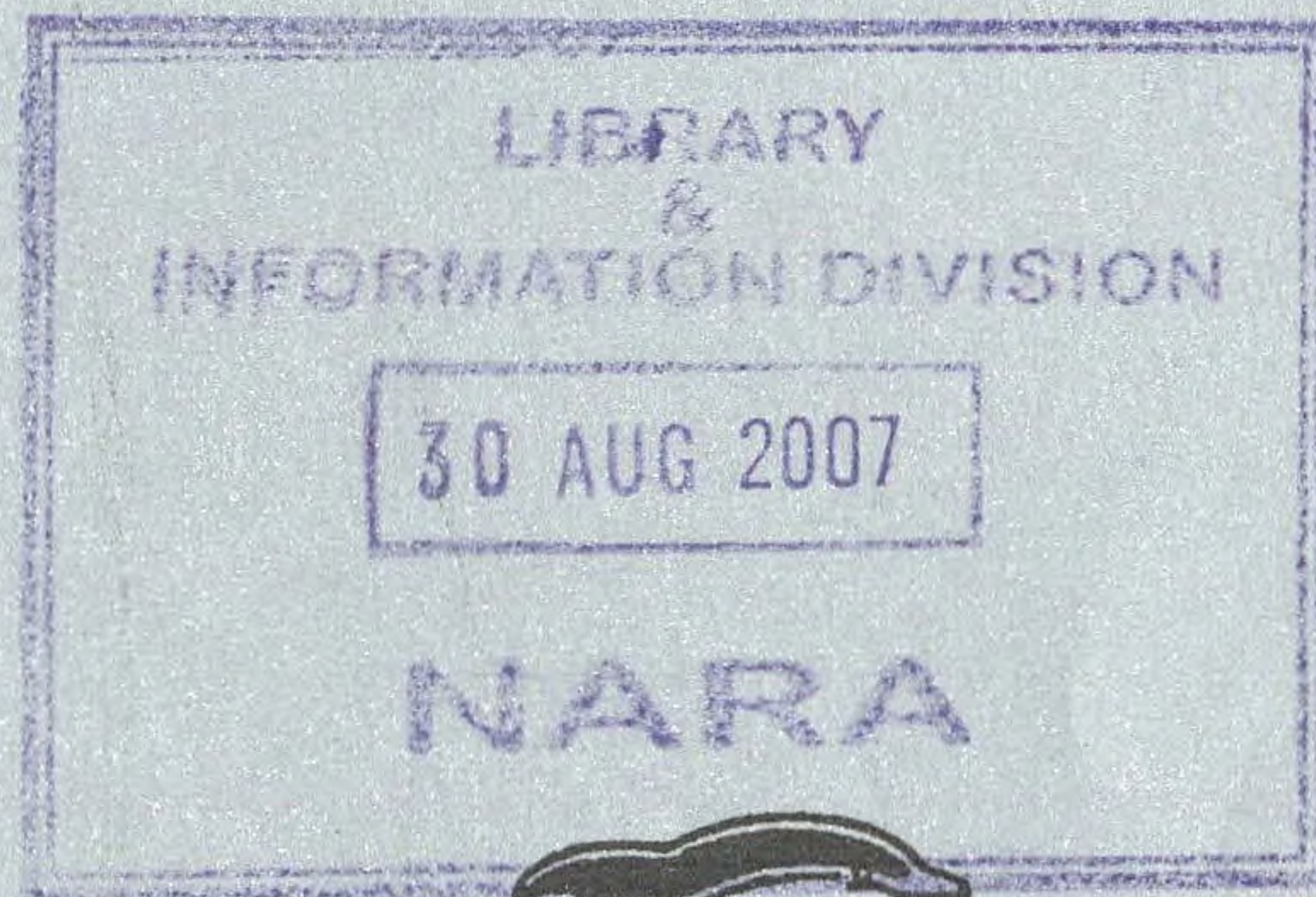


ANNUAL REPORT & ACCOUNTS

2003



**National Aquatic Resources Research &
Development Agency
Crow Island, Mattakkuliya,
Colombo 15**

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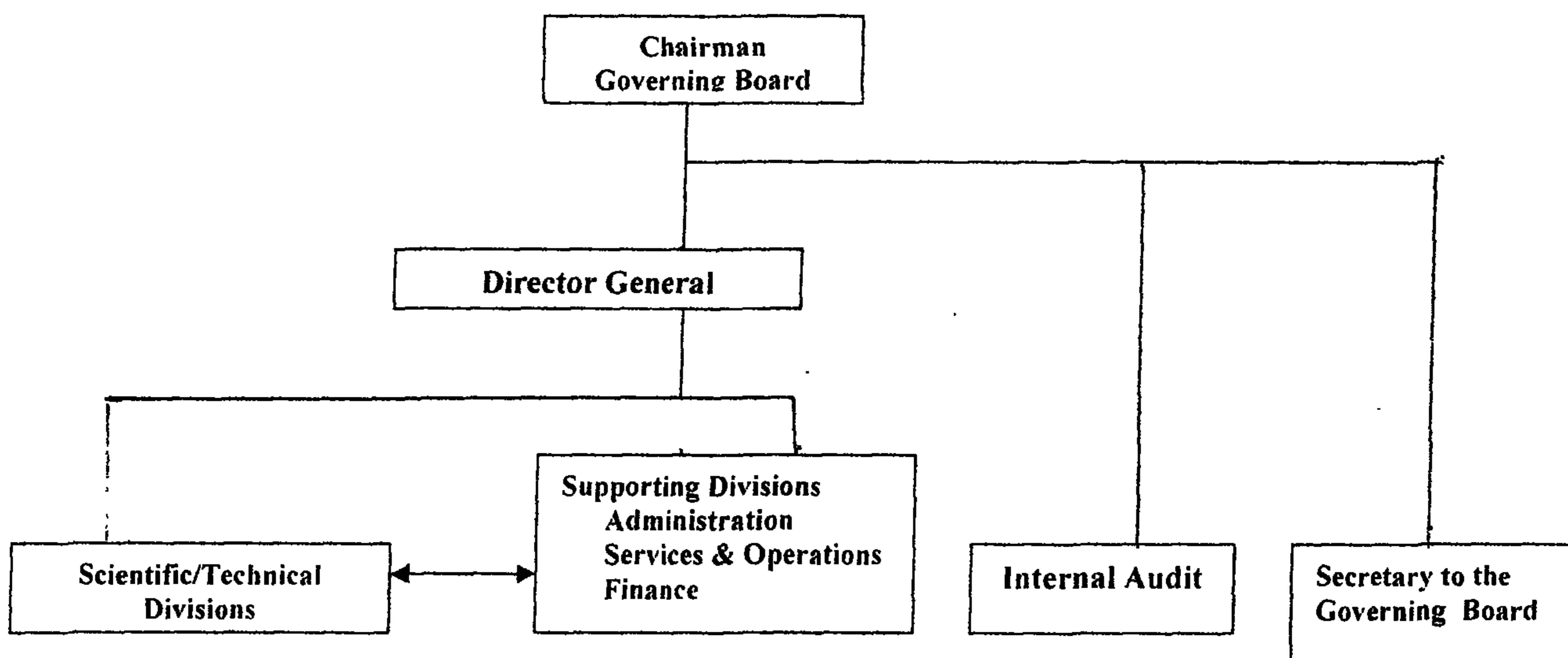
GENERAL ADMINISTRATION

The National Aquatic Resources Research and Development Agency (NARA) is the principal national institution charged with the responsibility of carrying out and coordinating research, development and management activities of the subject of aquatic resources. NARA was established in the year 1981 by restructuring the Research Division of the Department of Fisheries. In the restructuring process Research Division was amalgamated to the institute of Fish Technology which existed in the present premises of NARA in Crow Island, Mattakkuliya, to establish a full fledged research agency, under the Act of Parliament. National Aquatic Resources Research and Development Agency Act No. 54 of 1981 and amended subsequently by National Aquatic Resources Research and Development Agency Act No. 32 of 1996. NARA function as a statutory body under the Ministry of Fisheries and Ocean Resources Development.

The main objectives and functions of the Agency are as follows :

- To ensure application and utilization of Scientific and Technological expertise for the implementation of national development programmes on the subject of living and non living aquatic resources.
- To promote and conduct research activities directed at identification, assessment, management and development of living and non living aquatic resources.
- To co-ordinate and provide advisory and consultancy services on matters relating to exploitation, management and development of living and non living aquatic resources.
- To undertake collection, dissemination and publication of information.
- To provide training.

1. Organizational Structure



2. Governing Board

The Governing Board constitutes eight (08) appointed members and eight (08) Ex: Officio members in accordance with the provisions of the Act. Following were the members for the year under review.

Appointed Member*

1. Mr Razik Zarook (Chairman)
2. Mr A Abayawickrema
3. Prof. Ananda Gunatilake
4. Dr N F C Ranaweera
5. Mrs P Ranpatabendi
6. Mr Nimal Silva
7. Dr K Sivasubramaniam
8. Dr N P Wijeyananda

* Names in alphabetical order (except Chairman)

Ex.Officio Members**

- | | | |
|----------------------------------|---|--|
| 9. Representative | - | For Secretary of Fisheries (not appointed) |
| 10. Mr J A Ariyawansa | - | Representative of Ministry of Ports & Shipping |
| 11. Mr N Pathmanandan | - | Representative for Secretary Ministry of Finance |
| 12. Mr Wickremasuriya | - | Representative for Secretary of Scientific Affairs |
| 13. Rear Admiral S P Weerasekera | - | Representative of the Commander of the Navy |
| 14. Mr K L A R de Silva | - | Surveyor General |
| 15. Mr G Piyasena | - | Director General, Department of Fisheries |
| 16. Mr M A R Kularatne | - | Director General (Jan – July 2003) |
| 17. Dr P P G S N Siriwardene- | - | Director General (From Aug 2003). |

** In the sequence as indicated in the Act.

3. Organization

Mr Razik Zarook continued through 2002 as Chairman, while Mr M A R Kularatne served as the Director General till 31st July 2003. From 1st of August 2003, Dr P P G S N Siriwardene assumed duties as the Director General of NARA. In order to perform the mandated functions of the agency, the organization had been designed to constitute eleven research and technical division* ie. Environmental Studies, Fishing Technology, Inland Aquatic Resources & Aquaculture, Library & Information, Marine Biological Resources, National Hydrographic, Office, Oceanography, Socio-Economic and Market Research, Post Harvest Technology, Information Technology, Bio Technology supported by Administration, Services & Operations and Finance Divisions.

4. Heads of Divisions

Following officials officiated as Heads of Divisions during the year:

Research Divisions

- | | | |
|-----------------------|---|---|
| Bio Technology | - | Mrs D Herath |
| Environmental Studies | - | Mr N Sureshkumar |
| Fishing Technology | - | Dr D S Jayakody (till 01.08.2003)
Dr P A A T Jayawardena (from 01.08.2003) |

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Information Technology	-	Mr A B A K Gunaratne
Inland Aquatic Resources & Aquaculture	-	Dr P P G S N Siriwardene (till 01.08.2003)
	-	Dr S C Jayamanna (from 21.08.2003)
Library and Information	-	Mrs S Thalakada (till 15.05.2003)
Marine Biological Resources	-	Dr (Ms) C Amarasiri
National Hydrographic Office	-	Mr M A Ariyawansa
Oceanography	-	Dr T K D Tennakoon
Post Harvest Technology	-	Ms G J Gamegama Arachchi
Socio-Economic and Market Research	-	Ms P A J C Perer (till 25.05.2003)
	-	Dr R R P Maldeniya (from 29.11.2003)
Support Services Divisions		
Administration	-	Mr U A Sirisena
Finance	-	Mr M D Senaratne
Services & Operations	-	Eng. D A Karunasena

5. Recruitments

5.1 Permanent basis

Designation	No. of Post	Name
Shroff	01	Mr V S Gunaratne
Clerk/Store Keeper	01	Mr D Abeywickrama
Research Assistant	01	Ms I A Nanayakkara

5.2

5.3 Contract basis

Designation	No. of Post	Name
Skipper /Sayuri	01	Mr Channa Hettige
Hydrographer Surveyor	07	Mr O R B E W D A Owitipana
		Mr A M Keerthisinghe
		Mr A R C Ranaweera
		Mr H C S Fernando
		Mr R H P Weligodapitiya
		Mr W H R K Devinda
Research Officer	01	Mr K H D T Kasagala

6. Departures from NARA

Name	Designation	Reasons for departure	Effective Date
Mrs P A J C Perera	Research Officer	Resignation	25.05.2003
Mrs J M W Kalavila	SGB/Legal Officer	Resignation	12.07.2003
Mr H A M Kulathilake	Research Officer	Resignation	31.07.2003

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Ms S P S D Senadheera	Research Officer	Resignation	08.09.2003
Mr K L R C Wijayasinghe	Research Officer	Resignation	01.09.2003
Mr P D K D Amarasooriya	Research Officer	Deceased	15.09.2003
Mr K R R Perera	Driver	Retired	19.09.2003
Mr T S P Perera	Caretaker	Vacation of Post	01.09.200
Mr P A G Amarasinghe	Survey Labourer	Deceased	23.11.2003

7. Vacancies as at 31.12.2003

Posts	Number
Governing Board Secretary/Legal Officer	01
Chief Administrative Officer	01
Research Officer	10
Economist	01
Deputy Director/Hydrographer	01
Chief Hydrographic Surveyor	01
Land Surveyor	01
Chief Cartographer	01
Deputy Chief Cartographer	01
Cartographer	01
System Analyst	01
System Analyst/ Programmer	02
Office Assistant	01
Purchasing Officer	01
Instruments Technician	01
Research Assistant	02
Audit Clerk	01
Word Processing Operator	01
Data Processing Operator	01
Draughtsman	01
Instruments Technician	01
Driver	04
Care Taker/Cook	01
Care Taker	01
Lab Assistant	02
Unskilled Labourer	03
Circuit Bungalow Keeper	01
E D P Assistant	01
Deck Hand	01
Coxswain	01
Technical Assistant (Mechanical)	01
Sanitary Labourer	02
Survey Labourer	01
Watcher	03

8. Promotions

Promoted Grade	Number	Effective Date	Name
II	02	15.03.2003	Mrs A M A S K Wijesinghe
		15.08.2003	Mrs K W S Ariyawansa
V	01	21.01.2003	Mr W A A P de Silva
VI	08	16.02.2003	Mr R A M Jayathilake
		18.02.2003	Mr Janaka Pushpakumar

		19.02.2003	Mr R V C Gamage
		01.01.2003	Mr L Seneviratne
		01.01.2003	Mr E A Dharmasiri
		01.01.2003	Mr T H E Peiris
		01.01.2003	Mr P D Sunil
		01.01.2003	Mr U L Leslie Perera
VII	06	01.01.2003	Mrs K D K de Silva
		01.07.2003	Ms H D W Kumudu Kumari
		01.07.2003	Mrs W A K R Mallika
		01.01.2003	Mr L S K Jayawardane
		01.01.2003	Mr U Dharmasiri
		13.05.2003	Mr W K Vincent
VIII	04	01.01.2003	Mr S M P Siripala
		Backdated to 01.01.2001	Mr J Abeynayake
		Backdated to 01.04.2001	Mr P A G Amarasinghe
		Backdated to 01.01.2003	Mr M I Padmasiri

9. Disciplinary Inquiries

Details of Inquiries conducted are as follows :

9.1 Labour Tribunal Cases

- | | | | |
|----|--|---|---|
| 1. | Mr W D Gratien Fernando & Mrs Suramy Wijesekera | - | In Progress |
| 2. | Mr Upali Edirisinghe | - | Case conducted (The Agency was ordered to pay Rs.87,720/= to Mr Edirisinghe. This payment was made Accordingly) |
| 3. | Mr J K Balapatabedi | - | In Progress |
| 4. | Case No. 6137 & of Kadolkelle Regional Research Centre at Negombon District Courts | - | In Progress |

9.2 Inquiries

- | | | | |
|----|--|---|---|
| 1. | Inquiry against Mr Y Samarathna/Accountant | - | was conducted |
| 2. | Inquiry against Mr B Upul Indrasiri/Labourer | - | was conducted
The report will be available in due course |
| 3. | Inquiry against Mr W Samantha Kumara/Driver | - | Was conducted. His service was terminated as per the inquiry report |

10. Welfare Activities

Following activities were undertaken

* The following Transport facilities were provided

Maharagama - NARA
Kottawa - NARA
Gampaha - NARA
Borella - NARA
Fort - NARA
Negombo - NARA
Kelaniya - NARA

* Medical Scheme

As per the medical scheme for the staff, which was established during the previous year. Medical bill reimbursements were made as requested by the membership of the scheme. The services of a Medical Officer was made available once a week for medical consultations.

- Appropriate actions were taken to assist the staff in their family bereavements.

11. Foreign Training / Seminars / Workshops / Meetings Attended by NARA staff

NAME & DESIGNATION	COUNTRY	PURPOSE	PERIOD
Mr O V Premachandra Cartographer	India	3rd Meeting of North Indian Ocean Hydrographic Commission	17-19.01.2003
Mr M A Arfiyawans Hhdrygrapher	Canada	Training on CARIS-LOTS	20-30.01.2003
	Iceland	Conference on legal & Scientific Aspects of continental shelf limits	25-27.06.2003
Mr S W S Weerasinghe Chief System Analyst	Canada	Training on CARIS-LOTS	20-30.01.2003
	Singapore	International Ecolis Conference and Exhibition	07-09.10.2003
Dr D S Jayakody Research Officer	Thailand	Workshop on Bay of Bengal Large Marine Ecosystems (BOBLME0)	17-21.02.3003
	Malaysia	Participation at the ADB-RETA 5945 Workshop	17-27.03.2003
	Thailand	Training on FADS (Deep Sea and shallow water)	24.11.2003 09.12.2003
Mr M A R Kularatne Director General	India	13 th NCD- User Interaction Meeting	26-27.02.2003
Mr A Rajasooriya Research Officer	Phillippines	Integrated Tropical Marine Ecosystems Management Symposium & ICRI-CPC Meeting	24-29.03.2003
	Australia	Workshop on the Governace of High seas biodiversity Conservation & to complete the research paper	16.06.2003 26.06.2003
	Iran	Regional Workshop on Coral Reef Management & Conservation	14-17.12.2003
Mr S R T P Sinhabahu	UK	Training in Hydrographic Data Processing & Marine Cartography	07.07.2003 10.08.2003
Mrs S Thalakada Chief Librarian	New Zealand	Employment and no pay	15.05.2003 14.05.2005
Mr Razik Zarook Chairman	France	22 nd Session of the Assembly of IOC	24.06.2003 04.07.2003
	India	IOGOOS Workshop on capacity building & strategy for Data & Information Management	08.07.2003
Dr K Arulananthan Research Office	Canada	Training Programme on Ocean Government (Policy Law and Management)	01.06.2003 01.08.2003
Mr J K Rjapakse Research Officer	Japan	SAR date potential & application for a training course sponsored by NASDA	21.07.2003 01.08.2003

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	Thailand	Training on Remote sensing application on Oceanography	01.11.2203 01.03.2004
Mr Sureshkumar Research Officer	Singapore/Malaysia	Oil Spill Response Seminar	29.06.2003 04.07.2003
	UK/Portugal	Marine Agrochemicals in Multi use Aquatic System (MAMAS)	05-12.09.2003
Mr H B Jayasiri Research Officer	Malaysia	Training Programme on Marine Ecosystem & Pollution Management in Malaysia	10.08.2003 28.09.2003
Dr R R P Maldeniya Research Officer	Malaysia	Training Workshop on Analysis & Projection of Fish Demand and supply in Asia	28.07.2003 11.08.2003
Mr S A M Azmy Research Officer	Monaco	Official Scientific visit to Monaco Environmental laboratory - IADA Monaco	31.06.2003 12.08.2003
Dr P P H SN Siriwardane Actg DG	UK/Portugal	Marine Agrochemicals in multi-use Aquatic system (MAMAS)	05-12.9.2003
Mr S U P Jinadasa Research Officer	India	Training Course on GIS for Geoscientists	20.08.2003 24.09.2003
	India	Workshop on Recent advances in earth advances in earth observation for Geo Resource Management	19.11.2003 25.11.2003
Mr W C A Fernando Sampler	Japan	Training on Fisheries Data Collection for Fisheries Management	18.08.2003 07.09.2003
Mr W Palithq Sampler	Japan	Training on Fisheries Data Collection for Fisheries Management	18.08.2003 07.09.2003
Dr P A A T Jayawardene Research Officer	UK	To present a paper for ERF Conference	14-18.09.2003
	Thailand	Training on FADS (Deep Sea and Shallow Water)	24.11.2003 09.12.2003
Dr C Amarasiri Research Officer	Japan	Fishing Resources Management Course	19.10.2003 20.11.2003
	Seychelles	06 th Scientific Session of IOTC	03-09.12.2003
Mrs A S L E Corea Research Officer	Thailand	To attend a Meeting	22-29.09.2003
	India	Training on Inland Fisheries/Aquaculture	13-18.10.2003
Mr P A D A Kumara Research Officer	India	Training on Inland Fisheries/Aquaculture	13-18.10.2003
Miss G J Ganegama arachchi Research Officer	India	Workshop on water safety & water microbiology	10-14.11.2003
Dr E M S Wijeratne Research Officer	Australia	Training Programme on Numerical Modeling of estuaries	10.11.2003 05.12.2003
Mrs E K V Samaraweera Research Officer	India	Workshop on Coastal Marine Biodiversity on Indian Ocean	12-15.12.2003
Mrs P S Jayasinghe Research Officer	India	International Seminar & Workshop on Fermented Foods Health Status & Social well-being	13-14.11.2003
Mrs A D W R Rajapakse Research Officer	India	For Post graduate Studies (Ph.D)	24.11.2003
			30.11.2003
Dt T K D Tennakoon Research Officer	India	IOGOOS Workshop on capacity building & strategy for Data & Information Management	08.10.2003
Mr W D A J P Wijendra Research Assistant	UK	Employment and no pay leave	22.12.2003
			21.12.2005

BIOTECHNOLOGY DIVISION

Head of the Division – Ms D R Herath

1. Overview of the year :

The division was initiated in October 2002 with a staff of 01 Research Officer (Head) to introduce and develop biotechnological applications with respect to fisheries and aquatic resources. One research project on Genomic analysis of the threatened endemic freshwater fish, *Danio pathirane* was carried out. Preservation of endangered species can be done by biotechnological intervention. Techniques such as DNA fingerprinting, micro satellite analysis and micro mitochondrial DNA analysis can be carried out to study the variation seen in these animals.

2. Activities undertaken :

programme	Project	Allocation		Period	
		(Rs/M)	Officer Responsible	From	To
1. Biotechnology	1.1 Genomic analysis of the threatened endemic freshwater fish. <i>Danio pathirana</i>	0.5	D R Herath	2002	2004

3. Performance :

Project 1.1

This is a continuation of the last year Biotechnology project to study the genome of the freshwater species *Danio pathirana*. Sequencing of *Danio pathirana*'s genome has been carried out during the first half of the study period. As Ms D R Herath is on maternity leave, analysis of the results and report writing will be carried out later.

ENVIRONMENTAL STUDIES DIVISION

Head of the Division: Mr N Sureshkumar

1. Overview of the year :

The main function of the division is to conduct studies related to water pollution and assessment on environmental related issues with respect to aquatic environment. During this period only two research officers were available in the division and one of the officers was on study leave for pursuance of Ph.D studies in Australia. One other research officer was contracted under ADB project. Other staff strength comprised of three research assistants, a data entry operator and three labourers. The activities were restricted to one field oriented project. Further the division implemented a European Commission funded collaborative research project to the end year, which will continue for another year.

2. Activities undertaken :

1. Status of pollution of the aquatic Environment	1.1 Status of water quality in selected inland aquatic environment with special reference to pollution and algal community	0.54	N Sureshkumar S A M Azmy P L S Panawala	Jan 2003	Dec 2003
2. Consultancy advisory service and test services, Emergency Studies	2.1 Test services, Consultancy & advisory service, and water pollution & Fishkill Studies	0.04	N Sureshkumar S A M Azmy P L S Panawala	Jan 2003	Dec 2003
3. Process to obtain accreditation to the laboratory	3.1 Laboratory improvement programme to obtain accreditation status to ESD laboratory	0.32	N Sureshkumar S A M Azmy P L S Panawala	Jan 2003	Dec 2003
4. Managing Agrochemicals in Multiuse aquatic System (MAMAS)	4.1 Chemicals & effect monitoring studies	28.300 Euro	N Sureshkumar	Jan 2003	Dec 2003

3. Performance :

Project 1.1

The objective was to assess the present water quality of selected inland water bodies. In this regard, Nachchaduwa, Tissawewa, Nuwara Wewa and Rajangana tanks in Anuradhapura district and Minneriya and Parakarams samudra in Polonnaruwa districts were selected. Further an attempt was made to record the pristine water quality of the country by analyzing water quality of Horton Plains and streams of Sinharaja Man and Biosphere forest, which will help in water pollution studies. The water quality studies were carried out with the view to assist in improving inland fishery in the country by providing base line data on water quality, of the systems studied.

Sampling was carried out monthly basis in all the water bodies mentioned above. Samples were analyzed for important water quality parameters. A total of 35 samples from Nachchaduwa, 36 samples from Tissawewa, 40 samples from Nuwara Wewa and 42 samples from Rajangana tank, 40 samples from Minneriya tank and 68 samples from Parakarama Samudra were too collected.

The results obtained from all water bodies studied were found to be within the optional water quality for aquaculture and fishery. The trends were analyzed for further inferences. The water quality of Horton Plains and Sinharaja forest too showed that results were well within the specifications of potable water quality standards.

Programme	Physical 95%	Financial 50.68%
Project 2.1		

2.1.1 Test services

This programme was carried out to generate funds through the available expertise and laboratory facilities. Under this programme. It is planned to assist mainly fisheries & aquatic resources sector and other industrialists to facilitate their industrial activities. in their compliance to those regulations gazetted under Fisheries & Aquatic Resources Development Act and National Environmental Act. In view of cost escalations of chemicals and lab consumables. charges for test services were revised with the approval of Governing Board. Altogether 7 samples of industrial effluent were collected and analyzed and total of Rs.53,945.00 was generated as income for NARA.

2.1.2 Advisory services

- Development of National Programme of Action (NPA) for the Protection of marine Environmental Pollution from land based activities in Sri Lanka.

Mr N Sureshkumar participated on behalf of NARA in the proceeding of the core team comprising all the stakeholders of the committee on National Programme of Action. which was coordinated by the Ministry of Environment and Natural Resources with the assistance of UNEP. Under this programme, NARA secured a consultancy task to draft a pilot scale environmentally sound zoning plan for aquaculture development in Hambantota district to overcome unplanned aquaculture developments in future.

- Institutional Strengthening of the Oil Spill Contingency management

Mr N Sureshkumar participated in the deliberations of the Operation response Team and Institutional strengthening of oil spill contingency Management project to assist the Marine Pollution Prevention Authority to revise the National Oil Spill Contingency Plan.

- National Steering Committee for Wetland Conservation in Sri Lanka

National Wetlands Steering Committee was reconstituted under the Central Environmental Authority in September 2003. Mr N Sureshkumar participated as a member of the Committee representing NARA.

- Preparation of a National Policy on Wetlands

Mr N Sureshkumar participated at the deliberations of the working group meetings organized by the Ministry of Environment and Natural Resources to draft a National Wetlands Policy for the country.

- Meeting regarding releasing the treated water of Bata- atha industrial estate to sea

Mr S A M Azmy and Mr N Sureshkumar attended a meeting arranged by Ministry of Enterprise Development Industrial Policy and Investment Promotion at Bata-atha to discuss the environmental issues pertaining release of treated effluent into the sea.

- Ballast water Management Programme

Marine Pollution Prevention Authority initiated a core group meeting to develop strategies for ballast water management in October and Mr N Sureshkumar represented NARA in the proceedings of the core group meetings.

2.1.3 Environmental Impact Assessment activities

- Proposed waste water Disposal System for Ratmalana/Moratuwa Industrial & residential areas.

Mr N Sureshkumar participated in the committee meetings conducted by the Urban Development Authority as Project Approving Agency under National Environmental Act to draft terms of reference for the EIA study of the proposed project during the period of March to June 2003.

- Nuthurajawala tank farm, pipeline and sub sea unloading facilities

Mr N Sureshkumar participated in the monitoring committee meetings conducted by the Central Environmental Authority as Project Approving Agency under National Environmental Act for the above project.

- Development of Koduwa and Uruduwa at Bolgoda

Mr S A M Azmy participated in the scoping committee meeting conducted by the Urban Development Authority to develop the terms of reference for an EIA study of proposed project

Establishment of Water based theme park at Seeduwa

Mr S A M Azmy participated in the scoping committee conducted by the Board of Investments of Sri Lanka to study the impacts of the proposed activity and informed BOI on NARA's concerns.

2.1.4 Consultancy studies

- Water Quality study in Batticaloa lagoon

Sri Lanka Association for the Advancement of Science (SLAAS) requested cooperation of NARA to conduct a water quality study in Batticaloa lagoon to assist the Eastern University and also to train two personnel from the University. The task was carried out and a sum of Rs.59,185.00 was paid as far in October 2003.

- Water Quality Study in water bodies associated with Rekawa, Ussangoda and Kalametiya Coastal ecosystems. Environmental Studies Division secured a study contract under GEF funded Rekawa, Ussangoda and Kalametiya coastal ecosystems project from Coast Conservation Department for a sum of Rs.835,692.00 for a period of 18 months starting from November 2003. Preliminary site selection and literature review were carried out during the year 2003.

- Preparation of Environmental Profile for Chilaw Lagoon

Environmental Studies Division obtained a study contract from Coast Conservation Department (CCD) to prepare an Environmental profile for Chilaw lagoon for the purposes of future special area management process of the CCD. The study period proposed was for four months starting from month of November 2003 and total contract amount was Rs.545,000/= . Preliminary site study and initial contacts with stakeholders were initiated during this period.

- Network for the qualification of the impacts of pesticide use in horticulture on ecosystems, human health and economy of South East Asia

Mr N Sureshkumar participated in the preparation of the above project proposal together with 15 other international partners for European Union funding. The project proposal was submitted to EU Office in Brussels in September 2003 by the main coordinator Alterra of The Netherlands.

- From Source to Coast in South – Asian Catchments (SCAN)

Mr N Sureshkumar participated in developing above research proposal together with 12 other international partners for European Union funding. Drafting of the proposal was initiated by Norwegian Institute for Water Research (NIVA). Submission of project proposal was delayed for net call by the EU due to delay in finalizing the proposal.

2.1.5 Emergency studies

- Preliminary investigation of alleged Marine pollution due to unloading of coal from Ashroff jetty in Trincomalee
On the request of Department of Fisheries and Aquatic Resources Development preliminary investigations were carried out to determine the marine pollution caused by unloading of coal from Asroff jetty in Trincomalee and a report was submitted by N Sureshkumar.

- Report on Green Belt at Bentota

On the direction of Chairman /NARA. report was prepared to assess the importance of the green belt at Bentota and was submitted to Coast Conservation Department by Mr N Sureshkumar together with Mr P A T Jayawardane, Mr Arjan Rajasooriya and Mr P D K D Amarasooriya of Marine Biological Resources Division

- Pollution caused by dust emanating from Cement plant in Trincomalee

An investigation was initiated to understand the impacts to marine ecosystem by the dust emanating from a cement plant in Trincomalee in collaboration with Oceanography and Marine Biological Resources Division. Further investigations to qualify the impacts are anticipated.

- Planktonic bloom of coast of Colombo

At the request of Marine Pollution Prevention Authority (MPPA) an investigation was carried out to determine the cause for a reddish orange bloom off coast of Colombo and report was submitted to MPPA.

- Construction of Fish ladder

At the request of Ministry of Water Management, Galamuna weir site was inspected and observations were submitted with regard to construction of a fish ladder at the weir site.

- Fish kill incident at Maha Divulwewa in Kahatagasdigiliya

On request of National Aquaculture Development Authority (NAQDA), a fish kill incident at Maha Divulwewa in Kahatagasdigiliya was investigated in October 2003 and a report was submitted to NAQDA by Mr S A M Azmy

Progress

Physical 100%

Financial 100%

Project 3.1

The purpose of developing, implementing and monitoring quality system in a laboratory is to perform test services generating technically valid and competent results to satisfy the clients needs with complying to international standards. Laboratory manual was drafted under the programme. Calibration of required items and service agreements were initiated to ensure accurate analysis. A new Atomic absorption Spectrophotometer was installed. Further new instruments were ordered to upgrade the analytical strength of the laboratory.

Progress

Physical 85%

Financial 100%

Project 4.1

The research project was implemented for the second year which was initiated by six international partners under the funding of European Commission with the objective to develop cost-effective diagnostics tools that can be used in an integrated risk assessment model leading to development of policy guidelines for the management of agrochemicals use in aquatic systems in Asian countries. During the second year of activities, chemical and effect monitoring activities were carried out in selected sites in Meegahawa and Kalankutiya tank systems in Galgamuwa area. A total of 90 samples were collected for analysis. Samples for pesticide residues were handed over to ITI for analysis. In situ toxicity test using moina and yolk sac tilapia were started. In this regard fabrication of test chambers were completed and culture of moina was also achieved. Dr P P S G N Siriwardane and Mr N Sureshkumar attended the progress review and forward planning meeting for the partners of the project held in Stirling University, UK and Aveiro University, Portugal from 5th to 12th September 2003.

Progress

Physical 95%

Financial 100%

4. Training :

- Oil Spill Response seminar

Mr N Sureshkumar attended the above seminar as a member of the operational response committee of the Marine Pollution Prevention Authority from 29th to 5th July in Singapore/Malaysia.

- **Scientific visit to Marine Environmental Laboratory, Monaco**

Mr S A M Azmy paid a scientific visit to Marine Environmental Laboratory, Monaco from 1st to 14th September 2003 to understand the determination of Plutonium, Cesium and Strontium elements in marine matrices

5. Publications:

1. Report on 'Preliminary investigation of alleged Marine pollution due to unloading of coal from Ashroff jetty in Trincomalee' dated 23.1.2003. Submitted to Department of Fisheries and Aquatic Resources.
2. Report on 'Preliminary environmental assessment of the coastal belt from Taj Exotica up to Induruwa railway crossing in Bentota' dated 01.09.2003. Submitted to Coast Conservation Department.
3. Report on 'Fish kill at Mahadivulwewa reservoir, Kahatagasdigiliya' dated October 2003. Submitted to National Aquaculture Development Authority.
4. Report on the incident of planktonic bloom off coast of Colombo' dated 01.12.2003. Submitted to Marine Pollution Prevention Authority.

FISHING TECHNOLOGY DIVISION

Head of the Division : Dr P A A T Jayawardene

1. Overview of the year:

Fishing Technology Division (FTD) of NARA makes valuable contribution to develop the fishing industry by undertaking research and development activities in fishing gear technology. The mandate of the division is to undertake research and development activities in view of introduction of new technologies to the industry while improving the efficacy of the existing fishing techniques for sustainable exploitation of the fishery resources from the seas of Sri Lanka. The cadre of the division comprised of Head of the Division, 02 Research Officers, 02 Research Assistants, Computer Operator, Boat Operator, and a Labourer. The responsibility of each individual is to play their definitive roles in the integrated annual research and development programme of the division to achieve the overall objective of sustainable advancement of the technology in the fishing industry.

2. Activities undertaken :

Program	Project	Allocation (Rs.M)	Officer responsible	Period from to
1. Introduction and evaluation of new fishing technologies in sustainable exploitation of the fishery resources	1.1 To introduce a new fishing technique-Stick Held Dip Net (SHDN) to harvest squid resources in the East coast of Sri Lanka (Trincomalee area)	0.918	N B P Punyadeva and K L R C Wijayasinghe	From January to December 2003

3. Performance :

Project 1.1

The objective of this study was to demonstrate the technical and economic feasibility of the SHDN in sustainable exploitation of the squid fishery resources from the seas off Sri Lanka. It was an efficient fishing method to exploit squids in calm seas and suitable device to operate from traditional fishing crafts. Prior to introduction to the fishing community further studies are needed to reduce the operations cost.

Progress: Physical 95% Financial 96.6%

4. Publications:

- Jayakody D S and Chandana K L R C (2003). Fishing trials on the south east of Sri Lanka for the deep sea lobster *Pureulus sewelli* (Abstract published) paper presented at the First Scientific Session on Marine Biological Resources and Fishing Technology.
- Jayakody D S and Pieris S S C (2003). Cost benefit analysis of deploying Fish Aggregating Devices (FADs) in Sri Lankan coastal waters (Abstract published) paper presented at the First Scientific Session on Marine Biological Resources and Fishing Technology.
- Punyadeva N B P and Wijayasinghe K L R C (2003). Development of a Stick Held Dip Net for harvesting squids. (Abstract published) paper presented at the First Scientific Session on Marine Biological Resources and Fishing Technology.

INFORMATION TECHNOLOGY DIVISION

Head of the Division : Mr A B A K Gunaratne

1. Overview of the year:

Information Technology Division is responsible to supply reliable, state-of-the-art information technology in the process of management, conservation, monitoring, development and coordination of aquatic resources. The division was initiated in October 2002 with staff of 01 Information Officer (Head) and 01 Research Assistant. The Division will cover 04 broad areas, application development and system support, Geographic Information Systems and remote sensing, PC support, Research and Development and training each with distinct responsibilities. Presently the division is carrying out development activities to update the website of NARA. E-mail facilities, outline access to NARA library database network services, GIS and remote sensing, PC support activities and training.

2. Activities undertaken:

Programme	Project	Allocation (Rs.M)	Officer Responsible	From To	
1. Application Development and Support	1.1 Setting up by dynamic website file server and news server	0.169	Ajith Gunaratne Janaka Lokugamage	Continuous 2002	2004
	1.2 Development of Personal information System for Administration Division	0	Ajith Gunaratne	2003	2004
2. Remote sensing and GIS	2.1 Development of GIS and remote sensing strategies for the management of sensitive areas in the Negombo Lagoon	0.091	Ajith Gunaratne Janaka Lokugamage	2002	2004
3. Training	3.1 Training Programme on desktop applications software and e-mail for NARA Staff	0.040	Ajith Gunaratne	2003	2003

3. Performance:

Project 1.1:

The main objective of the project is to provide information to stakeholders in the fisheries sector in trilingual language (Sinhala, Tamil and English) through NARA's website. Updating of the English web pages was carried out. Design and testing has been completed for the Sinhala version. Implementation of the Sinhala web pages was delayed due to late delivery of the computer server.

Security of the website and NARA Network was upgraded. Centrally operated virus protection was initiated and automatic virus upgrading for computer workstation was introduced. Software for network monitoring was installed.

Progress: Physical: 100% Financial: 100%

Project 1.2:

The expected target could not be achieved due to the retransfer of the staff member to his earlier division. However design part of the database was completed.

Progress: Physical: 80% Financial: Finds not allocated

Project 2.1

Remotely sensed data for the year 1975 and year 2000 were analyzed. During the project period two experts from Sida Sweden assisted the project. Accuracy assessments and further studies with catchment's characteristics need to be carried out in the year 2004. GIS layers for land use of the Negombo catchment area was completed.

Report on preliminary observation is being prepared with assistance from Swedish Experts.

Progress:

Physical: 100%

Financial: 100%

Project 3.1

Instructions on use of internet e-mail and desktop application were provided. Workshop not conducted due to financial constraints.

Progress:

Physical: 100%

Financial: 100%

INLAND AQUATIC RESOURCES AND AQUACULTURE DIVISION

Head of the Division: Dr S C Jayamanna

1. Overview of the year:

The mandate of Inland Aquatic Resources and Aquaculture Division of NARA is technology development and improvements for aquaculture, address technical problems in the industry and to develop management measures for inland aquatic resources. The research and development programme was formulated in par with the mandate.

Research and development activities were identified under three main thrust areas. Coastal aquaculture, Inland fisheries and freshwater aquaculture and Mangroves and wetland management. Currently 11 Research Officers and 15 Research Assistants attached to the division are engaged in multidisciplinary research and development. Of the 11 Research Officer and 15 Research Assistants, three Research Officers and 7 Research Assistants are working in Regional Research Centres in Rekawa, Kadolkele and Kalpitiya. Two Research Officers are on study leave reading for Post Graduate Degrees.

Of the Regional Research Centres, Centre in Rekawa operates as a multidisciplinary research and development research and development centre while Centre in Kadolkele operates mainly on wetland management and coastal aquaculture and Kalpitiya as a centre for promotion of marine fish breeding.

2. Activities undertaken:

Programme	Project	Allocation (Rs M.)	Officer Responsible	Period	
				From	To
1. Coastal aquaculture	1.1 Closing of routes of virus infections in shrimp aquaculture	0.595	Dr P P G S N Siriwardane Mahindha Kulathilake H M P Kithsiri A S L E Corea	Jan 2003	Dec 2003
	1.2 Determination of the factors affecting breeding larval survival and culture of sea bass and milkfish	0.531	P A D Ajith Kumara M Gammanpila	Jan 2003	Dec 2003
	1.3 Development of agriculture/Aquaculture integrated system in rural area of Sri Lanka	0.525	M H S Ariyaratne Dr P P G S N Siriwardane	Jan 2003	Dec 2003
2. Inland fisheries and fresh water aquaculture	2.1 Study of breeding technology and survival of fry rearing of endemic ornamental fish species and improvement to propagation techniques of ornamental aquatic plants	0.504	H M P Kithsiri Dr P P G S N Siriwardane A S L E Corea Mahindha Kulathilake P P M Heenatigala	Jan 2003	Dec 2003
	2.2 Improvement to the hatchery technology for breeding freshwater prawn (<i>Macrobrachium rosenbergi</i>)	0.6	Dr S C Jayamanne M Gammanpila	Jan 2003	Dec 2003
	2.3 Investigation of illegal Unrecorded and Unregulated (UU) Fisheries in Sri Lanka	0.505	P A D Ajith Kumara A D W R Rajapakshe	Jan 2003	Dec 2003
	2.4 Survey on fresh water fish species in southern province with special reference to endemic ornamental fish		A D W R Rajapakshe	Jan 2003	Dec 2003
3. Wetland ecosystems	3.1 Comparative study on seagrass productivity in different lagoon system with possible impacts on habitat destruction		Vasantha Pahalawattarachchi	Jan 2003	Dec 2003

3. Performance:

Project 1.1

The objective of this study is to investigate all possible routes of virus infections in shrimp farming industry and to implement preventive measures.

Brood stock and post larvae samples in different geographical locations were tested using nested PCR method to detect WSSV disease. Of the 96 samples tested 23 were WSSV positive. Incidence of WSSV is higher in Hendala area. Bacteriological analyses conducted on water samples from Chilaw to Kalpitiya area indicated presence of luminous bacteria. Water quality changes caused by two different probiotics were monitored under farm conditions and both products were found to be effective in reducing NH₃-N and NO₂-N levels in culture ponds. The study will be continued up to next year.

Progress Physical: 95% Financial: 94%

Project 1.2

The objective of the study is to demonstrate breeding of marine food fish under local conditions and to maintain Regional Research Station at Kalpitiya as a marine fish-breeding centre.

Maintenance of brood-stock, mass aigal culture and modification of the hatchery was carried out. Modification of the hatchery was completed and hormones were purchased. Live food: *Brachionus plicatilis*, *Skeletoma* sp., *Nanochloropsis* sp. and *Chlorella* sp. were successfully cultured both indoor and outdoor. Maximum growth was attained within 3 days under controlled temperature. Brood stock maintenance was carried out successfully in cages in the lagoon. Project will be continued.

Progress Physical: 95% Financial: 96%

Project 1.3

The objective of the study is to develop integrated aquaculture with participation of the community.

Three community participatory workshops were held in Rekawa, Kalamatiya and Wellaodya to obtain indigenous knowledge in management and development of coastal resources in the area. Five seasonal tanks out of 30 tanks were selected and stocked with Tilapia produced in the mini hatchery at RRC Rekawa. Five fisheries societies were established and a revolving fund has been given (by SDA) to continue stocking. The project will be continued to next year.

Progress Physical: 90% Financial: 72%

Project 2.1

The main objective of this project is to study the breeding technology, breeding patterns and the factors affecting the breeding of endemic ornamental fish species and propagation of commercially important aquatic plants. Nine endemic fish species were bred in captivity and the environmental factors, feed and disease that affect the success of breeding was investigated. *Rasbora veterifloris* was sensitive to environment conditions but most others can be bred in captivity with natural feed. The protozoan parasite, *Ichthyophthirius* sp was the major causative organism in fish breeding. Hatching rate of eggs of Oscar was increased successfully by controlling temperature (27-28°C) and treating with 3 ppm methylene blue during the hatching period. Survival rate increased to 40%

Recommendations: Prohibition of the export of *Puntius srilankensis* could be changed as restricted as they could be bred in captivity successfully. Only the fish that were bred in captivity should be granted permission for export.

- Aquatic Ornamental plant culture and distribution survey

Experiments on growth of *Aponogeton* using different propagation methods and different manure indicated that compost is the best organic manure for *Aponogeton* culture. Seed propagation of *Aponogeton* was 100% successful. The aquatic plant survey carried out in the Polonnaruwa district showed that *Aponogeton* nature is distributed in many seasonal tanks and *Cryptocoyne wenditil* is found as small patches in some streams in the Polonnaruwa district. The survey was confined to 9 months due to financial constraints.

Progress Physical: 95% Financial: 90%

Project 2.2

The objective of this study is to develop mass rearing techniques of *M. rosenbergi* suitable for inland area

Raising of brood stock in mud ponds were carried out in Rekawa area. The technology suitable for mass earning of larvae in inland areas using natural edible salt were conducted in Rekawa RRC. Results indicated that brood stock could be matured in captivity within a period of 6 months. Mass larval rearing was carried out successfully upto 6th larvae stage. The survey carried out for natural stocks of *Macrobrachium* indicated that *Macrobrachium malcolmsonii* is distributed throughout the tributaries, reservoirs and rivers of the Mahaweli basin.

Progress Physical: 98% Financial: 97%

Project 2.3

Ten reservoirs. Udawalawe. Udukiriwela and Lunugamvehera from the Hambantota district. Thabbowa, Minneriya. Wilachchiya, Nachchaduwa. Angamuwa, Yodhakandiya from Anuradhapura district and two villages Handapana and Manampitiya were visited monthly to collect catch statistics of commercially important fish. Eleven fish data collectors were appointed to collect data continuously. The project will be completed in April 2004.

Progress Physical: 95% Financial: 95%

Project 2.4

The progress of the project suffered due to unavailability of electro fishing gear required for quantity assessment of natural stocks of ornamental fish. Thus only qualitative sampling was carried out. Surveys were carried out in streams, rivulets, Canals and rivers that are connected with river basins. Gin Oya, Nilwala and Walawe. Survey was discontinued due to floods occurred in the area during the later period of the year.

Progress Physical: 90% Financial: 85%

Project 3.1

Objective of the project was to identify the impacts of anthropogenic factors on sea grasses in each lagoon by monitoring ecological parameters in sea grasses in Puttalam, Mundal and Negombo lagoon.

Sea grass beds of Puttalam lagoon is vastly damaged due to operation of illegal fishing gears such as push nets and trammel nets. Prolonged operations of these gears have caused lag regeneration of sea grass bed in Puttalam lagoon. Eight species of sea grasses were recorded from Puttalam lagoon and four from Negombo Lagoon. Sea grasses were limited to a short strip in Mundal lagoon and was dominated by *Halophila ovalis*. Recently introduced some water canals have affected sea grass beds in the Negombo Lagoon. Project to be continued ito 2004.

Progress Physical: 95% Financial: 86%

4. Externally funded projects:

4.1 ACIAR Project

Six types of feed were tested to investigate the growth of GIFT (Genetically improved farmed Tilapia) tilapia in Udukirwala tank. No significant difference was found among the feeds but the fish that fed with the feed with 60% of soybean meal showed a higher percentage of protein in their flesh. Three feeds were tested using *Labeo rohita* in two perennial tanks. Chandrika wewa and Kiri Ibban wewa. There was no significant difference in the growth but the fish that were fed with the feed with 60% of soybean meal showed a higher percentage of protein in their flesh. A paper on the findings is in preparation.

4.2 Sea weed culture Project

As seaweed *Gracilaria edulis* could not be found in the Puttalam Lagoon during this year plant materials of *Gracilaria verucosa* were brought from Trincomalee. Culture trials were conducted with *G. verucosa* in Kirinda, Rekawa and Puttalam Lagoons. *G. verucosa* grew successfully in Rekawa and Kirinda but the growth in the Puttalam Lagoon was not satisfactory.

5. Publications:

1. Ajith Kumara. P A D and Amarasinghe. U S. Possibilities of differential exploitation on minor Cyprinds in reservoirs of Sri Lanka.
2. Amarasinghe M D Thenuwara. R Fermamdo. S S and Pahalawatarachchi V (2003). Species richness and biomass distribution of marine angiosperms in Negombo lagoon. Proceedings of the 59th Annual Session of Sri Lanka Association for the Advancement of Science.
3. Ariyaratne M H S and Silva P K D. Appropriate technology for rural Aquaculture Development in Sri Lanka through community participation.
4. Athukorala D A and Amarasinghe U S. Introduction of Co Management strategies feasible for reservoir fisheries in Sri Lanka.
5. Corea A S L E. Recent trends in disease management in Sri Lankan Shrimp farming industry.
6. Corea A S L E. Jayasekera M S S. Cooray N N E and Gunasinghe P G. Ornamental fish and Aquatic Plant culture as a cottage industry.
7. Corea A S L E and Jayasekera M S S. Problems encountered in the ornamental aquatic plant trade.
8. Jayasekera M S S. Transportation problem of Endemic Ornamental fish.
9. Kithsiri H M P and Siriwardane P P G S N. Captive breeding of some endemic ornamental fish species. Reducing pressure on the wild stocks.
10. Kithsiri H M P and Siriwardane P P G S N and Menalee Rupika G R. Captive breeding of some endemic ornamental fish species in Sri Lanka.
11. Kithsiri H M P. Wijeyaratne M J S and Amarasinghe U S. Population Dynamics of three commercially important bivalve species (Family: Veneridae) in the Puttalam lagoon and Dutch bay Sri Lanka (in press).
12. Pahalawatarachchi V and Siriwardane P P G S N (2003). Effect of wastewater distribution of shrimp farms on sea grass beds in Negombo lagoon (A paper submitted to International Conference in Conservation of wetlands Trans Asia Hotel-Colombo)

13. Pathmi A W S, Jyamanne S C, Siriwardene P P G S N and Hirimuthugoda Y. Impact of crab fattening on the lagoon environment and the livelihood of fisheries in Negombo lagoon.
14. Parakrama M G I S, Amarasinghe U S and Siriwardene P P G S N. Some aspects of fisheries Biology and Food consumption in four commercially available fish species in Negombo Estuary.
15. Pathmi A W S, Jayamanne S C, Siriwardene P P G S N, Nirimuthugoda Y, (2003). Impact of crab fattening on the lagoon environment and the livelihood of fisheries in the Negombo lagoon.
16. Pahalawattarachchi V and Siriwardene P P G S N. Gracilaria edulis farming as a household aquaculture option for coastal communities.
17. Pahalawattarachchi V and Siriwardane P P G S N. Effects of shrimp farm effluents on sea grass beds in Negombo lagoon.
18. Siriwardane P P G S N. Importance of indigenous knowledge in aquaculture for development.
19. Wanigasinghe A, Pahalawattarachchi V and Kudavidanage E P (2003). Structural Properties of mangrove of Mawella lagoon with respect to management options. Proceedings of the 9th Annual Sessions of Sri Lanka Association of Aquatic Resources. NARA Auditorium June 2003.
20. Wijenayak and Gunaratne A B A K. Selection of seasonal reservoirs suitable for culture – based fisheries development using Analytical Hierarchy Process (AH) and GIS.

Books

1. “මිනිසා විසින්ම ජීවත් වීමේ අත්‍යවශ්‍ය වශය” - H M P Kithsiri, P P G S N Siriwardena and G R Hemalee

Leaflets

2. “ශ්‍රී ලංකාවේ ජීව ජෛව විවිධත්වය මිනිසාගේ අනුප්‍රාප්ති” - H M P Kithsiri and G R Hemalee

It was decided to add the three papers received for Volume 38 to halfway processed Volume 37 and to collect some more papers. This was because the number of accepted papers (with major and minor changes) by the referees were not sufficient for a full volume. Now there are five papers available for peer-review. There was a long delay in getting approval for the revised instructions set for authors.

Progress

Physical: 50%

Financial Funds not allocated

4. Other Activities Undertaken:

4.1 NARA Editorial Board

NARA Editorial Board was appointed to scrutinize and comment on the contents, layout and format of prospective publications of NARA.

Four meetings of the NARA Editorial Board were organized during the year. Manuscripts forwarded to the convener were submitted at the meetings and duly returned to respective auditors, with the comments and instructions for further enhancements. Approval was given to the revised manuscripts. These included the leaflets on Shrimp Fishery in the Negombo Lagoon, Stake Seine Net Fishery, Post Harvest Technology, Sea Cucumber, Test Services of IPHT and a booklet on Food Fish identification. Three booklets sent by COD for content improvements were referred to the subject matter specialists and duly returned with comments.

4.2 Translations and Editorial Assistance

Translations of reports, papers, documents and articles were produced as and when required and editorial assistance were provided in compilation of annual report, articles, leaflets of IPHT division and NARA Puwath.

MARINE BIOLOGY DIVISION

Head of the Division: Dr (Mrs) Champa Amarasiri

1. Overview of the year:

Marine Biological Resources Division is responsible for conducting research towards management of living marine resources. The work plan of the division has four research programmes, assessment and management of fisheries resources, conservation and management of coral reefs, conservation and management of turtles and molecular biology and technology. The staff of the division comprises of 09 Research Officers, 11 Research Assistants, 12 Samplers, 02 Diver Assistants, 1 Lab Attendant, 2 Data Entry Operators, One typist and 2 Labourers. Research Officers are responsible for all research activities including project planning, implementation and reporting. The responsibilities of the Research Assistants, Diver Assistants are to assist research by collecting field data, data compilation, analysis of fish samples. Samplers are assigned to collect fisheries statistics from offshore and selected coastal fisheries to upgrade the data bases while Data Entry Operators are responsible for maintaining data bases of the division.

2. Activities undertaken:

Programme	Project	Allocation (Rs.M)	Officer Responsible	Period	
				From	To
1. Assessment and Management of Fisheries Resources	1.1 Monitoring of Large Pelagic Fisheries.	0.984	C Amarasiri	Continuous	
	1.2 An assessment of availability present utilization and requirement pattern of natural bait types around Sri Lanka.	0.124	C Amarasiri	2001	2003
	1.3 Assessment & Management of small pelagic fish resources (Data Base Management).	0.3	T Fernando	Continuous	
	1.4 Bio-socio-economics study of the exploitation of demersal finfish resources in the coastal waters.	0.546	R Maldeniya	2001	2003
	1.5 Evaluation of biological, economic and sociological impacts of sand extraction from the shallow seas off west coast on shrimp fishing activities.	0.180	P A A T Jayawardane	2003	2003
	1.6 Bio-economic assessment of the flying fishery resources in the north western coastal waters of Sri Lanka. Possible expansion of the fishery to provide bait for tuna long line fishery.	0.216	P A A T Jayawardane	2003	2003
	1.7 Assessment and Management of fishery and searching for the causes for the decline in the catches in Mawela, Kalametiya and Garanduwa Lagoon in Southern Sri Lanka.	0.126	U. Liyanage	2003	2003
	1.8 A study of abundance, distribution and exploitation of Cephalopod resources in Sri Lanka..	0.108	P A A T Fernando	2002	2004
2. Coral reef conservation and management	2.1 Conservation and management of coral reefs.	0.094	A Rajasuriya	Continuous	
3. Conservation and management of Marine Mammals and Turtle	3.1 Prioritization of strategies for a better conservation plan for sea turtle fauna of Sri Lanka	0.129	D Amarasooriya	2002	2003
4. Special Projects	4.1 Development of marine museum	0.180	C Amarasiri	Continuous	

3. Performance:

Project 1.1

The objective of this project is to assess and monitor the coastal and offshore large pelagic fisheries for stock assessment and management of large pelagic resources and to provide information for better planning and management of offshore fisheries. The data collection has been continued as planned and data base was updated. The data summaries of the previous year was submitted to MFARD and IOTC. As this is a major national requirement the project will be continued.

Progress: Physical: 95% (by the end of 2003) Financial: 92.55%

Project 1.2

The project is a continuation of last years' project. The objectives of the project were to investigate storage facilities of the bait, other infrastructure facilities necessary for an efficient and constant transport and supply of bait to the users, and their economic viability. Information on bait requirement, utilization patterns, bait availability patterns by type, nature and quantity, demand and preference, bait producing fisheries around the island, catch returns were also collected as continuation of the year 2002. Major activities of the project have been completed by the end of the period and most of the field information required were collected. Data is being analyzed and the conclusions and recommendations are yet to be made with the outcome of the results.

Progress: Physical: 95% (by the end of 2003) Financial: 97.63%

Project 1.3

Fishing pressure for the coastal small pelagic fisheries are being increased tremendously, almost in all parts of the island. Monitoring the fishery activities is therefore, important to understand the trends of the development of the fishery. Catch and effort data will be collected throughout the study period covering the coastal areas from Chilaw to Trincomalee.

Catch effort data were analyzed for more than 20 fishery combinations separately. Stock assessment studies based on three major fish varieties were analyzed. Analysis would be completed and the out come with results, conclusion and recommendations were documented in the 'Profile of coastal pelagic fisheries in Sri Lanka'. The project will be continued for the next year too.

Progress: Physical: 90% (by the end of 2003) Financial: 108.12%

Project: 1.4

The project consisted of three components, monitoring of demersal finfish fisheries from Kalpitiya to Kirinda, inspection of pearl banks off Mannar and studying of sea cucumbers. The objective of the first component was to assess the status of demersal fish resources and their exploitation. The notable feature of the fishery was the declining of grouper production. During the year estimated production of groupers were declined by 47% than 2001 (3280 MT). This monitoring programme will be continued for the next year with the aim of providing information for management of the demersal finfish fishery.

Investigation of pearl banks was conducted from March to May after lapse of over 30 years. Though it was scheduled to start from January due to logistic constraints, underwater survey activities were delayed by two months and inspections were limited to northern paars (banks). It was observed that many of the known paars are still in barren state. Some parts of the Cheval Paar especially west,south-west and south Cheval, Modergam Paar and True Venkalai Paars have become repopulated and covered with mature oysters. However in most places oysters were sparsely scattered on sand. Oysters collected from west Chavel Paar reported 23-27% pearls while oysters of Moderagam Paar reported 5-7%. Out of pearls extracted there was one perfect pearl (oriental pearl) of >4 mm diameter. A few others collected of this slightly deformed, rugged and uneven.

During the survey, pearl oysters of all stages of growth, from the newly-deposited spat to the pearl bearing adults were observed. Spat and young oysters were observed mostly in isolation around the Cheval Paar but no large deposits of young oyster was observed. Spat deposits were found attached to sea grass. Study will be continued for the year 2004 with the main focus of studying the possibility of culturing pearl oysters.

Study of sea cucumbers was conducted with the aim of providing information on resource base and guidelines for fishing communities engaged in this fishery. Leaflet was prepared including all necessary information on taxonomy identification, processing and market for distribution. This study will also be continued for the next year.

Progress: Physical: 95% (by the end of 2003) Financial: 99.86%

Project 1.5

The small-scale fishing activities targeting shrimps, lobsters and small pelagic fish and also the shrimp trawling in the west coast were reasonably affected by the offshore sand extraction for development activities. The socio-economic study indicated that the income levels and the living standards of the fishing community in the study area were low or moderate and majority of them were not pleased with the existing proceedings.

Progress: Physical: 96%(by the end of 2003) Financial: 107.64%

Project 1.6

Fishing effort catch rates and the production from the fishery have decreased compared to the figures reported during the study conducted in 1991-1992 period. However, no such alteration was observed in the species composition of the catches. It is scheduled to conduct brief socio-economic analysis to evaluate the suitability of flying fish as a bait for tuna long line fishery.

Progress: Physical: 90% (by the end of 2003) Financial: 49.74%

Project 1.7

Lagoons are known to be highly productive ecosystems. Productivity of the selected lagoons are drastically declining due to illegal fishing practices (use of monofilament nets, small mesh size gill nets fishing by threshing fishing in breeding grounds), increasing, fishing pressure and changes of the ecosystem with the unplanned development projects. Mawella and Kalametiya lagoons are completely converted to the freshwater bodies and subjected to the siltation.

The closed lagoon mouths, very shallow canals from mouth to the lagoon body inhibit the exchange of marine and fresh water causing reduction of commercially important fin fish and shall fish species. Dominant fish species of the selected lagoons is *Oreochromis niloticus*. According to the water quality parameters and fish catch data exchange capacity of all the lagoons should be developed and illegal fishing activities must be stopped. The water quality parameters of the all selected lagoons (Salinity 0-6 ppt, DO 3.5-9 ppt, pH 6-7.5) are suitable for culture of *Oreochromis niloticus* to develop the production capacity.

Progress: Physical: 80% (by the end of 2003) Financial: 76.27%

Project 1.8

Preliminary investigation on the fishery and cephalopod resources in Sri Lankan coastal waters was completed. The status report "Cephalopod fishery of Sri Lanka" was documented. Detailed studies on reproduction and stock assessment aspects are being analyzed and the status of the fishery, conclusions and recommendations will be published in the final document. The study will be continued for the next year.

Progress: Physical: 96%(by the end of 2003) Financial: 104.23%

Project 2.1

In the year 2003 reef status has been monitored at the Bar Reef Marine Sanctuary, Hikkaduwa National Park, Weligama, Rekawa, Ussangoda, Great Basses, Little Basses, Pigeon Island National Park and Coral Island in Nilaveli, Duty Bay in Trincomalee, Passikuda, Kalkuda and Pumnakuda in Batticaloa. The data is being processed and it will be made available for management action. Currently the programme is preparing a management plan for the Bar Reef Marine Sanctuary and assisting in the preparation of an Environmental Profile for same.

Progress: Physical: 98% Financial: 99.51%

Project 3.1

Identification of temporal and spatial distribution pattern of sea turtle nesting and initiation of Hawksbill turtle rehabilitation programme in Southern Sri Lanka were the main objectives of this project. Up to now more than 80% of turtle nesting pattern and nesting beaches have been identified. Hawksbill turtle rehabilitation programme was started in Unawatuna bay in the southern Sri Lanka and it takes another 2-3 years to complete this task.

Progress: Physical: 90% (by the end of 2003) Financial: 92.49%

Project 4.1

The objective of maintaining a marine museum in NARA is to keep preserved rare marine fish and invertebrate specimens and cetacean skeletons etc. for research and education purposes. The specimen collection was increased by about 25 rare specimens this year. NARA scientists were also involved in transporting and burying a stranded whale bound near Colombo harbour in November 2003.

Progress: Physical: 85% (by the end of 2003) Financial: 17.20%

4. Publications:

1. Amarasiri C (2003). Issues and problems in the Management of the Offshore Fishery in Sri Lanka. NARA 1st Scientific Session.
2. Dissanayake D C T, Gunawardane M K G & Amarasooriya P D K D (2003). A preliminary study of the batoid fishery of Puttalam lagoon. Abstract SLAFAR Journal 9.8
3. Fernando P A T (2003). A new approach towards estimation of cephalopod growth.
4. Fernando P A T (2003). Cephalopod fishery of Sri Lanka – Report.
5. Fernando P A T (2003). Profile of Coastal Pelagic Fisheries in Sri Lanka – Report.
6. Fernando P A T, Wickramarachchi J Gamage, R & Perera, H A R E (2003). The impact of coastal constructions and human interference on biotic composition and related fisheries of the Koggala, Malala and Rekawa lagoons of Sri Lanka. Abstract SLAFAR Journal 9:10-11
7. Jayawardane P A A T & Gunawardane M G K (2003). Factors influencing migration of *Metapenaeus dobsori* (Miers 1878) from the western coastal waters of Sri Lanka Indian Journal of Fisheries (In Press)
8. Jayawardane P A A T, Mclusky D S & Tytler P (2003). Reproductive biology of *Metapenaeus dobsori* (Miers 1878) from the western coastal waters of Sri Lanka. Asian Fisheries science 16:91-106
9. Jayawardane P A A T, Mclusky D S & Tytler P (2003). Fishery biology of *Metapenaeus dobsori* (Miers 1878) from the western coastal waters of Sri Lanka. Fisheries Management and Ecology 10:79-189

10. Jayawardane P A A T. & Perera. H A R E (2003). Some observations on the artisanal stake net fishery for shrimp in the Negombo Lagoon. Sri Lanka Fisheries Management and Ecology 10:41-50
11. Maldeniya R R P (2003)> Strategies and indications of fisheries management – A case study of demersal fisheries in the west coast of Sri Lanka. NARA 1st Scientific Session.
12. Samaraweera E K V & Jayawardane P A A T (2003). Population dynamics of the Banana prawn *Penaeus merguensis* de Man (crustacean: Penadea) in the western coastal waters of Sri Lanka. Abstract SLAFAR Journal :9:9
13. Samaraweera E K V (2003). Coastal and marine bio-diversity of Sri Lanka. Workshop on coastal and Marine bio-diversity of the Indian Ocean 12th – 15th December 2003 – Goa. India.

NATIONAL HYDROGRAPHIC OFFICE

Head of the Division: Mr M A Ariyawansa

1. Overview of the Year:

National Hydrographic Office provides services to assist safe and efficient navigation of ships. The principal service is the provision of nautical information which includes nautical charts, data for coastal zone management, environmental protection and other related products and services. The provision of accurate and up to date charts offer significant economic and commercial benefits through facilitation of maritime trade and other marine activities.

Inadequacy of hydrographic data in the southern coastal and offshore area is going to be the main draw back for any development project which is expected to take place in southern coastal area. At present Hambantota area is earmarked for large infra-structural developments, where, proposed port development is expected to occupy the center stage. Therefore the National Charting Programme which is presently being conducted by the National Hydrographic Office of NARA has focused its attention on Hambantota.

Existing cadre of staff	Responsibilities
Hydrographer (1 No.)	Overall supervision and management of all survey activities connected with Hydrography
Senior Hydrographic Surveyor (2 Nos.)	Field management/carrying out systematic hydrographic surveys at sea by using survey vessel 'SV Sayuri' and survey boats
Chief Land Surveyor (1 No.)	Field management and conducting surveys of control points, shore line details and beach profiling
Consultant Cartographer (1 No.)	Overall supervision of all activities of the cartography section, carrying out activities requested by other NARA divisions such as designing, posters, brochures of covers of NARA reports etc.
Cartographer (1 No.)	General supervision and quality control of cartographic activities of the section
Cartographic Draughtsman (2 Nos.)	Attending to all cartographic activities pertaining to preparation of nautical charts up to the printing stage
Chief System Analyst (1 No.)	Hydrographic and Land data processing editing and data base management

2. Activities undertaken:

Programme	Project	Allocation (Rs.M)	Officer Responsible	Period From	To
1. National Charting Programme	1.1 Bathymetric Data collection by S V. ' Sayuri' in an approx area of 400 sq km off Hambantota	2.66	S N S Amarasinghe A N D Perera	Jan 2003	Dec 2003
	1.2 Bathymetric Data collection by survey boat 'Tharanga' of the sea area of Hambantota (300 sq km)	0.67	S N S Amarasinghe A N D Perera	Jan 2003	Dec 2003
	1.3 Shore line detail survey covering 50 km from Hambantota to Pathiraja Point	0.67	P N Kodikara S W S Weerasinghe O V Premachandra	Jan 2003	Dec 2003

OCEANOGRAPHY DIVISION

Head of the Division: Dr T K D Tennakoon

1. Overview of the year:

The expenditure for the conductance of research projects and NODC exceeded the estimation and the deficit was met by the divisional allocation (see the Table. 1 below). However, the necessary funds for the induction of new instruments and repairing of the malfunctioning instruments were not received. Thus, it will substantially impede the future progress of the division.

Allocation for the 2003 and its disbursement.

	Disbursement (Rs.M)	Estimation
Research Projects	1.136	1.100
Equipment	1.037	3.000
Trincomalee station and laboratory renovation	0.180	0.900
National Oceanographic Data Center	0.123	0.100
Memorandums Of Understanding	0.144	0.200
Total	2.620	5.300

The renovation of the division laboratory is almost completed, however the rehabilitation of the Trincomalee station was not undertaken due to lack of funds. Though, instrumentation was allocated 3 million, less than 1.1 was received. The division undertook numerous consultancy services during the year 2003, thus earning Rs.3 million in the process.

The division invited a number of eminent scientists to deliver guest lectures on the current scientific topics. It also organized scientific lectures, seminars and awareness programmes for the general public and scientific staff from different institutes. The division attempted to organize regional conference on 'Strategies for capacity building data management for IOGOOS alliance', however the conference was transferred to Hyderabad/India by IOGOOS showing the situation of the country. Almost all the divisional staff was sent for training to update with modern techniques on various disciplines of Oceanography.

2. Activities undertaken :

Programme	Project	Allocation (Rs.)	Officer Responsible	Period	
				From	To
1. Nearshore Oceanography	1.1 Physical and Biological Oceanographic study of coastal Water bodies and associated waters	0.2	K Arulanathan	continuous	
	1.2 Monitoring & modeling of short and long term sea level changes around Sri Lankan waters	0.2	E M S Wijeratne	continuous	
2. Offshore Oceanography	2.1 Investigation of geological biological physical and chemical oceanographic parameters in the continental shelf of Sri Lanka (SV Sayuri)	0.6	S U P Jinadasa E M S Wijeratne K Arulanathan J K Rajapakse and H B Jayasiri T K D Tennakoon	continuous	
3. 0 Oceanographic data management	3.1 National Oceanographic Data Center of Sri Lanka (NODC)	0.1	T K D Tennakoon W A J P Wijendra	continuous	

	3.2 Investigation of geological structures and stratigraphic sequences of marine sediments using available seismic data of EEZ	0.1	S U P Jinadasa T K D Tennakoon	continuous
4.0	4. Implementation of Memorandum of Understandings (MoU)	0.2	T K D Tennakoon	continuous

3. Performance :

Project 1.1

The physical and biological oceanographic surveys were conducted at Thambalagamūwa lagoon (Trincomalee) and Rekawa lagoon (Tangalle) to study the physical processes and biological productivity. Data analysis and report writing is in progress. The study showed that oceanographic parameters were at an acceptable level and lagoons remain as healthy environments for flora and fauna. The study should be continued.

Progress: Physical: 100% Financial: 100%

Project 1.2

Short and long term sea level variation in Sri Lankan waters were investigated by means of monitoring and modeling. Existing tidal constant table was improved by adding new sites data from east coast. 2-D tidal model was improved to investigate flushing and dispersion in tidal inlets.

Progress: Physical: 100% Financial: 100%

Project 2.1

The survey was conducted off Hanbantota with the purposes of investigating sand and mineral deposits, surface sediment distribution, biological productivity and physical parameters of water column. Sample analysis and data analysis were completed and report writing is in progress. Sand deposits were identified and seismic survey should be done to potential estimation. This project will be continued.

Progress: Physical: 100% Financial: 100%

NODC-SL website was completely upgraded. 'Samudra maru' cruise and contour map has been digitized completely. Organized a seminar for the A/L Science teachers in Colombo educational region on marine diversity and oceanography. Collected oceanography data CDs and manuals from intergovernmental Oceanographic Commission (IOC).

Project 3.2

The purpose of this survey was gathering available geophysical data and identification of offshore resources within Exclusive Economic Zone of Sri Lanka. During the year thorough study has been done to investigate and collect available seismic data within the EEZ and mid Indian Ocean basin close to Sri Lanka. It was found that the seismic data of our inserts area was available in following institutions.

1. Scripps Institute of Oceanography – USA
2. National Oceanographic and Atmosphere Institute – USA
3. Bundastag Geological Institute – Germany
4. National Institute of Oceanography – Goa, India
5. Institute of Oceanology – Moscow, Russia
6. Ceylon Petroleum Corporation – Sri Lanka

Among above institutions last three came with positive proposals to share the data. There was an invitation from Moscow Institute of Oceanology to visit them to share the data. Their effort was unsuccessful due to unavailability of funds. Data available in Petroleum Corporation.

Progress:

Physical: 100%

Financial: 100%

Project 4.1

The main purpose of this project was to implement MoUs signed last year. Under this project successfully invited following Scientists to NARA.

1. Prof M Ravindran – Director, National Institute of Ocean Technology, Chennai, India
2. Dr G K Gupta – Technical Advisor (Geology), Ministry of Science and Technology, Government of India
3. Prof C Pattiarachchi – University of Western Australia
4. Mr Indra Kumar Jayawardane

The following officers of the division got opportunities to undergo training at various institutions under this Project.

Dr E M S Wijerathne – Oceanographic data modeling programme. University of Western Australia. Modeling
Mr S U P Jinadasa – Remote sensing applications, Geological Survey of India, India
Mr J K Rajapaksha – Remote sensing applications, Satellite Oceanography Asian Institute of Technology, Thailand
Mrs E K V Samaraweera – Coastal and marine bio diversity of Indian Ocean – NIO. India

4. Publications :

1. Arulananthan. K Offshore oceanographic survey CTD measurements- 2002 National Aquatic Resources Research and Development Agency. May 2003.
2. Jayasiri. H B and Jinadasa. S U P < Cruise Report On Offshore Oceanographic survey - 2002
3. Jayasiri H B.. Presentation on 'Tools of national Ocean policy' SLAAS Auditorium 5th June 2003
4. Jayasiri H B. Travel Report 'Training programme on Ocean Governance. Policy Law and management. International Ocean Institute. Canada. submitted to NARA, NSF Commonwealth science council.
5. Jinadasa S U P and Fonseka G M (2003). Use of multi-electrode resistivity imager system for possible risk assessment of dam failures at proposed Diyawini dam site. Institute of Engineers of Sri Lanka (IESL) .
6. Tennakoon T K D and Arulananthan K. Ocean energy potential in the eastern coast of Sri Lanka. International workshop on Environmental Management in North-East of Sri Lanka. University of Jaffna. December 1-4. 2003
7. Wijerathne E M S. 2003 Tidal Characteristics and Modelling of Tidal Wave Propagation in Shallow Lagoons of Sri Lanka Dept of Oceanography. Gothenburg. University . Earth Science Centre series C51 2003

POST HARVEST TECHNOLOGY DIVISION

Head of Division (Actg): Ms G J Ganegama Arachchi

1. Overview of the year :

Post Harvest Technology Division conducts research on issues of post harvest technology of the sector and test services to industry and therein to contribute to the national economic development. PHTD has identified 07 projects including the purchase of equipment as 7th project for the year 2003. Activities of Accreditation of Quality Control Laboratory have been completed during this year. Quality Control Laboratory offers test services to microbiological and chemical analysis of fishery products. Potable water and aquarium water. In addition, PHTD has provided consultancy services to the industry by training technical personnel, required and trouble shooting the hygienic problems of fish processing plants. At present, division is staffed with 05 Research Officers, 07 Research Assistants, 01 Data Entry Operator and other supporting staff comprising 01 Laboratory Attendant and 08 Labourers. At present there are two vacant positions of Research Officers. Division has made arrangements to develop testing facilities on semi quantitative determination of antibiotic residues in fishery products.

2. Activities undertaken:

Programme	Project	Allocation (Rs M)	Officer Reponsible	Period From	To
1	Accreditation of the quality control laboratory of NARA	0.937	K W S Ariyawansa G J Ganegama Arachchi I Kariyawasam	Jan 2003	Dec 2003
2	Investigatuon on remedial measures to reduce quality based post harvest losses of fishery industry	0.300	G J Ganegama Aracchi	Jan 2003	Dec 2003
3	Application of quality index method (QIM) as a tool to determine shelf life of selected fish species and other methods to assess the freshness of fish	0.202	K W S Ariyawansa S Senadeera	Jan 2003	Dec 2003
4	Value addition and development of convenient fish products using low value fish resources	0.206	P S Jayasinghe Dr R Maldeniya	Jan 2003	Dec 2003
5	Effect of slaughter method (instant killing method) on the quality of Oreochromis species	0.155	P S Jayasinghe I Kariyawasam	Jan 2003	Dec 2003
6.	Studying of biofilms and effect of chemical storage parameters related to post harvest process losses on fish processing and popular fishery products	0.200	I Kariyawasan	Jan 2003	Dec 2003
7.	Equipment	2.0		Jan 2003	Dec 2003

3. Performance :

Project 1

Objective of this project is to establish a well recognized quality assurance programme for the test services offered by Quality Control Laboratory. Quality System implemented in the laboratory comply with ISO/EC 17025 standards.

Application of Accreditation of Quality Control Laboratory under Accreditation Scheme for Testing Laboratories (ASTL) from SLSI has been forwarded and awaiting the final results. Delay in purchase of reference cultures and participation at proficiency-testing programs have been identified as constrains due to importations regulations of the countries, already contacted. Inadequate allocation of funds and staff have been identified as main constrains for the continuation and expansion of test services.

Progress: Physical: 97% Financial: 104.31%

Project 2

The main objective is to assess the quality of fish with respect to the improved handling practices. This is a complimentary project to Sida project. Phase II of MFOR. Determination quality of fish along the fish distribution chain from Beruwala Fishery Harbour to final retail stages at Horana and Matugama has been studied. Results show that cleaning of fish with potable water instead of harbour-water reduce the E-coli contamination significantly with good infrastructure facilities during subsequent handling. Due to budgetary constrains and more involvement with activities of project-one has affected the progress of the project.

Progress: Physical: 88% Financial: 108.78%

Project 3

This is a continued project from 2002. Freshness is of great importance when measuring the quality of fish. Quality index Method (QIM) evaluates the changes in sensory parameters and attributes of a fish species during storage. During the study, QIM was developed for the *Thunnus albares* (Yellow Fin tuna). More involvement with activities of project-one that affected the progress of the project.

Progress: Physical: 85% Financial: 78.40%

Project 4

Objective of this study is to develop convenience foods from underutilized fish resources. Different ready to eat products have been developed using surimi *Leiognathus spp.* And tuna. Break down of mincing and straining equipment has caused the slowing down of the progress of the project activities. Further shelf-life studies and analysis of proximate composition is required.

Development of improved methods on extraction of sea weed jellies is in progress. A jelly-drop (sweet meal) has been developed from commercially available sea-weed Agar.

Progress: Physical: 85% Financial: 93.39%

Project 5

Instant killing techniques can be used to obtain high quality fresh fish product. Because rigorous struggling during the normal death leads to excessive exhaustion and damages to fish muscles. The live *Thilapia* were collected using case nets from Thabbowa reservoir. The three visits were made for sampling. The collected live *Thilapia* was stored in water tanks until the instant killing method is practiced. The samples stored in ice were transported to NARA. Fish were analyzed for chemical and microbiological parameters. Activities of project are to be continued.

Progress: Physical: 87% Financial: 103.61%

Project 6

This project was carried out to determine the quality of Sri Lankan dried fish and to study the effect of different market storage conditions on it. Two third of the study has been completed. Target could not be achieved because of accreditation work. It is required to carry out analysis for first 3 months of 2004.

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Progress: Physical: 87% Financial: 102.02%

Project 7

Equipment were purchased

Progress: Physical: 95% Financial: 14.99%

4. Publications:

1. Ariyawans. K W S. Wijendra. D N and Senadeera S P S D (2003). Quality Index Method to determine the shelf life of Frigate tuna (*Auxis thazard*) Journal of Aquatic Resources of Sri Lanka
2. Edirisinghe. E M R K B (2003). Evaluation of Gas Sensor Technology for the Non destructive Determination of Freshness and shelf-life of Yellow Fin Tuna (*Thunnus albacares*) PHD thesis, University of Greenwich. UK.
3. Ekanayake. S and Jayasinghe P S (2003). 'Fermented food products in Sri Lanka' presented at International Conference on Fermented Food. Health statues and social well being. India November 13-14th 2003 4-5
4. Ganegama Arachchi G J. Kariyawasam M G I U, Herenatigala, P P M. Ariyaratne. D S. Dahanayake T. and Jayasinghe J M P K (2003). An investigation on the Quality and Handling Practices of the *Katsuwonus pelamis* along the Main Commercial Channels from Beruwala Fishery Harbour. (Accepted by Editorial Board of Sri Lanka Journal of Aquatic Sciences. Sri Lanka)
5. Jayasinghe. P S. Pasqual V S. Jauasinghe J M P K and Galappathi C (2003). Comparative Study on Quality Characteristic of Maldive – fish Prepared Using Tilapia (*Oreochromis Mossambicus*) and Skipjack tuna (*Katsuwonus pelamic*): presented at the First International Conference on Food Systems October 19th 2003 proceedings of abstract 22.
6. Jayasinghe. P S. Pathmashankar, M Jayasinghe. J M P K and Galappaththi C (2003). 'Influence of different processing method on shelf life and quality of dried shrimp' presented at the First International Conference on Food Systems held in UAE. October 19th 2003, proceedings of abstracts 64.
7. Jayasinghe. P S and Ekanayake. S (2003). "Fermented and cured fish products in Sri Lanka" presented at International Conference on Fermented Food. Health statues and social well being. India. November 13-14th 2003.
8. Kariyawasam. M G I U and Jayasooriya S P (2003). Investigation on the presence of biofilms on the food contact surfaces in Sri Lankan fish and shrimp processing factories. Proceedings of Ninth Annual Sessions. Sri Lanka Association for Fisheries and Aquatic Resources 30th June 2003. NARA Colombo. Sri Lanka 15.
9. Kariyawasam. M G I U and Jayasooriya S P (2003). Microbial quality of water, ice and processing atmosphere in sea food processing. Proceedings of Ninth Annual Sessions. Sri Lanka Association for Fisheries and Aquatic Resources 30th June 2003. NARA. Colombo. Sri Lanka 15.
10. Prabakaran. K Ganegama Arachchi. G J and Fonseka T S (2003). Development of natural flavouring powder from Prawn waste (*Peneaus monodon*) and pineapple (*Aranas comosous*). Proceedings of Third Agricultural Research Symposium. Wayamba. University of Sri Lanka Makandura. Gonawala (NWP 211-216).
11. Siriwardane. R P. Ganegama Arachchi. G J and Fonseka T S (2003). Preliminary study on development of a dry sausages from Tilapia (*Oreochromis*) spp using *Pediococcus pentosaceus* and *Lactobacillus bulgaricus* Proceedings of Third Agricultural Research Symposium. Wayamba University of Sri Lanka. Makandura. Gonawela. (NWP) 211-216.
12. Thushani W. Ariyanwansa. K W S and Arampath P C (2003). Recovering ability of freeze-stressed. *Salmonella typhimurium* and *Staphylococcus aureus* cells in frozen shrimp. Ceylon Journal of Biological Science (31)-63-69

SERVICES AND OPERATION DIVISION

Chief Engineer/Head of the Division: Eng: D A Karunasena

1. Overview of the Year:

Main function of the division is to carry out infrastructure facility development and maintenance of head office and regional research centre. Due to the budgetary constraints allocation was restricted to Rupees two million for the year for building maintenance, building and premises development and rehabilitation work carried out on priority basis within the allocated funds.

Other facilities such as electricity, fresh water supply for Air conditioning of laboratories and offices. Office Equipment, laboratory equipment and vessels maintenance were also adequately carried out on regular basis as well as on the requisition of respective divisions. Because of limitation of allocated funds, some of the maintenance activities had to be postponed for the year 2004.

During the period S & O divisional staff positively contributed for achieving divisional goals. The services and operations staff for the year consists of:

Chief Engineer	01
Supervisory/Technical Staff	08
Clerical Staff	02
Skilled Staff	18
Skilled Staff (drivers)	26
Semi skilled	04
Total	59

Hired Labour from Prison Department 14 (premises cleaning work)

Transport activity is one of the key inputs for R & D work at NARA. The fleet belonging to NARA is managed by the S & O division. There was no acquisition of new vehicles for number of years and the existing fleet became further redundant. The majority of vehicles are more than 10 years old. During the year 20 vehicles effectively functioned but the total transport requirement was not able to manage with the NARA fleet, so balance was hired as done in previous year. The average cost of hiring of vehicles was Rs.11/48 per km where as running of NARA fleet was Rs.22/62 per km

2. Activities Undertaken :

Program	Project	Allocation (Rs.M)	Responsible Officer	Period	
				From	To
1. Civil Construction	1.1 Settlement of invoice for the construction of Boundary wall	0.293	D A Karunasena	Jan	Mar
	1.2 Purchases of Equipment	0.229	D A Kaunasena	Jan 2003	Mar 2003
	1.3 Installation of pumps for factory RRC/Kalpitiya	0.375	D A Karunasena	June 2003	Sep 2003
	1.4 Renovation of NARA/Wadiya two rooms and toilets	0.275	D A Karunasena	Nov 2003	Dec 2003
2 Rehabilitation	2.1 Rehabilitation of TOYOTA land cruiser 61/6251	0.350	D A Karunasena B S Wimalasinghe	May 2003	July 2003

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2.2 Rehabilitation of Mitsubishi Pajero 32/3417	0.350	D A Karunasena B S Wimalasinghe	Sep 2003	Dec 2003
2.3 Rehabilitation of D/cab 58/1378	0.300	D A Karunasena B S Wimalasinghe	Jan 2003	Feb 2003
2.4 Rehabilitation of Pajero 32/7029	0.350	D A Karunasena B S Wimalasinghe	June 2003	July 2003

3. Performance:

Project 1.1

M/s City Express Services Invoice of Rs.630,379.00 pertaining to construction of concrete structure for boundary fence at RRC/Kadolkelle was in a dispute and this was referred to an arbitration panel. could be decided to pay Rs.293,000/00 and settle the issue.

Progress: Physical: 100% Financial: 100%

Project 1.2

It has been decided to purchase 03 bush cutters and one Electrical Energy measuring meter for S & O Division. Three bush cutters have been purchased at total cost of Rs.120,000.00. Action was taken to purchase the Electrical Energy measuring meter but because of insufficient funds the purchase was postponed for 2004.

Progress: Physical: 50% Financial: 52%

Project 1.3

There was a requirement for newly built hatchery building operation at RRC/Kalpitiya. installation of 5000 lt/hrs capacity seawater pump. that was undertaken by S & O Division. This consisted of construction of pump house laying of 3ph x 100 Amp. L/T power line of 100 meters and erection of pump.

Progress: Physical: 100% Financial: 100%

Project 1.4

Two rooms, bathroom and toilets of NARA/Wadiya had to be renovated to be used as a temporary residence for the NARA/officers who come from regional stations for official work. The S & O division staff did part of the work and balance was done at a contractual work.

Progress: Physical: 100% Financial: 100%

Project 2.1

Engine and steering system completely over hauled by the Agency.

Progress: Physical: 100% Financial: 100%

Project 2.2

Purchase of the spares for the suspension and power transmission system rehabilitation of Pajero 32/3417 and renovation is in progress.

Progress: Physical: 80% Financial: 100%

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Project 2.3

The Agent over hauled the engine of the vehicle.

Progress:

Physical: 100%

Financial: 100%

Project 2.4

The suspension and power transmission system were rehabilitated by the Agent.

4. Other Activities Undertaken:

4.1 QC Lab of PHTD Electrical Power Distribution System Renovation.

Complete renovation was done for electrical power distribution system of quality control laboratory (QC) of post harvest technology division and that was a requirement for accreditation. Programme of QC lab Rs. 100,100.00 spent from recurrent budget.

4.2 Separate Electrical Power Feeder for NIFNE

The National Institute of Fisheries and Nautical Engineering (NIFNE) is housed in a part of NARA main building. There was no rent or charges for facilities given to NIFNE in previous years. Separate power supply system was introduced by NARA and the power bill was to be paid by NIFNE from February 2003. As a result 75 KVA load has been reduced from NARA load and approximate reduction of NARA power bill is Rs. 700,000.00 for the year.

4.3 MW 35 Fishing Boat of NARA rehabilitated

Power transmission system of the boat overhauled at a cost of Rs.100,00.00 under recurrent budget.

4.4 Fire Safety System

Majority of portable fire extinguishers were not in working order and they were replaced with new units during the year Rupees 130,000.00 were spent from recurrent budget for the task.

4.5 Service Agreement between QCL-PHTD and S & O

Agreement was signed between the Quality Control Laboratory of the Post harvest technology division (QC-PHTD) and S & O division to have effective maintenance service for the quality control laboratory equipment as it was a requirement for accreditation programme. Both QC laboratory and S & O division were geared to the agreement. However because of poor funding interrupted the operation of the agreement.

4.6 Transport Facilities

4.6.1 Transport for Research and Development Activities

NARA vehicle fleet (20 vehicles) operated during the year and total distance covered was 558,860 km. In addition vehicles were hired to cater the demand of 252,050 km. and that was not able to be fulfilled from NARA fleet.

Cost of NARA fleet operation was as follows for the year:

Number of Vehicles 22

Number of Drivers 26

Total Distance operated for the year km 558,860

		as % of total cost
Cost of Fuel	Rs. 2,597,000.00	21%
Services operational replacement	Rs. 825,000.00	07%
Licensing Fee	Rs. 48,802.00	0%
Insurance Charges	Rs. 525,665.00	04%
Cost of Repairs	Rs. 3,934,000.00	31%
Drivers Salary (gross)	Rs. 2,590,541.00	20%
Drivers overtime	Rs. 1,280,000.00	10% total 37%
Drivers subsistence	Rs. 840,000.00	07%
Total Cost of the operation	Rs. 12,641,000.00	

(Exclude cost of the maintenance staff and depreciation cost of the fleet)

The R & D related work 252,050 km was run with hired vehicles. The payment made for hired vehicles was Rs. 2,893,524,000.00 for the year.

	Distance (km)	Total cost (Rs)	Cost (Rs/km)
NARA fuel	558,860	12,641,008.00	22.62
Hired Vehicles	252,050	2,893,524.00	11.48

It indicates that fleet is not economical due to maintenance cost and high rate of remuneration.

4.6.2 Staff Transport

Six transport routes have been operated in previous year and this was increased to seven with the introduction of NARA Kelaniya route.

The total routes operated for the year is as follows :

Route :	Benefited No. of Employees	Distance (km)	Expenditure for the year (Rs.)
NARA-Fort	48	6	399,840.00
NARA-Borella	48	8	399,840.00
NARA-Kottawa	28	28	456,000.00
NARA-Maharagama	15	28	408,000.00
NARA-Gampaha	42	28	624,000.00
NARA-Negombo	34	28	552,000.00
NARA-Kelaniya	15	11	124,080.00

Cost of operation of the 7 routes was Rs. 2,963,760.00

5. Staff Training

Supervision and staff (17) of S & O division participated to day training workshop at Open University on Industrial Safety and health care and obtained practical training on prevention of fire safety. The training of this nature was not received by any of S & O staff in the past and will be a benefit to the institution. The programme was sponsored by Asian Development Bank.

SOCIO-ECONOMIC AND MARKET RESEARCH DIVISION

Head of the Division (Acting) Dr (Mrs) Rekha Maldeniya

1. Overview of the year:

Socio-economic and Market Research Division is responsible in conducting research on social and marketing issues of fisheries sector and the fishing community. During this year due to lack of research staff the work plan of the division is limited to preparation of the Fisheries Year Book.

The staff of the division comprised of 2 Research Officers, 4 Research Assistants and 1 Labourer. Former acting head of the division, Mrs C Perera left the division in August-May and the other Research Officer is on study leave since August 2001, reading for M.Phil at University of Tromso, Norway. He will be back in office in August 2004. Dr (Mrs) Maldeniya was appointed as an acting head of the division and later (November) appointed as the head of the division.

2. Activities undertaken:

Programme	Project	Allocation (Rs.M)	Officer Responsible	Period	
				From	To
1. Preparation of Fisheries Year Book	1. Fisheries Year Book	0.3	R Maldeniya	2003	203

3. Performance:

Project 1

Fisheries Year Book – 2002

The Sri Lanka Fisheries Year Book is a single document of collection of fisheries statistics collected from individual agencies. This compilation of data is reflected in this Year Book in a coherent and methodical manner using tabulations and graphic representations..

Progress: Physical: 100% Financial: 100%

NATIONAL AQUATIC RESOURCES RESEARCH AND DEVELOPMENT AGENCY

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31S DECEMBER 2003


RECEIPTS		2003	2002
GOVERNMENT CONTRIBUTION	(1)	67,500,000.00	70,860.000
SUNDRY INCOME	(2)	8,123,147.11	16,003.040
INTEREST INCOME	(3)	511,441.93	476,640
PROFIT ON SALE OF FIXED ASSETS	(4)	666,325.60	1,228,165
OTHER CONTRIBUTIONS	(5)	4,645,556.76	2,198.049
		81,446,471.40	96,765.894
EXPE NDITURE			
ADMINISTRATIVE EXPENSES			
PERSONNEL EMOLUMENTS	(6)	49,982,427.57	49,163,701
PROVISION FOR GRATUITY		2,181,345.00	1,471,631
TRAVELLING & SUBSISTENCE	(7)	395,111.43	447,721
FEES-BOARD MEETINGS		85,000.00	66,000.
OTHER FEES & ALLOWANCES		413,662.20	610.809
SECURITY CHARGES		1,598,422.00	1,976,503
FUEL FOR VEHICLES	(7)	881,053.78	807,506
STAFF TRANSPORT & HIRING CHARGES		3,274,417.80	2,973,774
LEASE PAYMENT FOR VEHICLE		766,085.00	-
ADVERTISING		314,056.00	339,187
STATIONERY	(8)	749,919.45	903,522
POSTAGE		68,137.56	67,455
ENTERTAINMENT		171,098.00	247,220
STAFF WELFARE		308,634.18	241,963
STAFF TRAINING		147,652.99	135,940
TELEPHONE	(9)	858,163.82	1,033,036
FOREIGN TRAVELLING		1,484,120.58	1,794,072
INSURANCE		90,247.54	86,474
REPAIRS & MAINTENANCE	(10)	12,876,849.30	9,554,491
AUDIT FEES		57,161.00	103,065
BANK CHARGES		216,720.29	84,952
CHEMICAL & CONSUMABLES	(11)	118,502.35	27,999
SUNDRIES	(12)	630,026.53	275,916
PRINTING		25,190.00	179,225
ELECTRICITY CHARGES	(7)	8,613,223.29	7,249,406
WATER CHARGES	(7)	1,777,981.82	1,857,476
RATES & TAXES		604,800.00	604,800
SPECIAL PROJECTS EXPENSES	(9)	4,645,556.76	2,198,049
RESEARCH & DEVELOPMENT COST	(13)	16,058,996.09	11,742,241
PROVISION FOR SLOW MOVING ITEMS		295,977.38	-
PROVISION FOR DEPRECIATION	(14)	43,843,534.00	39,577,230
PROVISION FOR DEPRECIATION		153,444,669.25	135,831,864
EXCESS OF EXPENDITURE OVER RECEIPTS		(71,998,197.85)	(45,065,970)

NATIONAL AQUATIC RESOURCES RESEARCH AND DEVELOPMENT AGENCY

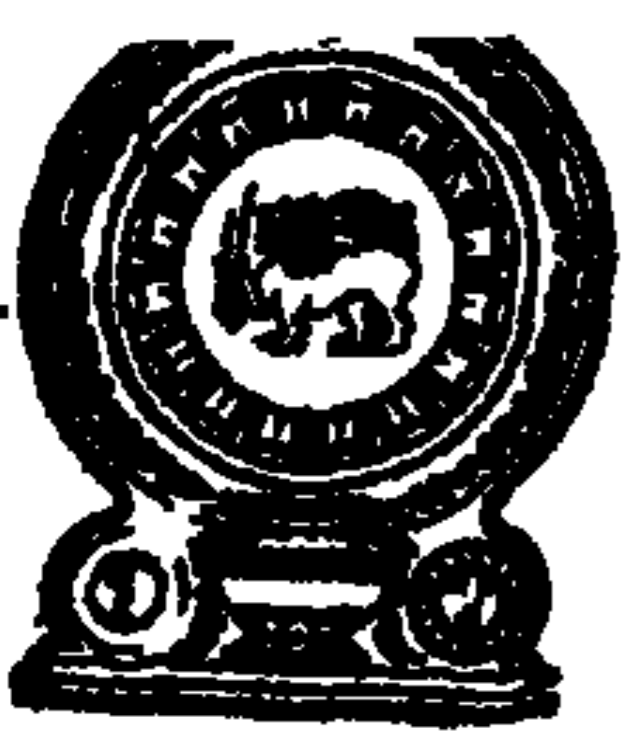
BALANCE SHEET AS AT 31ST DECEMBER 2003

ASSETS			2003	2002
NON- CURRENT ASSETS	NOTES			
PROPERTY, PLANT AND EQUIPMENT	(14)		289,353,730.49	310,043,415
			<u>289,353,730.49</u>	<u>310,043,415</u>
CURRENT ASSETS				
STOCK AS AT 31.12.2003	(15)		1,101,233.99	1,823,163
DEBTORS & PREPAYMENTS	(16)		2,986,182.17	3,272,187
DEPOSITS	(17)		807,250.00	365,500
ADVANCES	(18)		1,681,440.63	1,286,691
STAFF LOANS	(19)		7,420,947.73	7,901,725
CASH IN HAND & AT BANK	(20)		<u>589,686.44</u>	<u>753,464</u>
			14,586,740.96	15,405,730
TOTAL ASSETS			<u><u>303,940,471.45</u></u>	<u><u>325,449,145</u></u>
EQUITY AND LIABILITIES				
CAPITAL AND RESERVE				
CAPITAL CONTRIBUTION (GOVERNMENT)	(21)		478,165,360.00	433,165,360
REVALUATION RESERVE	(22)		265,352,098.60	265,537,959
FOREIGN GRANT	(23)		144,558,859.00	144,097,664
LOCAL GRANT	(24)		28,418,367.68	31,096,998
ACCUMULATED EXCESS OF EXPENDITURE OVER IN	(25)		<u>(654,551,592.38)</u>	<u>(582,739,255)</u>
			261,943,112.90	291,158,744
NON- CURRENT LIABILITES				
PROVISION FOR GRATUITY			18,649,713.50	17,095,788.00
CURRENT LIABILITES				
CREDITORS & ACCRUED EXPENDITURE	(26)		12,508,022.82	13,376,195
PROJECT CREDITORS	(27)		5,900,463.00	3,688,564
CONSULTANCY PROJECTS CREDITORS	(28)		4,939,159.23	131,564
CASH AT BANK			<u>-</u>	<u>292</u>
			23,347,645.05	17,194,615
TOTAL EQUITY AND LIABILITIES			<u><u>303,940,471.45</u></u>	<u><u>325,449,145</u></u>


G.PIYASENA
ACTING CHAIRMAN


DR. T.K.D. TENNAKOON
DIRECTOR GENERAL


M.D. SENARATNE
ACCOUNTANT



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கணக்காய்வாளர் தலைமை அபிவிருத்தி திணைக்களம்

AUDITOR-GENERAL'S DEPARTMENT



මගේ අංකය
எனது இல.
My No.

AP/B.NAR/FA 2003/80

ඔබේ අංකය
உமது இல.
Your No.

දිනය
திகதி
Date

21 March 2004

The Chairman.

National Aquatic Resources Research and Development Agency.

Report of the Auditor General on the Accounts of the National Aquatic Resources Research and Development Agency for the year ended 31 December 2003 in terms of Section 14 (2)(c) of the Finance Act No.38 of 1971

The audit of accounts of the National Aquatic Resources Research and Development Agency for the year ended 31 December 2003 was carried out under my directions in pursuance of provisions in Article 154(1) of the Constitution of the Democratic Socialist Republic of Sri Lanka read in conjunction with Section 13(1) of the Finance Act No. 38 of 1971. My observations, which I consider should be published with the annual report of the Agency in terms of Section 14(2)(c) of the Finance Act appear in this report. A detailed report in terms of Section 13(7)(a) of the Finance Act will be furnished to the Chairman of the Agency in due course.

1:2 Scope of Audit.

Audit opinion, comments and findings in this report are based on a review of the financial statements presented to audit and substantive tests of samples of transactions. The scope and extent of such review and tests were such as to enable as wide an audit coverage as possible within the limitations of staff, other resources and time available to me. The audit was carried out in accordance with Sri Lanka Auditing Standards, methods and practices to obtain reasonable assurance as to whether the financial statements are free of material misstatements. The audit included examination of evidence supporting the amounts and disclosures in financial statements and assessment of accounting principles and significant

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කොළඹ 07, ශ්‍රී ලංකාව

செய்தறி சதுக்கம்,
கொழும்பு 07, இலங்கை

INDEPENDENCE SQUARE,
COLOMBO 07, SRI LANKA

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estimates and judgments made in the preparation of financial statements, evaluation of their overall presentation and determining whether the accounting policies adopted were appropriate, consistently applied and adequately disclosed. Sub-sections (3) and (4) of Section 13 of the Finance Act No.38 of 1971 give discretionary powers to the Auditor General to determine the scope and extent of the audit.

2. Accounts

2.1 Audit Opinion

Except for the effects on the financial statements of the matters referred to in para 2.2 of my report, I am of opinion so far as appears from my examination and to the best of my information and according to the explanation given to me, the financial statements have been prepared and presented in accordance with Sri Lanka Accounting Standards and the stated accounting policies as set out in notes (from Note No. 1 to 7) to the financial statements and give a true and fair view of the financial position of the Agency as at 31 December 2003 and the financial results and cash flow for the year then ended.

2.2 Comments on Accounts

2.2.1 Accounting Deficiencies

Following observations are made.

- (a) Land and buildings of the Rekawa Regional Research Station had not been valued and brought to account as at the end of the year under review.
- (b) Creditors of Delimitation Project had been overstated by Rs. 2,500.

2.2.2 Accounts Receivable and Payable

Following observations are made.

<u>Description of Accounts</u>	<u>Amount as per final accounts (Rs.)</u>	<u>Nature of deficiency</u>
(a) Debtors and prepayments	2,175,752	<p>(I) The balances outstanding between 2 to 5 years and over 5 years amounted to Rs. 293,278 and Rs. 298,834 respectively. It represented 24% of the debtors and prepayments.</p> <p>(II) The provision for bad and doubtful debts amounting to Rs. 301,278 had been made during the year under review. It represented 12% of the debtors and prepayments.</p>
(b) Deposits	807,250	The balances outstanding between 1 to 5 years and over 5 years amounted to Rs. 311,033 and Rs. 157,972 respectively. It represented 58% of the deposits.
(c) Creditors and accrued expenditure	12,508,023	Liabilities totalling Rs. 3,760,704 and Rs. 1,105,395 remained unsettled for over 5 years and between 3 to 5 years respectively.

2.2.3 Transaction Not Supported by Adequate Authority.

- (a) A building owned by the NARA extent of which was 8,171 square feet had been given to the National Institute of Fisheries and Nautical Engineering without proper rental agreement.
- (b) A vehicle belonging to the Ministry of Fisheries and Ocean Resources valued at Rs. 118,950 had been shown under fixed assets of the Agency.

2.2.4 Non-Compliance with Laws, Rules, Regulations and Management Decisions.

Several instances of non-compliance with the provisions in the following Laws, Rules, Regulations etc observed in audit were pointed out to the notice of the Chairman of the agency.

- (a) National Aquatic Resources Research and Development Agency Act No. 54 of 1984 Section 6.
- (b) Goods and Services Tax Act No. 34 of 1996
- (c) Financial Regulations 371(2)
- (d) (I) Public Administration Circular No. 22/99 of 08 October 1999
(II) Public Administration Circular No. 15/90 of 04 March 1990
- (e) Guidelines on Government Tender Procedure
- (f) Public Finance Circular No. 364(i) of 01 June 1999

- (g) Public Enterprises Department Circular No. 116 of 24 January 1997.
- (h) Establishment Code of the Democratic Socialist Republic of Sri Lanka.
- (I) Chapter XV and Finance and Planning Circular No. F/6/1/1/96.
- (II) Chapter XXIV Section 10;2.
- (J) Treasury Circular No. 842 dated 19 December 1978.

2.2.5 Identified Losses

The following identified losses were observed during the year under review.

<u>Item</u>	<u>Value (Rs.)</u>	<u>Particulars</u>
(a) Purchase Advances	215,278	Advances had been paid to four Institutions for the purchase of goods. Goods were not received to the Agency up to the balance sheet date. Which were outstanding between 3 to 7 years.
(b) Service Advance	599,510	Advances had been paid to two institutions which were outstanding between 1 to 3 years.
(c) Expenses for the arbitration	154,000	Due to the settlement arrangement for construction of 510 feet boundary fence of RRC – Kadolkelle

(d) Payment for Crab Hatchery Sumps in Over head tank – Kadolkelle	160,318	Overpayment had been paid to a contractor subsequent to the poor monitoring.
(e) Construction of Inland Aquatic Resources Division (IARD)	323,213	Over payment had been made to the contractor due to the poor supervision and monitoring.
(f) Staff Loans	452,549	Action had not been taken to recover the outstanding advances and staff loans from the officers who had left their services.
(g) Penalty	115,506	Two instances <i>of delay in the payments of electricity bills had been observed.</i>

3 Financial and Operating review

3.2 Financial Results

According to the accounts presented, the operations of the Agency during the year ended 31 December 2003 had resulted in a deficit of Rs. 71,998,198 as compared with the corresponding deficit of Rs. 45,065,970 for the previous year, thus showing a deterioration of Rs. 26,932,228 in the financial results.

3.2 Idle And Under Utilized Assests.

<u>Nature of Transaction</u>	<u>Value</u>	<u>Deficiency</u>
	Rs.	
(a) Construction of security fence Kalpitiya	33,394	Out of 106 concrete fence posts purchased only 70 had been used and out of that posts used, 62 had been observed as damaged.
(b) 231 Concrete posts at RRC – Kadolkelle	Cannot be ascertained.	Idling
(c) Construction of water discharging channels for Hatchery building at RRC- Kalpitiya	408,373	Had been idling due to non-commencement of building. <i>construction.</i>
(d) 1,222 floor tiles	106,409	Idling over two years.
(e) Air blower	39,408	Idling over five years.
(f) Fire extinguisher	180,380	Idling over six months.

3.3 Operational Inefficiencies

<u>Nature of Transaction</u>	<u>Value</u>	<u>Deficiency</u>
	Rs.	
(a) 100 feet Boundary Wall at Regional Research Centre (RRC) – Kadolkelle	121,023	Construction had not been done satisfactorily.

(b) 510 feet Boundary Fence at RRC – Kadolkelle	293,000	Construction had been abandoned subsequently due to poor quality of work.
(c) Payment for Crab Hatchery Sumps Over head tank – Kadolkelle	503,215	Construction had been abandoned subsequently due to poor quality of work.
(d) construction of part of security fence – Kalpitiya	33,394	The construction had not been adequate.
(e) Fencing of the land with P.V.C. coated galvanized nets RRC Kalpitiya	399,510	Construction had been abandoned subsequently due to the specification given in BOQ/ Drawing for the job is not in a standard specification.

3.4 Extraneous Items

Extraneous items observed in audit are shown in the following table.

	<u>Amount</u> <u>(Rs.)</u>	<u>Particular</u>
	-----	-----
(a) Advertising	12,000	Expenses on account of local travelling of the Ministry Officers.

(b) Sundry expenses	25,000	Donation had been given to Matara District Sports Development Foundation for "Nilwala Udanaya".
(c) Welfare Account	5,000	Prizes for "Nilwala Udanaya".
(d) Welfare Account	274,555	Donation for flood victims.
(e) Entertainment	50,677	Expenses relating to Ministry Office.

3.5 Funding Arrangements for Provision for Payment of Gratuity.

A provision amounting to Rs. 18,649,714 had been made in the accounts for payment of gratuity. But there was no funding arrangements to meet future liabilities.

3.6 Budgetary Control

It was observed that the budget had not been made use of as an effective instrument of management control as there were significant variations between the budget and actual income and expenditure.

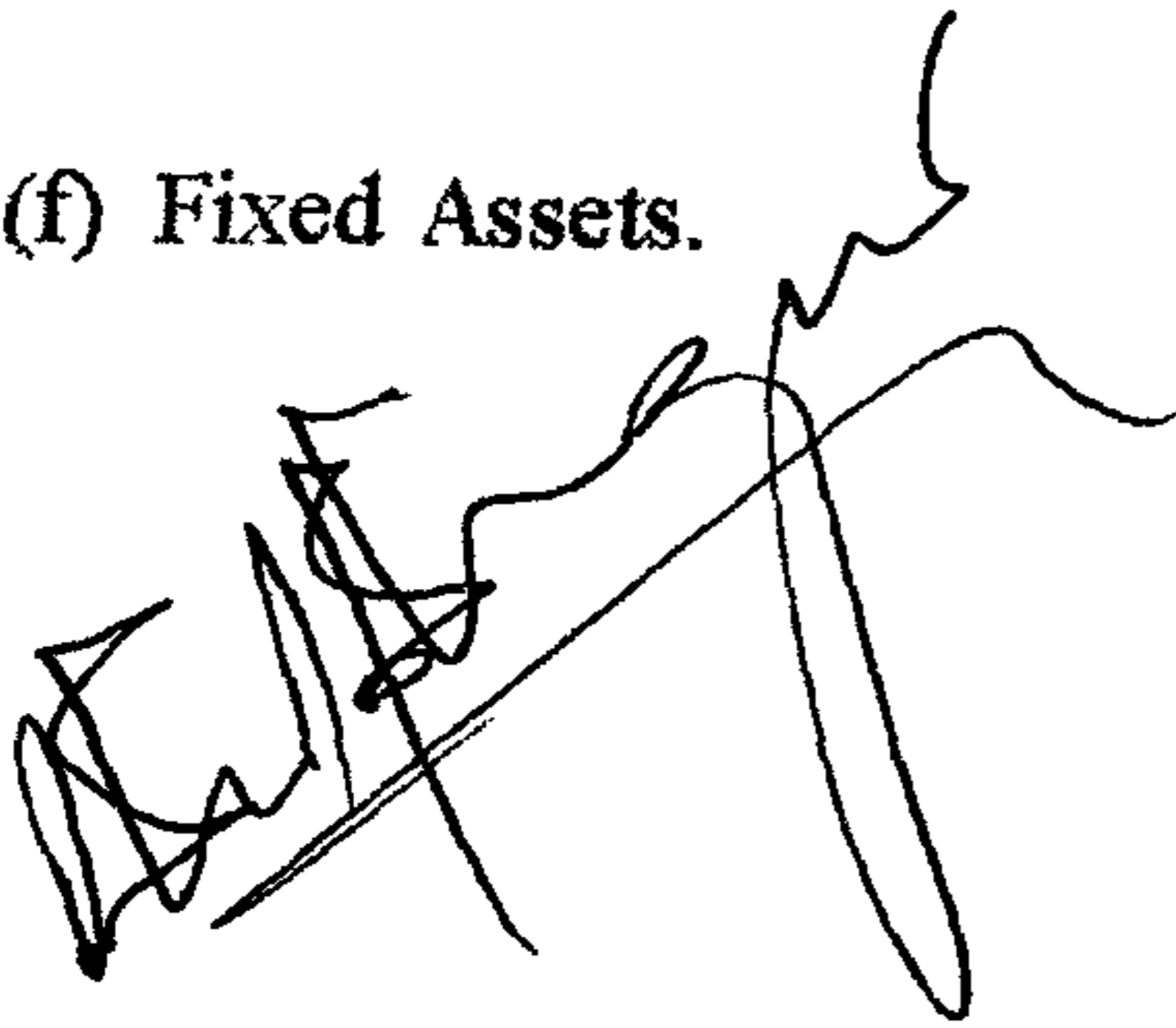
3.6 Vehicle Utilization

The Agency had a fleet of 20 vehicles as at the end of the year under review. One vehicle out of the fleet and 02 vehicles which were not included to the fleet had been released to the Ministry of Fisheries and Ocean Resources. However, the Agency had hired number of vehicles and the charges thereon amounting to Rs. 2,694,561. Expenditure on fuel and repair for the fleet of vehicles of the Agency were amounted to Rs. 2,485,565 and Rs. 3,350,035 respectively.

4. System^s and Controls.

Special attention is needed in respect of the following areas of controls.

- (a) Payments and settlement of advances.
- (b) Tender Documents and Evaluation of Tenders.
- (c) Award of contract, Extension of time and Part payments.
- (d) Recruitment and Promotions.
- (e) Payments of salary advances.
- (f) Fixed Assets.



(S.C. Mayadunne.)

Auditor General.

Action taken on the comments made by Auditor General's Report for the year 2003

2.2 Comments on Accounts

2.2.1 Accounting Deficiencies

- (a) Award of tender for Valuation of Assets of NARA was delayed due to severe financial constraints faced by the institute. However, the tender was awarded in February, 2004 and all assets will be valued and will be brought to accounts at the end of the year 2004.
- (b) This will be corrected in the accounts of 2004.

2.2.2 Accounts Receivable and Payable

(a) Debtors and Prepayments

- (I) Provision has already been made in the accounts as bad debtors for Rs.298,834 with the approval of Governing Board. Action will be taken to recover the balances outstanding between 2-5 years.
- (II) No provision has been made for bad and doubtful debts for the year under review.

(b) Deposits

NARA has made certain deposits for Supply of Electricity and Telephone lines. These deposits had been made at the time of transaction and will remain as such until end of the transaction. For others, provision has been made as bad debtors.

(c) Creditors & accrued expenditure

Agreed with comments. Rates & Taxes amounting to Rs.3,751,830/= is outstanding. However, NARA has agreed with C.M.C. to settle this by paying one year's outstanding amount with current year's payment.

The outstanding amount between 3 to 5 years includes retention money on construction contracts and refundable deposits on tenders.

2.2.3 Transaction not supported by Adequate Authority

- (a) Proper assignment will be signed by both parties.
- (b) This will be rectified in the accounts of 2004.

2.2.4. Non-compliance with Laws, Rules, Regulations and Management Decisions

- (a) National Aquatic Resources Research & Development Agency Act No. 54 of 1984 Section 6.

This refers to the appointment of Working Director for NARA. The Working Director was appointed by the Hon. Minister in-charge of the subject of Ministry of Fisheries & Ocean Resources according to the powers vested in the Section 28 of the Act. Further, NARA has sent the copies of letter of appointment to the Secretary to the President and to the Auditor General.

The necessary provision for the payment of emoluments and other allowances had been allocated for the year under review.

- (b) Goods and Services Tax Act No. 34 of 1996

This refers to the payment of G.S.T. for the construction without obtaining their registered numbers. This has happened due to past payment to the contractor. But original invoices as well as final payment have been made after obtaining the G.S.T. No.

- (c) Financial Regulations 371(2)

NARA is a Research organization and due to practical reasons we agree that certain advances have not been settled in due time. However, action has been taken to minimize these.

- (d) (i) Public Administration Circular No. 22/99 of 08 October, 1999

She has been appointed by the Hon. Minister in charge of the Fisheries & Ocean Resources as Co-coordinating officer for Research & Development for Southern Region and Legal officer for the same area. Based on the above appointment vehicle has been allocated.

- (ii) Public Administration Circular No. 15/90 of 04 March, 1990

Please refer above (d) (i)

- (e) Guidelines on Government Tender Procedure

Steps have already been taken not to repeat this type of errors.

(f) Public Finance Circular No. 364 (i) of 01 June 1999

This has already been compiled.

(g) Public Enterprises Department Circular No. 116 of 24 January, 1997

Action will be taken not to repeat this type of errors.

(h) Establishment Code of the Democratic Socialist Republic of Sri Lanka.

(I) Chapter XV and Finance and Planning Circular No. F/6/1/1/96

The necessary approval has already been obtained.

(II) Chapter XXIV Section 10:2

This has already been settled.

(J) Treasury circular No. 842 dated 19 December 1978

Assets register has been maintained with necessary details.

2.2.4

Identified Losses

(a) Purchase Advance

Legal action has been taken to recover Rs.145,000/= and demand order has been sent for Rs.70,590/=. Action already been taken to recover Rs.1,687/=. However, full provision has been made in the accounts for Rs.213,590/= as bad debts.

(b) Service Advance

This is remaining in the accounts due to non completion of construction of Kalpitiya and Kadolkelle. Legal action as well as internal inquiry is being held against the officer who is responsible for the construction.

(c) Expenses for the arbitration

Formal inquiry is being held in this regard. Action will be taken on receipt of inquiry report.

(d) Payment for Crab Hatchery Sumps in Over head tank Kadolkelle.

Formal inquiry is being held in this regard. Action will be taken on receipt of inquiry report.

(e) Construction of Inland Aquatic Resources Division(IARAD)

Formal inquiry is being held in this regard. Action will be taken on receipt of inquiry report.

(f) Staff Loans

Every effort has been made to recover the outstanding advances and loans but the possibility of recovery is doubtful. The necessary provision has been made in the accounts.

(g) Penalty

Due to delay in obtaining funds from Treasury. Payments for electricity bill has to be postponed, accordingly penalty has been enforced.

3 Financial & Operating Review

3.2 Financial Results

3.2 Idle and Under Utilized Assets

(a) Construction of Security fence at Kalpitiya

Formal inquiry is being held against the officer concerned. Necessary action will be taken, once the report is received.

(b) 231 Concrete posts at RRC – Kadolkelle

Arrangements have been made to use these posts to complete the fence at Kalpitiya and Kadolkelle.

(c) Construction of water discharging channels for Hatchery building at RRC-Kalpitiya

The construction work has been completed at the end of year 2003 and research work commenced in year 2004.

(d) 1,222 floor tiles

Arrangements have been made to use these items.

(e) Air blower

Arrangements have been made to use these items.

(f) Fire extinguisher

Arrangements have been made to use these items.

3.3 Operational Inefficiencies

(a) 100ft. Boundary Wall at Regional Research Centre (RRC) – Kadolkelle

Formal inquiry is being held against the officer. On receipt of this report necessary action will be taken.

(b) 510ft. Boundary Fence at RRC - Kadolkelle

Formal inquiry is being held against the officer. On receipt of this report necessary action will be taken.

(c) Payment for Crab Hatchery Sumps Over head tank - Kadolkelle

Formal inquiry is being held against the officer. On receipt of this report necessary action will be taken.

(d) Construction of part of security fence – Kalpitiya

Formal inquiry is being held against the officer. On receipt of this report necessary action will be taken.

(e) Fencing of the land with P.V.C. coated galvanized nets RRC Kalpitiya.

Formal inquiry is being held against the officer. On receipt of this report necessary action will be taken.

3.4 Extraneous Items

- (a) Advertising
This payment is made for the programme organized by the Ministry of Fisheries.
- (b) Sundry expenses
This payment is made for the advertisement.
- (c) Welfare Account
Agreed with the comments
- (d) Welfare Account
Agreed with the comments.
- (e) Entertainment

The payment is made for the programme of extension work held at Kalpitiya.

3.5 Funding Arrangements for Provision for Payment of Gratuity

Letter has been sent through Secretary to the Ministry of Fisheries and Aquatic Resources requesting the fund for the creation of gratuity funds. But so far no reply has been received in spite of reminders.

3.6 Budgetary Control

It is true that there are a few items with significant variations between budget and actual. We have already given reasons for these variations. Further, these variations occur due to exigencies of services as limitation on the fund allocated by the Treasury.

3.7 Vehicles Utilization

Almost all the vehicles owned by NARA are over 10 years old and are often under repairs. As such improvement of fuel consumption and maintenance is difficult. Hiring of vehicles was done as the continuation of research projects is essential.

4. Systems & Controls

Comments were noted. Action will be taken in future to pay attention in particular to the items referred to regarding some aspects.

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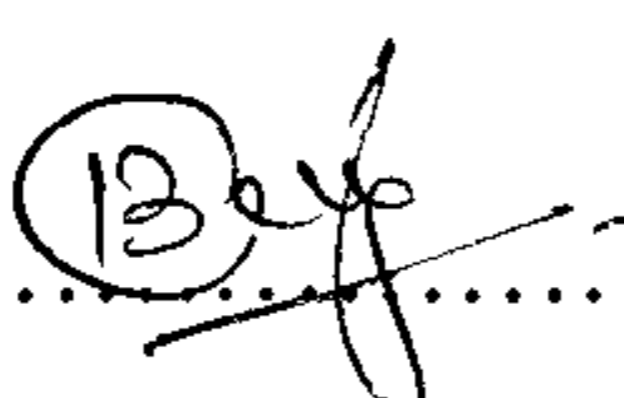
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