NARA's many-pronged impact on Sri Lankan fisheries

NARA is one of the best-known acronyms in Sri Lankan fisheries. The National Aquatic Resources Research and Development Agency has for the past 25 years organised research, development and management activities on aquatic resources in Sri Lanka.

NARA was established in 1981. The main objective then was to tackle the challenges of the 200 nautical mile Exclusive Economic Zone (EEZ). Sri Lanka's EEZ represents a sea territory of 460 000 sq. km — around eight times the land territory of the country. With jurisdiction over such vast sea territory, it is imperative for Sri Lanka to organise sound management of oceanic resources and to integrate fisheries and aquatic resources into development planning.

NARA lends its expertise to resource management in Sri Lanka, to planning and management of fisheries, and to optimal exploitation of fisheries resources.
Mr K Haputantri is the chairperson of NARA, and Ms K T R Pratapsinghe the Director-General.

The main functions of NARA are to:

- Exercise all the powers and duties conferred on the Agency under the National Aquatic Resources Research and Development Agency Act No. 54 of 1981 as amended by Act No. 32 of 1996.
- Apply and utilize scientific and technological expertise for implementing the national development programme on living and non-living aquatic resources.
- Conduct research to identify, assess, manage, conserve and develop aquatic resources – in marine and inland waters, in particular.
- Organize oceanographic and hydrographic surveys and develop charts and data bases.
- Improve and develop fishing craft, fishing gear and equipment, and fishing methods.
- Undertake social and economic studies on the fishing industry, including the welfare of fishermen and their dependents.
- Advise on the development, management and conservation of aquatic resources in inland waters, coastal wetlands and off-shore areas.
- Provide advisory and consultancy services on scientific, technological and legal matters relating to the exploitation, management, conservation and development of aquatic resources.
- Co-ordinate the activities of institutions engaged in the exploitation, planning, research, development, conservation, control and management of aquatic resources.
- Undertake the collection, dissemination and publication of information and data useful for the management, conservation and development of aquatic resources and the fishing industry in Sri Lanka.
- Develop technologies and standards for product development and quality control of fish and fish products.
- Provide training relevant to the work of the agency.

Besides its headquarters at Mattakuliya, NARA has four regional research stations located at Rekawa, Kadolkele (Negombo), Kalpitiya and Trincomalee. The Agency's 50 researchers and 300 supporting staff carry out activities spread across nine divisions and two supporting divisions, which are described below.

Inland Aquatic Resources and Aquaculture Division

This Division is responsible for management and sustainable utilization of inland aquatic resources and habitats in the country. The main R & D programmes relate to environmental assessment and management for aquaculture development, verification of culture technologies for shrimps, prawns, molluscs, brackishwater fish, holothurians and artemia.

The Division conducts regular training programmes on disease management in ornamental fish farming, fish nutrition and fresh water prawn culture. Farmers have been introduced to a buy-back system where fish exporters and small-scale developers work together with NARA to promote ornamental fish farming in rural areas.

Leaflets and manuals are prepared on various farming practices such as mollusc culture, seaweed farming, shrimp culture and diseases and distributed among entrepreneurs and fish farmers. Resource surveys and conservation programs are undertaken on sensitive ecosystems such as mangroves, salt marshes and other wetlands. The Division prepares Environment Impact Assessments (EIA) and integrated management plans for coastal areas. Advisory services are provided to farmers to prevent and control diseases, water quality management, effluent treatment and sediment management.

The Marine Biological Resources Division

This Division carries out research on management, development and conservation of marine living resources and ecosystems.

- Management-oriented research projects to assess fish, crustacean and gastropod resources.
- Development-oriented research projects to assess the viability of offshore and deep-sea fisheries.
- Research projects on coastal zone management.
- Conservation of coral reef and threatened marine fauna.

Management-oriented assessments are carried from eight coastal areas between Kalpitiya and Trincomalee. The research outputs are designed to benefit mainly fishing communities and investors in offshore and deep-sea fisheries.

The conservation-oriented research aims at conserving the gene pool, creating opportunities for nature studies and ecotourism ventures. Coral reef resources are managed through resource monitoring and data collection. For marine turtle conservation, important nesting beaches are identified, and *in-situ* and *ex-situ* conservation procedures carried out.

The Division has employed a catch and effort monitoring system at six locations between Negombo and Trincomalee. Additionally, a logbook system is being used for recording fish catch data. NARA is planning a coastal resource survey with assistance from NORAD and SIDA. The Agency is also the focal point for a tsunami early warning system in the country.

Socio-Economics & Marketing Research Division

This Division carries out socio-economic studies on the fishing industry, including the welfare of fishers and their dependants, analysis of fish distribution patterns and their impact on consumers. This work is done in collaboration with other divisions of NARA. Collaborative work at present includes consultations with farmers on preparing a code of best practices for shrimp farmers and assessment of the socio-economic impact of coral reef bleaching and degradation. The Division also produces the annual Fisheries Year Book, which is the official publication on Sri Lankan fisheries statistics.

Fishing Technology Division

This Division undertakes R & D activities in fishing gear technology. Recent activities of the Division include successful demonstration of inshore Fish Aggregation Devices and improving the habitat of spiny lobsters.

Environmental Studies Division

This Division assesses the impact of agriculture on water quality of inland and coastal waters, the accumulation of heavy metals in aquatic fauna and flora, accumulation of pesticides and agro-chemicals in water as well as in fish, the effects of industrial activities on water quality, etc. The Central Environmental Authority and other regulatory agencies utilise the research outputs of this Division.

The Division also carries out EIA for development projects; chemical and microbiological analysis of drinking water, wastewater, sewage water, and industrial effluents. The Division provides advisory services to environmental management committees.

Post-Harvest Technology Division

This Division strives to minimize post-harvest losses of fish and commercialise newly developed fish products. The main activities are introduction of new food processing technologies from locally available under-utilized or non-utilized aquatic resources; and introduction of improved hygienic processing techniques for traditional fish products.

The Division offers laboratory and consultancy services on microbiological assessment, chemical analysis, food preservation, processing and quality control. It conducts research to help minimize the occurrence of human health hazards due to contamination of fish and fish products from chemical residues, antibiotics, bio-toxins and resistant pathogens. It

also undertakes quality monitoring programs for fish and shrimps to ensure compliance with regulations.

Oceanography Division

This Division builds up understanding and knowledge of the marine environment, predicts changes in the ocean environment and manages coastal and marine resources. The Division has a multi-disciplinary team, which undertakes research, does consultancies and advises fishers and industrial managers. The Division conducts:

- Joint research expeditions in the Indian Ocean with international oceanographic institutions to study the monsoon circulation and other oceanographic parameters within Sri Lanka's EEZ.
- A mineral exploration programme off Beruwela to identify and evaluate deposits of heavy mineral concentrations, principally Monazite, Ilmenite, Rutile and Zircon.
- Monitor sea level changes, measure currents, temperatures, waves, tides and salinity and identify areas of ocean energy potential around the country.

The Division investigates the distribution and transportation of nutrients, trace metals, organic matter and other biological assessment in oceanic and coastal waters. It plans to set up a National Oceanographic Data Centre (NODC) for the benefit of the public and for investors in oceanography.

Information Technology Division

The Division provides an IT platform for information gathering, processing, sharing and dissemination among all stakeholders for management, conservation and development of aquatic resources. It provides Internet services, system support, Geographic information Systems (GIS), remote sensing, modeling and training in computer applications. The Division is host to local and regional level databases on aquatic resources and provides links to other institutions concerned with aquatic resources research.

National Hydrographic Office

The National Hydrographic Office (NHO), established in 1984, is accredited to the International Hydrographic Organization (IHO). It carries out hydrographic surveys through systematic data collection in inshore, near shore and offshore areas, extending up to the country's EEZ. Hydrographic surveys are also carried out for inland water bodies.

The immediate outputs of the NHO are nautical charts, thematic maps on fisheries and user-oriented hydrographic maps involving digital & analogue hydrographic data. The data is mainly used for navigation, port & harbour development, coastal zone management, delimitation of national maritime jurisdiction, control of marine pollution, coast conservation, coastal engineering projects and defence and exploration. The NHO is capable of carrying out hydrographic surveys up to a depth of 5000 m, well within the continental margin of Sri Lanka.

Library & Information Division

This Division is concerned with information retrieval, access and dissemination for research & development activities, and preparation of online information for its users.

NARA is thus Sri Lanka's lead organisation for aquatic resources and its management. One of its major constraints of late has been a 'brain drain' – some of its senior staff have left the country for better opportunities abroad. The December 2004 tsunami inflicted heavy damage on the Agency's research laboratories, equipment, computers and on its research vessel 'Sayuri'. The Agency lost valuable records collected during the past 20 years. Oceanographic and bathymetric investigations have come to a halt. The Agency is striving to recover from the effect of the tsunami and resume its pivot role in aquatic resources management and development in Sri Lanka.

NARA celebrates its 25th anniversary in 2007

NARA is convening a two-day International Conference on Tropical Aquatic Research Towards Sustainable Development (15-16 February 2007) to mark its 25th anniversary. The Icelandic International Development Agency is supporting the Conference. Current status, trends and future needs in aquatic research will be the focus of discussion in the Conference. Presentations are invited on the following session themes:

- **Post Harvest Technology & Marketing:** Quality assurance & safety, handling & processing, value addition.
- **Capture Fisheries:** Biology, stock assessment, fishing technology.
- **Aquaculture & Disease Management:** Culture practices, diseases, pathology, shrimp farming, aquatic plants.
- **Ecosystem Conservation & Management:** Coral reefs, mangroves, sea grass, sand dunes, sea turtles, whales, dolphins, seabirds, bio diversity, estuaries and inland waters, waste management & pollution.
- **Ocean Dynamics & Development:** Hydrography, climate, sealevel, ocean disaster, maritime safety, navigation, marine pollution, energy, mineral resources, data management, ocean productivity, ocean circulation, numerical modelling.
- **Socio economics and Community Issues:** Post-Tsunami rehabilitation, impact of globalization, women in fisheries, welfare, community development.
- **Technological Advancement:** GIS and remote sensing applications, potential fishing forecasting, artificial intelligence.

For more details contact the Conference Secretariat at:
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