blue carbon floral resources" under the NICRA project-SCSP component, 6th January 2025

- Organised a six-day Hands-on training on Seaweed Culture and Marine Crab Fattening Process under the SCSP component, 3rd–8th February 2025

Venkatesan, V.

- Participated in the Oyster Harvest Mela organised as part of the SCSP programme, Dalvaparam, Kollam, on 15th July 2025.
- Deputation of Scientist for APE Assessment by Panel–Renewal of Approval of the processing plant (EIA, Kochi) at M/s. Aquastar Marine Exports, Ezhupunna, Alappuzha on 7th August, 2025.

Vipin Kumar, V. P

- Exhibition-cum-training programme during ICMBGSD-2025, School of Marine Sciences, CUSAT (500 participants) from 09–11 April 2025.

- Exhibition-cum-training programme at IPAAF, Adlux International Convention Centre, Angamaly (1, 500 participants) from 09–12 May 2025.
- Hands-on training on fish feed production technology for SCSP beneficiaries (15 participants) from 09–11 July 2025.
- Experiential training “Beyond Blue Horizon” for BSc. Agriculture students, Kerala Agricultural University (20 participants) from 14–18 July 2025.
- Exhibition-cum-training programme during AQUASEM '25, CUSAT, Kochi (400 participants) from 11–12 August 2025.
- Interactive session with high-level committee, Govt. of India, and paddy farmer representatives (40 participants) from 25 September 2025.
- Aqua-Hands-on-the-job training in ornamental fish farming for VHSE students (30 participants) from 14–17 November 2025.

- Interactive session with IFS probationers (120 participants) from 11 December 2025
- Chairman, Canteen Management Committee, ICAR-CMFRI, leading the institute to achieve FSSAI Eat Right Campus Certification (valid up to 2026) by ensuring compliance with food safety, hygiene, and wellness standards.
- Organised the DST Expert Committee Review by the Chairman, Prof. Durgesh Pant for review of the project STI Hub during 25th Dec 2025 to 1st January 2026 at ICAR-CMFRI (ATIC), Kochi.
- Represented ICAR-CMFRI at Aquabiz Summit 2025 held on 18 March 2025, delivering a presentation and showcasing institute technologies to entrepreneurs mobilised through CIFT–Agri Business Incubation Centre.

Personnel

Scientists (Headquarters, Centres and Stations)

No. Name and designation

Headquarters, Kochi	
1	Dr Grinson George Director
2	Dr V. V. R. Suresh Principal Scientist & Head, McD
3	Dr A. P. Dineshbabu Principal Scientist & Head, SFD
4	Dr J. Jayasankar Principal Scientist & Head, FRAEED
5	Dr Kajal Chakraborty Principal Scientist & Head, MBFNHD
6	Dr Shoba Joe Kizhakudan Principal Scientist & Head, FFD
7	Dr K. S. Sobhana Principal Scientist & Head in-Charge, MBEMD
8	Dr Imelda Joseph Principal Scientist
9	Dr Abdussamad. E. M. Principal Scientist
10	Dr Josileen Jose Principal Scientist & Head in-Charge, SFD
11	Dr Madhu. K. Principal Scientist
12	Dr D. Prema Principal Scientist
13	Dr Rema Madhu Principal Scientist
14	Dr Shoji Joseph Principal Scientist
15	Dr Bobby Ignatius Principal Scientist
16	Dr Ramachandran C. Principal Scientist
17	Dr Somy Kuriakose Principal Scientist
18	Dr Geetha Sasikumar Principal Scientist
19	Dr Vipinkumar V. P. Principal Scientist
20	Dr S. R. Krupesha Sharma Principal Scientist & Head in-Charge, MBFNHD
21	Dr U. Ganga Principal Scientist

No. Name and designation

22	Dr S. Lakshmi Pillai Principal Scientist
23	Dr Shyam S Salim Principal Scientist
24	Dr Rekha J. Nair Principal Scientist
25	Dr K. G. Mini Principal Scientist
26	Dr Saju George Principal Scientist
27	Dr T. M. Najmudeen Principal Scientist
28	Dr Miriam Paul Sreeram Principal Scientist
29	Dr Rekha Devi Chakraborty Principal Scientist
30	Dr Sandhya Sukumaran Principal Scientist
31	Dr Aswathy N. Principal Scientist
32	Dr Shinoj P. Principal Scientist
33	Dr Suresh Babu P. P. Principal Scientist
34	Dr Venkatesan V. Principal Scientist
35	Dr M. A. Pradeep Senior Scientist
36	Dr Eldho Varghese Senior Scientist
37	Dr Sreenath K. R. Senior Scientist
38	Dr Shelton Padua Senior Scientist
39	Dr K. Mohammed Koya Senior Scientist
40	Dr Jeena N. S. Senior Scientist
41	Dr Vidya R. Senior Scientist
42	Dr Rajesh N Senior Scientist
43	Dr Anuraj A. Senior Scientist

No. Name and designation

44	Smt. Reshma K. J. Scientist
45	Dr Ratheesh Kumar R. Senior Scientist
46	Dr Chandrasekar, S. Senior Scientist
47	Dr Ashish Khandelwal Senior Scientist
48	Dr Rajeev Ranjan Senior Scientist
49	Dr Gokhlesh Kumar Senior Scientist
50	Dr Sanal Ebeneezar Senior Scientist
51	Dr Remya L. Senior Scientist
52	Dr Sumithra T. G. Senior Scientist
53	Dr (Smt.) Reshma Gills Senior Scientist
54	Dr Livi Wilson Senior Scientist
55	Dr Adnan Hussain Gora Scientist
56	Dr Abdul Azeez P. Scientist
57	Dr Saima Rehman Scientist
58	Dr Anuja A. R. Scientist
Mandapam Regional Centre	
59	Dr K Vinod Principal Scientist & Head
60	Dr G. Tamilmani Principal Scientist
61	Dr M. Sakthivel Principal Scientist
62	Dr P. Rameshkumar Principal Scientist
63	Dr Johnson. B. Senior Scientist
64	Dr R. Saravanan Senior Scientist

No. Name and designation

65	Dr Anikuttan K. K. Senior Scientist
66	Dr Naveen Kumar B. T. Senior Scientist
67	Dr Vikas P. A. Senior Scientist
68	Shri S. Thirumalaiselvan Scientist
69	Dr Rajkumar M. Senior Scientist
70	Dr Sankar M. Scientist
71	Smt. Bavithra R. Scientist

Visakhapatnam Regional Centre

72	Dr Joe K. Kizhakudan Principal Scientist & Head
73	Dr S. S. Raju Principal Scientist
74	Dr Jayasree Loka Principal Scientist
75	Dr Ritesh Ranjan Principal Scientist
76	Dr Biji Xavier Principal Scientist
77	Dr Raju Baitha Senior Scientist
78	Dr Muktha M. Senior Scientist
79	Dr Pralaya Ranjan Behera Senior Scientist
80	Dr Sekar Megarajan Senior Scientist
81	Dr Indira Divipala Senior Scientist
82	Dr Manas H. M. Senior Scientist
83	Dr Jasmine F. Senior Scientist

Mangalore Regional Centre

84	Dr Sujitha Thomas Principal Scientist & Head
85	Dr Rajesh K. M. Principal Scientist
86	Dr Bindu Sulochanan Principal Scientist
87	Dr Divya Viswambharan Senior Scientist
88	Dr Purushottama, G. B. Senior Scientist
89	Dr Sunil Kumar S Ail Scientist

No. Name and designation

Calicut Regional Station	
90	Dr Anulekshmi Chellappan Senior Scientist & SIC
91	Dr Akhilesh K. V. Senior Scientist
92	Dr Shilta M. T. Senior Scientist
93	Smt. Ramya Abhijith Scientist
94	Dr Vaisakh G. Senior Scientist

Karwar Regional Station

95	Dr C. Kalidas Principal Scientist & SIC
96	Dr Mahesh V. Scientist
97	Dr Kurva Raghu Ramudu Scientist
98	Shri Tanveer Hussain Scientist

Madras Regional Station

99	Dr R. Narayana Kumar Principal Scientist & SIC
100	Dr A. Margaret Muthu Rathinam Principal Scientist
101	Dr A. K. Abdul Nazar Principal Scientist
102	Dr J. Charles Jeeva Principal Scientist
103	Dr R. Jeyabaskaran Senior Scientist
104	Dr Srinivasa Raghavan. V. Senior Scientist
105	Dr S. Ramkumar Senior Scientist
106	Smt. P. Gomathi Scientist

Mumbai Regional Station

107	Shri Nakhawa Ajay Dayaram Scientist & SIC
108	Dr Bhendekar Santosh Nagnath Scientist

Tuticorin Regional Station

109	Dr Loveson L. Edward Senior Scientist & SIC
110	Dr L. Ranjith Senior Scientist
111	Dr D. Linga Prabu Senior Scientist
112	Smt. M. Kavitha Scientist
113	Dr Veera Venthan K. R. Scientist

No. Name and designation

114	Smt. Vidhya V. Scientist
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Veraval Regional Station

115	Dr Swathilekshmi P. S. Principal Scientist & SIC
116	Dr Divu D. Senior Scientist
117	Dr Vinaya Kumar Vase Senior Scientist
118	Dr Rajan Kumar Scientist
119	Smt. Shikha Rahangdale Scientist

Vizhinjam Regional Centre

120	Dr B. Santhosh Principal Scientist & Head
121	Dr M. K Anil Principal Scientist
122	Dr Asha P. S. Principal Scientist
123	Dr Krishna Sukumaran Principal Scientist
124	Dr Biju Sam Kamalam J. Senior Scientist
125	Dr Surya S. Senior Scientist
126	Dr Rathi Bhuvaneswari G. Senior Scientist
127	Shri Ambarish P. Gop Scientist
128	Dr Ajina S. M. Scientist
129	Dr Gladston Y. Scientist

Puri Field Centre

130	Dr Gyanaranjan Dash Senior Scientist
131	Dr Swatipriyanka Sen Dash Senior Scientist
132	Dr Rajesh Kumar Pradhan Senior Scientist

Digha Regional Station

133	Dr Subal Kumar Roul Senior Scientist & SIC
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KVK, Narakkal

134	Dr Shinoj Subramannian Principal Scientist & Head
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KVK, Lakshadweep

135	Dr P. Natarajan Ananth Principal Scientist & Head
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Technical Staff (Headquarters and Centres)

No. Name and designation

CMFRI HQRS., KOCHI	
1	Shri N. Viswanathan Chief Technical Officer (Civil)
2	Shri P. S. Anilkumar Chief Technical Officer
3	Dr G. Shylaja Chief Technical Officer
4	Dr Jenni B. Assistant Chief Technical Officer
5	Shri Sijo Paul Assistant Chief Technical Officer
6	Smt. Seetha P. K. Assistant Chief Technical Officer
7	Dr M. P. Paulton Assistant Chief Technical Officer
8	Smt. Sindhu K. Augustine Senior Technical Officer
9	Shri V. K. Manu Senior Technical Officer (Computer)
10	Smt. N. R. Dhanutha Senior technical Officer
11	Shri Arun Surendran P. S. Technical Officer
12	Smt. Lavanya Ratheesh Technical Officer
13	Shri P. S. Alloycious Technical Officer
14	Shri T. Retheesh Technical Officer
15	Shri A. Padmanabha Senior Technical Officer
16	Shri K. G. Radhakrishnan Nair Technical Officer (Motor Driver)
17	Shri P. Harshakumar Technical Officer (Motor Driver)
18	Shri P. K. Baby Senior Technical Officer
19	Smt. Vandana V. Senior Technical Assistant (Hindi Translator)
20	Smt. Priya K. M. Senior Technical Assistant (Hindi Translator)
21	Shri Aju K. Raju Senior Technical Assistant
22	Shri K. M. David Technical Officer
23	Shri Vijayakarthekeyan Senior Technical Assistant (Electrician)
24	Shri C. V. Jayakumar Technical Officer
25	Dr Anusree V. Nair Senior Technical Assistant

No. Name and designation

26	Shri Binoy Bhaskaran Senior Technical Assistant
27	Dr Ragesh N. Senior Technical Assistant
28	Dr Sayooj P. Senior Technical Assistant
29	Dr Sajeela K. A. Senior Technical Assistant
30	Dr Sajikumar K. K. Technical Officer
31	Shri Retheesh T. B. Senior Technical Assistant
32	Shri Manjeesh R. Senior Technical Assistant (Computer appln.)
33	Shri M. N. Sathyan Technical Officer (Motor Driver)
34	Shri Abhilash P. R. Senior Technical Assistant (Exhibition Assistant)
35	Smt. Reena V. Joseph Senior Technical Assistant
36	Smt. Dhanya G. Technical Assistant
37	Shri Premjith Antony Senior Technician
38	Shri P. V. Sunil Senior Technician
39	Shri Shaji A. K. Senior Technician
40	Smt. Sheela P. P. Senior Technician
41	Shri Jestin Joy K. M. Senior Technician
42	Shri Sreekumar K. M. Senior Technician
43	Shri Vijayan M. T. Senior Technician
44	Shri Kishor T. G. Senior Technician
45	Shri Sreesanth L. Senior Technician
46	Shri Sunil K. T. S. Senior Technician
47	Shri Jishnudev M. A. Technical Assistant
48	Shri Paulose Jacob Peter Senior Technician (Quilon FC)
49	Shri Abbas .A. Muhammed Senior Technician
50	Shri Anoob P. Anassery Senior Technician

No. Name and designation

51	Shri Jerin V. Jose Technician
52	Smt. Sini M. B. Senior Technician
53	Smt. Usha P. K. Technician
54	Shri Rajesh P. A. Technician
55	Shri Jithesh P. T. Technician
56	Smt. Keerthi Krishna Technician
57	Shri Akhil Babu V. Technician
58	Shri Pakkri Muthu S. Technician
59	Smt. Sethulakshmi M. Technician
60	Shri Joby P. J. Technician
61	Shri Prashanth P. K. Technician
62	Smt. Jesli Disilva Technician
63	Shri Ullas Shankar Technician (Quilon FC)
64	Shri Koushik T. R. Technician
Mandapam Regional Centre	
1	Shri I. Mendonza Xavier ACTO
2	Shri G. Hanumantha Rao Technical Officer
3	Shri M. Palanichamy Technical Assistant (Electrician)
4	Shri K. Shanmughanathan Senior Technician
5	Shri M. Jayasingh Senior Technician
6	Shri I. Syed Sadiq Senior Technician
7	Shri V. Muniasamy Senior Technician
8	Shri B. Kathiresan Senior Technician
9	Shri K. Muniyasamy Senior Technician
10	Shri M. Ganesan Senior Technician
11	Shri M. Thayalan Senior Technician

No. Name and designation

12	Shri K. Senthil Kumar Senior Technician
13	Shri Tinto Thomas Senior Technician
14	Shri A. Ramesh Senior Technician (Nagapattinam FC)
15	Shri M. Mahalingam Technician (Nagapattinam FC)
16	Shri R. Suresh Technician (Pattukottai F C)
17	Shri K. Narayanan Technician
18	Shri Midhun Muthayan Technician
19	Shri Aneesh U. Technician
20	Shri Deepak Kumar Technical Trainee

Visakhapatnam Regional Centre

1	Dr Biswajit Dash CTO
2	Dr Madhumita Das CTO
3	Dr Phalguni Pattnaik CTO
4	Shri K. Gauri Sankara Rao ACTO (Computer)
5	Shri P. Venkataramana Technical Officer
6	Shri Narasimhulu Sadhu Technical Officer
7	Dr Mamidi Satish Kumar Technical Officer
8	Shri V. Ashok Maharshi Technical Officer (Srikakulam FC)
9	Shri Kodi srinivasa Rao Technical Officer
10	Shri Punam Ashok Khandagale Technical Officer
11	Shri Ravi kumar Avadhanula Technical Officer
12	Shri Balla Vamsi Senior Technical Assistant
13	Shri Chinni Babu Bathina Senior Technical Assistant
14	Shri Suresh kumar Pilli Senior Technical Assistant
15	Shri R. P. Venkatesh Technical Assistant (Fitter)
16	Shri Sangaru Padmaja Rani Senior Technician
17	Shri Durga Suresh Relangi Senior Technician

No. Name and designation

18	Shri Rachakonda Shivaraju Senior Technician
19	Shri Panchakarla Nagaraju Senior Technician (Narsapur F. C)
20	Shri C. H. Moshe Senior Technician
21	Shri D. Jaganna Senior Technician
22	Shri D. Lingaraju Technician
23	Shri Oggu China Venkateswarlu Technician
24	Shri Damodara Rao Padumu Technician
25	Ms Menaka Das Senior Technician
26	Shri Prakash Chandra Das Senior Technician
27	Smt. Jincy Cherian Technician
28	Shri Siddhartha Hazra Technical Trainee (Narsapur F. C)
29	Shri Avinash Kumar Lal Technical Trainee (Puri FC)
30	Shri Ranjan Kumar Technical Trainee (Srikakulam FC)
31	Shri Madina Vamsi Technical Trainee (Sreekakulam FC)

Vizhijam Regional Centre

1	Dr Jose Kingsly ACTO
2	Dr V. A. Leslie ACTO
3	Shri K. K. Suresh ACTO
4	Smt. Dipti N. V. Technical Officer
5	Shri Albert Idu Senior Technical Assistant
6	Smt. Sharanya M. P. Technician
7	Ms Sruthi N. S. Senior Technician

Mangalore Regional Centre

1	Dr Veena Shettigar Senior Technical Officer
2	Shri M. Chaniappa Technical Officer
3	Shri G. D. Nataraja Senior Technical Officer
4	Shri Karamathulla Sahib P. Technical Assistant
5	Ms Renuka K. Senior Technician

No. Name and designation

6	Shri Sabyasachi Ghosh Technical Trainee
7	Shri Banoth Sunil Technical Trainee

Mumbai Regional Station

1	Dr Nilesh Anil Pawar ACTO
2	Shri Shashikanth R. Yadav Technical Officer (Motor Driver)
3	Shri Vaibhav Dinkar Mhatre Technical Officer
4	Shri Thakurdas Technical Officer
5	Shri Jayadev S. Hotagi Technical Officer
6	Shri Umesh Hari Rane Technical Officer
7	Shri Bhangare Sunil Ramachandra Technical Assistant
8	Shri Shrikrishna Pandurang Hotekar Senior Technician
9	Shri Suresh Technician
10	Shri Digambhar Suresh Kumbar Senior Technician
11	Shri Mahendra Pandit Sonawane Senior Technician
12	Shri Jay Prakash Ray Technical Trainee (Alibag FC)

Madras Regional Station

1	Shri K. Diwakar CTO
2	Shri D. Pugazhendi CTO
3	Dr S. Gomathy ACTO
4	Shri N. Rudramurthy ACTO
5	Shri S. Selvanidhi Technical Officer
6	Shri P. Jaiganesh Technical Officer
7	Shri M. Anbarasu Technical Officer
8	Dr K. S. Shiak Mohamed Yousuf Technical Officer
9	Shri S. V. Subba Rao Technical Officer (Ongole F. C)
10	Shri G. Sudhakar Technical Officer (Ongole F. C)
11	Shri S. Pradeep Technical Assistant (Cuddalore F. C)
12	Shri I. Santhoshi Senior Technical Assistant

No. Name and designation

13	Shri J. Balaji Senior Technician
14	Shri Bareen Mohammed Senior Technician
15	Smt. Remya Unnikrishnan Technician
16	Smt. R. Eswari Technician
17	Smt. P. Prasannakumari Technician
18	Shri Vishnu P. G. Senior Technician
19	Shri Pankaj Kumar Technical Trainee (Cuddalore F. C.)

Tuticorin Regional Station

1	Shri U. Jeyaram Senior Technical Officer
2	Shri S. Mohamed Sathakathullah Technical Officer
3	Shri K. Ramaswami Senior Technical Assistant (Motor Driver)
4	Dr P. Rajendran Technical Assistant (Kanyakumari F. C.)
5	Shri S. Willington Senior Technician
6	Shri N. Ramaswami Senior Technician
7	Shri C. S. Santhana Kumar Technician
8	Shri Soumen Bar Technical Trainee (Kanyakumari F. C.)

Veraval Regional Station

1	Dr Suresh Kumar Mojjada Chief Technical Officer
2	Dr Fofandi Mahendra Kumar D. ACTO

No. Name and designation

3	Shri Bhatt Bhargav Hareshbhai Senior Technician
4	Shri Solanki Vipulkumar Mulajibhai Senior Technician (Jamnagar F. C.)
5	Ms. Gohel Jayshree Khimji Senior Technician
6	Shri Chudasama Karsan Punja Senior Technician
7	Shri Dinesh Kumar Yadav Technical Trainee (Jamnagar F. C.)

Calicut Regional Station

1	Smt. P. Renuka Senior Technician
2	Shri Ansar Pokkarakath Senior Technician
3	Smt. Silpa P. G. Senior Technician
4	Shri T. Rajesh Babu Senior Technician
5	Shri Shiju P. Senior Technician (Kannur, Data collecting point)
6	Smt. Vijisha M. Technician
7	Smt. Vijayalakshmi V. V. Technician

Karwar Regional Station

1	Dr Sonali S. Mhaddolkar Technical Officer
2	Dr Praveen Narayan Dube Senior Technical Assistant
3	Shri N. Selvakumar Senior Technician
4	Smt. Pramila Harish Borkar Senior Technician
5	Shri Deepak Rathi Technical Trainee

No. Name and designation

6	Tarun Dabas Technical Trainee
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Digha Regional Station

1	Shri Indranil Mukherjee Senior Technician
2	Shri Milan Jana Technical Trainee
3	Shri Kalpataru Maji Technical Trainee

KVK Narakkal

1	Shri Shoji Joy Edison CTO (SMS-horticulture)
2	Shri F. Pushparaj Anjalo CTO (SMS-Agri Extn.)
3	Dr Karikkathil Smitha Sivadasan CTO (SMS-Animal Husbandry)
4	Shri Robin Bilam STO (SMS-Soil Sciences)
5	Shri Thirumoorthy P. STO (SMS-Home Science)
6	Shri Sineesh Ambi Senior Technician (Motor Driver)
7	Shri Binoop C. S. Senior Technician (Motor Driver)

KVK, Lakshadweep

1	Dr Abdul Gaffor V. M. STO (SMS-Poultry & Animal Sciece)
2	Shri Sagar Vitthal Shinde STO (SMS-Aquaculture)
3	Dr Ansul STO (SMS-Vegetable Science)
4	Dr Abhishek Das STO (SMS-Soil Sciences)
5	Dr Raju C. A. STO (SMS-Home Science)
6	Dr Marepally Udaya Sindhu STO (SMS)

Administrative Staff (Headquarters and Centres)

No.	Name and designation
1	Shri Hareesh Nair Chief Administrative Officer (Senior Grade)
2	Shri Prashant Kumar Comptroller
3	Smt. Meera. K. N. Administrative Officer
4	Shri P Muraleedharan Senior Administrative Officer
5	Smt. V. K. Sobha Administrative Officer
6	Shri Sreekumaran K. S. Senior Finance & Accounts Officer
7	Smt. Febeena P. A. Finance & Accounts Officer
8	Shri Arjun Murali Assistant Finance & Accounts Officer
9	Shri Roshin Pushpan Assistant Finance & Accounts Officer
10	Smt. Deepa P. N. Assistant Finance & Accounts Officer
11	Smt. Sobha K. S. Assistant Finance & Accounts Officer
12	Shri C. Jayakanthan AAO
13	Smt. M. Safiyabi AAO
14	Shri Joseph Mathew AAO
15	Shri Sunil A. T. AAO
16	Smt. G. Ambika AAO
17	Smt. Manjusha G. Menon AAO
18	Smt. Radhika Krishnan G. AAO
19	Smt. Soumya Surendran AAO
20	Smt. Sumeena N. K. Assistant
21	Smt. N. G. Supriya Assistant Administrative officer
22	Smt. Binny Cherian Assistant
23	Smt. T. C. Chandrika Assistant
24	Smt Annies Mary Paulose Assistant
25	Shri K. S. Sunil Raj Assistant
26	Shri T. K. Sumesh Assistant
27	Shri E. A. Roopesh Assistant
28	Smt. Manju Jose Assistant
29	Shri B. James Assistant
30	Smt. Sujatha K. K. Assistant

No.	Name and designation
31	Ms. Tintu P. X. Assistant
32	Mr. Vimal Ganesh R. Assistant
33	Smt. Christy Joshy Assistant
34	Smt. P. Vineetha Private Secretary
35	Smt. P. K. Anitha Private Secretary
36	Smt. Bindu Sanjeev Private Secretary
37	Smt. K. Smitha Private Secretary
38	Smt. Shirley Kuriakose Private Secretary
39	Shri S. Sreekumar Upper Division Clerk
40	Smt. Remya T. R. Upper Division Clerk
41	Smt. Sreeja N. P. Upper Division Clerk
42	Shri M. Saravanan Upper Division Clerk
43	Smt. Sandhya C. K. Upper Division Clerk
44	Smt. Zulekha Personal Assistant
45	Smt. Dhanya M. B. Personal Assistant
46	Shri Rajesh T. K. Lower Division Clerk
47	Shri Biju George Lower Division Clerk
48	Shri Greever Yoyak Lower Division Clerk
49	Shri Eldhose Benny Lower Division Clerk
50	Smt. Emy K Baby Lower Division Clerk
51	Shri Seban John Lower Division Clerk
52	Shri T Jothi Manikandan Lower Division Clerk
53	Shri Ebrahim K. P. Lower Division Clerk
54	Shri S. Sarath Chandran Lower Division Clerk
Madras Regional Station	
1	Shri S. Yuvarajan Assistant
2	Smt. Suriya Varshini P. Assistant
3	Smt. S. Anjalidevi Upper Division Clerk
4	Shri R. Kumaran Lower Division Clerk
Mandapam Regional Centre	
1	Shri D. Augustus Julin Raj AAO

No.	Name and designation
2	Shri M. Shahul Hameed Assistant
3	Shri B. Palanivelmurugan Upper Division Clerk
4	Smt. M. Valarmathi Upper Division Clerk
5	Smt. K Madhavi Lower Division Clerk
Calicut Regional Station	
1	Shri Rishikesh Aandi AAO
2	Shri R. Saravanan Upper Division Clerk
Mumbai Regional Station	
1	Shri Santosh Kumar AAO
2	Shri Vinod P. Bhagayatkar Assistant
3	Shri Bhomesh Meena Assistant
Tuticorin Regional Station	
1	Smt. T. Mahalakshmi Assistant
2	Shri J. Vinoth Prabhu Vaz Assistant
3	Shri K. Jerald Raja Assistant
4	Smt. R. Anantharani Upper Division Clerk
Mangalore Regional Centre	
1	Shri Upendar Kumar AAO
2	Shri Vineeth T. Lower Division Clerk
Veraval Regional Station	
1	Shri Rohit A. Chowda Upper Division Clerk
2	Shri Pandya Jatin Kumar Upper Division Clerk
Karwar Regional Station	
1	Shri Ratan P. Naik Upper Division Clerk
Visakhapatnam Regional Centre	
1	Smt. D. Madhavi Latha Assistant
2	Shri L. Pydi Raju Upper Division Clerk
3	Shri S Srinivasulu Lower Division Clerk
Vizhinjam Regional Centre	
1	Smt. K. Latha AAO
2	Smt. Vinny George Assistant
3	Smt. M. P. Kaladevi Upper Division Clerk

Multi Tasking Staff (Headquarters and Centres)

No.	Name and designation
1	Shri K. G. Jayaprasad Multi Tasking Staff
2	Smt. K. T. Prakasini Multi Tasking Staff
3	Smt. Usha. S. Multi Tasking Staff
4	Smt. Subaida. K. S. Multi Tasking Staff
5	Smt. K. S. Jeeji Multi Tasking Staff
6	Shri P. M. Gireesh Multi Tasking Staff
7	Shri M. K. Anil Kumar Multi Tasking Staff
8	Smt. Unniresmi C. U. Multi Tasking Staff
9	Smt. Rinku Joseph Multi Tasking Staff
10	Smt. Deepa R. Multi Tasking Staff
12	Shri Sibin P. Babu Multi Tasking Staff
13	Shri Ratheesh M. Multi Tasking Staff
14	Smt. Anaswara K. B. Multi Tasking Staff
15	Smt. Sruthy S. Multi Tasking Staff
16	Shri Akhildev S. Multi Tasking Staff
17	Smt. Binitha Babu Multi Tasking Staff
18	Smt. Remya E. A. Multi Tasking Staff
19	Smt. Jinimol K. P. Multi Tasking Staff
20	Smt. Hima P. H. Multi Tasking Staff
21	Smt. Divya K. A. Multi Tasking Staff
22	Shri Thobias P. Antony Multi Tasking Staff
23	Shri Vysakhan P. Multi Tasking Staff
24	Shri Sujith R. Multi Tasking Staff
25	Smt. Reshma K. S. Multi Tasking Staff
26	Ms. Athira T. G. Multi Tasking Staff
27	Smt. Preethy Udayabhanu Multi Tasking Staff

No.	Name and designation
28	Shri Vipinkumar K. K. Multi Tasking Staff
29	Shri Augustine Sipson N. A. Multi Tasking Staff
30	Shri Ancil Parera Multi Tasking Staff
31	Smt. Nandana P. R. Multi Tasking Staff
32	Shri P. B. Jeevaraj Multi Tasking Staff
Calicut Regional Station	
1	Smt. Nishida P. Multi Tasking Staff
2	Shri M. K. Chandran Multi Tasking Staff
3	Shri Anoop K. G. Multi Tasking Staff
4	Shri V. Rajendran Multi Tasking Staff
5	Shri Anirudh K. Multi Tasking Staff
6	Shri Ajith Mattappadan Multi Tasking Staff
7	Shri Abdul Hakeem M. M. Multi Tasking Staff
Karwar Regional Station	
1	Shri Ramakant Shankar Harikantra Multi Tasking Staff
2	Ms. Pooja Mahabaleswar Gajinkar Multi Tasking Staff
3	Ms. Veena Ulhas Kamble Multi Tasking Staff
4	Shri Ravichandra Angadi Multi Tasking Staff
5	Shri. Manoj Rajendra Hulaswar Multi Tasking Staff
6	Smt. Bebutai Laxman Korabu Multi Tasking Staff
7	Shi Nagaraj Mohan Durgekar Multi Tasking Staff
8	Shri Suraj Surendra Kalgutkar Multi Tasking Staff
9	Shri Nagaraj Somayya Gond Multi Tasking Staff
KVK, Lakshadweep	
1	Smt. Shajala Banu P. M. Multi Tasking Staff
KVK, Narakkal	
1	Shri Jimosh Mohan C M Multi Tasking Staff

No.	Name and designation
2	Shri Midhun Kumar P. H. Multi Tasking Staff
Madras Regional Station	
1	Smt. R. Kalaiselvi Multi Tasking Staff
2	Shri T. Balaraman Multi Tasking Staff
3	Shri K. Prabhakaran Multi Tasking Staff
4	Shri Raja Sekar R. Multi Tasking Staff
5	Shri R. Yuvaraj Multi Tasking Staff
6	Smt. Niranjana A. Multi Tasking Staff
7	Shri J. Ramachandran Multi Tasking Staff
Mandapam Regional Centre	
1	Shri M. Saravana Kumar Multi Tasking Staff
2	Shri K. Ganesan Multi Tasking Staff
3	Smt. M. Saraswathi Multi Tasking Staff
4	Shri N. Thirupathi Multi Tasking Staff
5	Smt. M. Muthuvelu Multi Tasking Staff
6	Shri A. Mohammed Kaleem Multi Tasking Staff
7	Smt. M. Afrin Rani Multi Tasking Staff
8	Shri Ravikumar T. T. Multi Tasking Staff
9	Shri B. Sravanakumar Multi Tasking Staff
10	Shri R. Rajkumar Multi Tasking Staff
11	Shri S. Joseph Jegan Multi Tasking Staff
12	Shri K. Jeevanantham Multi Tasking Staff
13	Ms. Divya Bharathy S. Multi Tasking Staff
14	Smt. S. Sabiya Begum Multi Tasking Staff
15	Shri K Chandran Multi Tasking Staff
16	Shri Harivenkateshwaran .C. Multi Tasking Staff
17	Shri K. Krishnan Multi Tasking Staff

No. Name and designation

18 **Shri A. Dharunkumar**
Multi Tasking Staff

Mangalore Regional Centre

1 **Shri S. Mahalinga Naik**
Multi Tasking Staff

2 **Smt. Thanujakshi**
Multi Tasking Staff

3 **Shri Shrinath B.**
Multi Tasking Staff

4 **Smt. Sathyavathi**
Multi Tasking Staff

5 **Ms. Pushpa K.**
Multi Tasking Staff

6 **Shri Dharmaraju L. B.**
Multi Tasking Staff

7 **Shri Naveen Raju K. G. Naik**
Multi Tasking Staff

Mumbai Regional Station

1 **Smt. Urmila S. Balmiki**
Multi Tasking Staff

2 **Shri Ashish Chaturvedi**
Multi Tasking Staff

3 **Shri Vaibhav Jayant Gharat**
Multi Tasking Staff

4 **Shri Deepak Ramesh Rao**
Multi Tasking Staff

Tuticorin Regional Station

1 **Shri Santhakumar A.**
Multi Tasking Staff

2 **Shri S. Mariappan**
Multi Tasking Staff

No. Name and designation

3 **Shri K. Subramanian**
Multi Tasking Staff

4 **Shri A. Paul Pondi**
Multi Tasking Staff

Veraval Regional Station

1 **Smt. Santok A. Bharada**
Multi Tasking Staff

2 **Shri Bhint Mitesh Hiralal**
Multi Tasking Staff

3 **Shri Chorvadi Kamlesh Kalidas**
Multi Tasking Staff

4 **Shri Thakar Milan Rajnikant**
Multi Tasking Staff

5 **Shri Mushagra Rajit Hasam**
Multi Tasking Staff

6 **Shri Gadhiya Noormamad Alibhai**
Multi Tasking Staff

Visakhapatnam Regional Centre

1 **Shri P. Venkatesh**
Multi Tasking Staff

2 **Shri Siram Nookaraju**
Multi Tasking Staff

3 **Shri Seeram Harish**
Multi Tasking Staff

4 **Shri Potala Bhaskara Rao**
Multi Tasking Staff

5 **Shri Venkateswarulu Vuyyala**
Multi Tasking Staff

6 **Shri Yenni Prasad Babu**
Multi Tasking Staff

No. Name and designation

7 **Shri P. Shanmukh Deekshit Kumar**
Multi Tasking Staff

8 **Shri Palli Kalidasu**
Multi Tasking Staff

9 **Shri Vasamsetti Ravikant**
Multi Tasking Staff

10 **Shri C H Ramarao**
Multi Tasking Staff

11 **Shri R. Pydi Raju**
Multi Tasking Staff

Vizhinjam Regional Centre

1 **Shri S. Sathesh Kumar**
Multi Tasking Staff

2 **Ms. Krishna Priya P. M.**
Multi Tasking Staff

3 **Smt. Shalini O.**
Multi Tasking Staff

4 **Smt. Nisha S.**
Multi Tasking Staff

5 **Shri V. Anand**
Multi Tasking Staff

6 **Smt. Sreelakshmi S.**
Multi Tasking Staff

7 **Shri Akhil A. R.**
Multi Tasking Staff

Digha Regional Station

1 **Shri Vishal Dayanand Jangam**
Multi Tasking Staff

2 **Shri Ganesh Suryakant Tandal**
Multi Tasking Staff

Budget

Budget 2025-2026

Grants for Creation of Capital Assets (CAPITAL)

		(Rs. In Lakhs)		
Name of the Head		R.E 2025-26	Expenditure up to 31.03.2026	% of Utilization
1	Works			
	(A) Land	0.00	0.00	0.00
	(B) Building			
	i Office Building	184.57	184.57	100.00
	ii Residential Building	0.00	0.00	0.00
	iii Minor Works	14.31	14.31	0.00
2	Equipments	135.10	135.10	100.00
3	Information Technology	77.10	77.10	100.00
4	Library Books and Journals	5.27	5.27	0.00
5	Vehicle & Vessels	0.00	0.00	0.00
6	Livestock	0.00	0.00	0.00
7	Furniture & Fixtures	17.65	17.65	100.00
8	Others	0.00	0.00	0.00
Total – CAPITAL (Grants for creation of Capital Assets)		434.00	434.00	100.00

Grants in Aid-Salaries (REVENUE)

Name of the Head		R.E 2025-26	Expenditure up to 31.03.2026	% of Utilization
1	Establishment Expenses			
	Salaries			
	i. Establishment Charges	8334.23	8334.23	100.00
	ii. Wages	0.00	0.00	0.00
	iii. Overtime Allowance	0.00	0.00	0.00
Total – Establishment Expenses (Grant in Aid-Salaries)		8334.23	8334.23	100.00

Grants in Aid-General (REVENUE)**(Rs. In Lakhs)**

	Name of the Head	R.E 2025-26	Expenditure up to 31.03.2026	% of Utilization
1	Pension & Other Retirement Benefits	9890.00	9890.00	100.00
2	Travelling Allowance			
	(A) Domestic TA/Transfer TA	158.00	158.00	100.00
	(B) Foreign TA	0.00	0.00	0.00
	Total – Traveling Allowance	158.00	158.00	100.00
3	Research & Operational Expenses			
	(A) Research Expenses	200.00	200.00	100.00
	(B) Operational Expenses	312.00	312.00	100.00
	Total–Research & Operational Expenses	512.00	512.00	100.00
4	Administrative Expenses			
	(A) Infrastructure	731.37	731.37	100.00
	(B) Communication	21.00	21.00	100.00
	(C) Repairs & Maintenance			
	i Equipments, Vehicles & Others	124.77	124.77	100.00
	ii Office Building	101.16	101.16	100.00
	iii Residential Building	11.00	11.00	100.00
	iv Minor Works	15.75	15.75	0.00
	(D) Others (excluding TA)	394.95	394.95	100.00
	Total–Administrative Expenses	1400.00	1400.00	100.00
5	Miscellaneous Expenses			
	A HRD	15.25	15.25	100.00
	B Other items (Fellowships, Scholarship etc.)	0.00	0.00	0.00
	C Publicity & Exhibition	18.47	18.47	100.00
	D Guest House–Maintenance	2.28	2.28	100.00
	E Other Miscellaneous	0.00	0.00	0.00
	Total–Miscellaneous Expenses	36.00	36.00	100.00
	Total Grants in Aid–General (incl. Pension)	11996.00	11996.00	100.00
	Grand Total	20764.23	20764.23	100.00
	TSP–Capital	10.00	10.00	100.00
	TSP–General	110.00	110.00	100.00
	Total TSP	120.00	120.00	100.00
	SCSP–Capital	40.00	40.00	100.00
	SCSP–General	200.00	200.00	100.00
	Total SCSP	240.00	240.00	100.00
	RE–Total	21124.23	21124.23	100.00
	Loans & Advances	5.00	5.00	100.00
	Central Corpus Fund	5.99	4.58	76.46
	Institute Corpus Fund	154.46	154.46	100.00

Revenue 2025-26**(Rs. In Lakhs)**

	Target	Achieved
Income from Sales/services		52.66
Fee/Subscription	103.00	12.56
Income from Royalty, publication etc.		0.72
Total	103.00	65.94
Other Receipts		
Other Income		72.89
STD Interest		7.51
Sale of Asset		26.77
Recoveries on Loans & Advances		11.46
CPWD/Grants Refund		38.02
TOTAL		156.65
GRAND TOTAL		222.59

(Rs. In lakhs)

Other Heads	Opening Balance	Receipts	Expenditure	Refund	Closing Balance
AINP-M	0.00	140.00	140.00	0.00	0.00
AINP-OFBC	0.00	310.00	310.00	0.00	0.00
NICRA	0.00	64.75	64.75	0.00	0.00
Winter/Summer School	0.72	0.00	0.00	0.72	0.00
Other Schemes	6.12	187.46	186.44	6.57	0.57
KVK, Narakkal	0.04	217.47	216.85	0.04	0.62
KVK, Lakshadweep	0.84	190.28	184.47	0.84	5.81
Deposit Schemes (Externally funded)	111.55	3303.55	2777.53	186.55	451.02
Consultancies	626.47	638.04	257.37	0.00	1007.14

Notes

Lined area for notes.



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- Headquarters
- Regional Centres
- Regional Stations
- Field Centres
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