

CMLRE Unveils Landmark National Report on Deep-Sea and Distant-Water Fishery Resources of the Indian EEZ to Fuel Sustainable Blue Economy

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NEW DELHI — As global focus intensifies on ocean-driven food security and climate regulation, India has taken a definitive step toward mapping and managing its vast, uncharted marine frontiers. Marking the Silver Jubilee celebrations of the Centre for Marine Living Resources & Ecology (CMLRE), the Ministry of Earth Sciences (MoES) has released the comprehensive **“National Report on Deep-Sea and Distant-Water Fishery Resources of the Indian EEZ.”**

The milestone document compiles nearly four decades of pioneering oceanographic research and three decades of systematic surveys across India's 2.37 million square kilometre Exclusive Economic Zone (EEZ). Far more than a scientific archive, the report delivers a definitive roadmap for the sustainable development of India's Blue Economy, balancing resource assessment with biodiversity conservation.

The report was formally unveiled in the presence of **Dr. M. Ravichandran**, Former Secretary, MoES, alongside former CMLRE Directors Dr. P. Madheswaran and Dr. M. Sudhakar; Dr. M. V. Ramana Murthy, Director of the Deep Ocean Mission; and Dr. R. S. Maheskumar, Head of CMLRE, alongside senior members of the marine science community.

Decades of Exploration Aboard a Floating Laboratory

The findings presented in the report represent an unprecedented collective scientific effort, encompassing **more than 400 oceanographic cruises** since the early 1990s under the Marine Living Resources Programme (MLRP). At the heart of this massive endeavor is India's flagship research vessel, the **Fishery and Oceanographic Research Vessel (FORV) Sagar Sampada**.

Serving as a sophisticated floating laboratory, the vessel carried multidisciplinary teams of scientists through grueling, weeks-long expeditions across the Arabian Sea, the Bay of Bengal, the Lakshadweep waters, the Andaman Sea, and into the Southern Ocean (Antarctica) to map species distributions, estimate fish abundance, and capture critical environmental data.

Key Highlights from the Deep-Sea Frontier

- **Unlocking the "Twilight Zone" (Mesopelagic Layer):** Extending from 200 to 1,000 meters deep, this zone houses dense communities of lanternfishes (myctophids), deep-sea shrimps, and cephalopods. The report details how their nightly vertical migration drives the ocean's "biological carbon pump," transferring carbon from the surface to the deep sea to regulate global climate.
- **Deep-Sea Demersal Resources:** The report provides a meticulous assessment of living resources inhabiting the continental slope beyond 200 meters, identifying substantial, currently underexploited stocks of deep-sea shrimps, perches, scombroids, flatfishes, and eels.

- **Distant-Water Fisheries:** Comprehensive data is compiled on high-value open-ocean and deep-water species, including tunas, billfishes, sharks, oceanic squids, and Antarctic krill.
- **Safeguarding Marine Biodiversity Hotspots:** Crucially, the publication documents ecologically vital regions that serve as nurseries and habitats for vulnerable ecosystems. Key areas highlighted include:
 - Kollam Bank & Angria Bank
 - Off-Mangalore Deep-Sea Slope
 - Terrace off Trivandrum
 - The Lakshadweep and Andaman-Nicobar Islands

A Tech-Driven Vision for 2047

The report highlights how modern, emerging technologies are transforming Indian oceanography. By integrating historical field observations with **fisheries acoustics, environmental DNA (eDNA), autonomous observing platforms, satellite observations, artificial intelligence (AI), and advanced ecosystem modelling**, India is establishing a state-of-the-art framework for marine spatial planning.

This scientific foundation directly reinforces India's **Vision 2047**, which prioritises the Blue Economy as a core pillar of national growth. It also strengthens India's global commitments to **UN Sustainable Development Goal 14 (Life Below Water)** and the UN Decade of Ocean Science for Sustainable Development.

"Sustainable prosperity will not come simply from discovering new marine resources, but from understanding them, respecting the ecosystems that sustain them, and managing them with science as the guiding compass," said Dr M Ravichandran.

The publication was edited by **Dr V. N. Sanjeevan (former Director, CMLRE) and Dr Baban Ingole (retired Scientist, NIO Goa), and published under the leadership of Dr R. S. Maheskumar**. The core authorial team responsible for synthesising this massive repository of multi-disciplinary data includes Dr Hashim Manjebraayakath, Dr Smitha B. R., Dr Rajeesh Kumar M. P., Dr Meera K. M., Dr Purbali Saha, Dr Sahina Akter, Dr Chinmay Kar, and Dr Davood Nihal.



Picture: Former Secretary, Ministry of Earth Sciences (MoES), Dr. M. Ravichandran, released the National Report on Deep-Sea and Distant-Water Fishery Resources of Indian EEZ during the Silver Jubilee celebrations of the Centre for Marine Living Resources & Ecology (CMLRE), Kochi, in the presence of former Directors, senior scientists, Head of CMLRE, authors, and distinguished members of the marine science community.

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