

THE MARINE AFFAIRS & AQUATIC RESOURCES

INFORMATION SYSTEM

(MAARIS)

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BACKGROUND

The successful completion of the UN Law of the Sea Convention endowed Sri Lanka with jurisdiction over 25 times the sea area as land. In 1981 the National Aquatic Resources Agency (NARA) was set up to fulfil the need for institutional structure and to develop technical expertise for surveying these resources. Around 1982, a need was felt for the establishment of a national information system capable of providing the information necessary for the management of the resources of this extended Exclusive Economic Zone of Sri Lanka. The Marine Affairs and Aquatic Resources Information System (MAARIS) which commenced operating this year at NARA is a direct result of this. MAARIS is funded by two international organizations, namely IDRC & ICOD.

The International Development Research Centre (IDRC) of Canada which has established its role as one of the few agencies in South East Asia supporting development research in fisheries, devotes a significant portion of its annual budget to information programmes. The idea being the information generated by development research if not properly handled get misplaced and becomes a perishable commodity in the development process. NARA as an organization contributing significantly in terms of development research and seeking to enhance the dissemination of knowledge in fisheries focussed the attention of IDRC to lend its support for the setting up of MAARIS.

The International Center for Ocean Development (ICOD) was established in 1985 as a Crown Corporation in Canada with a mandate to promote and facilitate transfers of technology, information & expertise on a "South-South" basis. Thus ICOD attempts where possible to focus assistance at the regional level. MAARIS being a concept which integrates institutional and national priorities and needs that could easily be expanded upon to meet regional needs, ICOD funds the Extension/Outreach unit of MAARIS.

ORGANIZATION OF THE SYSTEM

The objectives of MAARIS is the collection, storage, repackaging and dissemination of information useful for the development of aquatic resources and marine affairs in Sri Lanka. Its activities to be progressively broadened from national to regional and international coverage. For this purpose 'information' is defined as published & unpublished products of analysed and recorded data, in documentary, audio-visual or electronic form. Once these objectives are realised we should have a fully operational Marine Affairs & Aquatic Resources Information System (MAARIS), as an effective mechanism for controlling documentation, data, and technical information.

The progressive steps in the establishment of this system are as follows:

- 1 The establishment of an automated national repository and research library in marine affairs.
- 2 Create a computerised data base of national marine & aquatic resources literature, which could provide search and bibliographic output services with back up document delivery services.
- 3 Establishment of a Documentation Unit which could process, repackage & publish the information gathered, at national, regional & international level. Reports, abstracting journals, Directories, Leaflets & Information packages are output of this division.
- 4 Establishment of an Extension Services Unit to provide current awareness and outreach services to the user community.

MAARIS has 3 functional units. The library, Documentation & Extension. Transfer or dissemination of technical information now make use of all relevant means of communication. The medium of storage of information has changed over the years. The development technology in information goes hand in hand with development technology in communication and cannot be considered separately. As the medium of storage determines the form of inputs and outputs of any information system, this has been taken well into consideration in the designing of MAARIS. The overall mandate of dissemination of information is shared by all three units at different levels of communication, the library to its visitors, documentation unit through mailings, and the extension unit by production of audio-visual and its outreach activities.

The system would harness all bibliographical information available in the country on marine affairs through its contacts that have been already established with all relevant libraries in the country. A national depository library and a data base housed at NARA is the most significant contribution that is made by MAARIS to the management of aquatic resources and marine affairs in Sri Lanka.

Under MAARIS the library will make an attempt to collect and store all national literature which comes within the purview of aquatic resources and marine affairs, with retrospective effect. The bibliographical information pertaining to these, both published and unpublished documentation, will be recorded with an abstract, and indexed under a subject heading from the ASFIS thesaurus. These recordings, computerised, will constitute the MAARIS national data base. Computerised literature searches, bibliographies, abstracting journals are some of the outputs from this data base.

The activities of the MAARIS project made it necessary for us to move into more spacious accommodation with better reader facilities arrangements and, holdings divided into "Subject Bays". This is being done with the appreciation of the need for speed in retrieving the material for quick reference in the limited time available to the researchers in this discipline who are mostly on the field.

Documentation Unit, manned by an Abstractor and a Publication Officer, analyse the information gathered by the library, to compile bibliographies, directories, information packages etc., which are now in great demand. Inclusion of aquatic resources and marine affairs related subjects in the school projects from last year has increased the demand on the NARA library with repeated requests for "take away information packages". Fortunately this need was foreseen in the designing of MAARIS and we hope our information products to be put out would satisfy the information needs of the schools. Communication by mail of these information products is the second level of communication utilised for dissemination of information.

The third unit of MAARIS, the extension unit is designed to take, the dissemination of information a step further; in reaching out to the users in their own place of work or study. The information collected and repackaged by the other two units would be translated into a more useful way to the user concerned, such as the fish culturist, the sea-food exporter, the fisherman, and even the housewife and the children in schools. Outreach activities such as talks, demonstrations, exhibitions and film shows make use of AV material such as posters, charts, video-films and documentaries, designed and produced as outputs from this unit. The latter will be based on information generated by the research done at NARA. Public awareness activities such as the education of the public on conservation of wetlands, corals, mangroves, turtles and marine mammals are given high priority in its dissemination programme. Thus MAARIS utilizes a combination of paper and electronic based elements for organizing information.

CURRENT STATUS & ACTIVITIES

MAARIS project commenced in Jan. 1988, with recruitment of staff and installation of the computer facilities. As computer hardware had reduced in price MAARIS was very fortunate, that with the same amount of money available in the project for the computer requirements for the data base, the purchase of a fully operational desk-top publishing system with all relevant hardware and software, was also possible.

This desk-top publishing system is capable of providing "lay-out" of documents by use of "Ventura" desk-top publishing software with a camera ready copy of the document printed by use of a Laser Beam Printer, to be used as "art-works" for printing. This eliminates the time consuming task of type setting, saving time and money in printing and publishing our information outputs. The NARA journal, the cruise reports, the internal manuals, occasional papers, technical reports are some of the publications that would be published by this process. Though no provision was made for a printing facility in the project, as a result of the lay-out facilities available from the computer unit of MAARIS, by the end of 1988, it was possible to offer NARA a complete documentation service, from lay-out to printing, using the heavy duty photocopy machine available.

The MAARIS Data Base of bibliographical references with abstracts is being stored in an IBM PC micro computer using UNESCO/CDS ISIS software. In the designing of the system effort was made to conform to common formats of data-entry and communication in order to facilitate exchange between the library and the information centres within the country, regionally and globally. Though the inputs to the Data Base is considerably slow on account of the abstracting that has to be done by one of the staff in addition to her normal duties, MAARIS does have a mini data base ready for searches. Work is now rapidly proceeding towards the generation of an abstracting journal.

The housing of the computer also necessitated the expansion of the library into more spacious accommodation to house the equipment, furniture and stocks to be purchased under the MAARIS Project. The Laboratory adjoining the Library was redecorated and organized to house the computer facility, the publishing facility and staff cubicles.

The unrestricted reference facilities available to the public from the MAARIS library is being made use of presently, largely by school children. The inclusion of subjects on marine and aquatic resources in the school curricula, is bringing in an influx of school children. A demand is also being made by the parents for publications, that could be purchased, which could provide the necessary information for the children in simpler form. Two information leaflets are being prepared for this purpose, one on the 'fishing industry' and the other on 'aquatic resources' soon to be printed in the local languages, Sinhala and Tamil.

The newly appointed publications officer took over the editorial functions for the printing of the NARA journal volume 32, which has now come out in print. This unit is also handling the layout and printing of the Divisional Manuals which are restricted to internal circulation. Two information leaflets prepared by the researchers of the Institute of Post Harvest Technology (IPHT), one on 'preparation of dry fish' and the other on 'proven procedures for icing of fish', are being edited for printing in Sinhala under the MAARIS Project.

Apart from traditional services such as lending, reference, inter library loan services, and answer to technical queries normally associated with information services, the computerised literature searches and the consequent document procurement service are the highlights of this system. MAARIS make available retrospective searches from the FAO/ASFA database from Rome almost on-line by means of the CD-ROM Laser Disc technology. Laser technology though sophisticated, has cut down on time and money by saving on search time and cost of annual subscriptions to abstracting journals which are quite costly.

Users of MAARIS have now got used to the idea of requesting the procurement of reprints, of relevance to their work. This service introduced last year will be augmented with MAARIS funds which have been provided for the purchase of (NLL Coupons) from the National Lending Library of Great Britain which provides reprints of any reference to any periodical article that may be requested from it. "REPRINTS" a valuable research resource was underutilized so far. This is now being remedied, and the library reprint collection has grown at the rate of about 60 per year through exchange agreements and requests by officers. The reprint will remain the most important supplement to the main collection of journals, and would be for a long time the most economical way to up date information with the diminishing numbers of periodical titles being subscribed each year due to the rising cost of subscription. An earnest request was made to the researchers to make use of this facility provided so that the library holdings also grows while satisfying their information needs. In addition to the SDI service of contents pages now being provided to NARA staff a Selective Dissemination of Information Service (SDI) which will provide information to every one of the NARA officers according to their profiles of interests would be initiated soon.

The proper establishment of the Extension Unit of MAARIS commenced in Jan 1988, with recruitment of staff which consist of an Extension officer and a Liaison officer. In addition the service of the two photo technicians of NARA were also made available to the unit.

With establishment of the unit it plunged headlong into the controversy resulting from the announcement of the proposed Coal Power Plant in Clapenburg Bay in Trincomalee, N.E. of Sri Lanka. This is one of the most beautiful and abundant habitats of marine life and a whale watcher's paradise. NARA was required to provide information on the possible and potential environmental damage from coal-fired electricity generation especially its effect on marine life. The Extension Unit initiated and provided background material for newspapers, radio and TV coverage for this controversial topic. It also completed production of a 45min. documentary entitled "Price for Power: two sides to the question on Trincomalee coal power station".

Media coverage was also given to conservation of sea-turtles and mangroves. Contributions were also made to the press on the Ocean Drilling Program (ODP) of the sophisticated deep-sea drillship "JOIDES RESOLUTION" on its survey in the Indian Ocean.

Following TV productions were made at the Sri Lanka Broadcasting Corporation with information, background material and TV footage whenever required being supplied by the extension unit:

1. The Indian Ocean: a shared heritage
2. Managing the seas: a new perspective
3. Pulsation of life in the inter-tidal zones
4. "The lewaya" (salterns) program on Salt Corporation
5. Mangroves - a Dateline program
6. News clip on prawn farm at Kalpitiya
7. News clip on Joides Resolution, drilling vessel
8. Footage on the second standing committee meeting of the Indian Ocean Marine Affairs Co-operation (IOMAC)

A NARA photo technician is now engaged in the production of life sized models of well known species of marine fish to be exhibited in the NARA Museum and also to be used as extension materials for schools.

In Sri Lanka, a new continuous assessment scheme of education was introduced into the schools from 1988, in which children are entrusted with projects under various titles. As, 'Aquatic Resources', 'Fisheries', and 'Marine Life' are some of the more popular titles of projects, information is sought by school children on these for their assignments. As a result requests for visits of school children to NARA sometimes in batches of 50 and 100 and more are made almost every month. These visits are co-ordinated and organised by the extension unit of MAARIS. MAARIS leaflets would cover some of these topics.

Arrangements are being made for an information liaison officer of the extension unit to participate in the mobile extension program of the Ministry of Fisheries. It is anticipated that this could be the best method available for feed back on the information needs of the fishermen to MAARIS. NARA also collaborates on work that has commenced on the compilation of a glossary of fisheries terms in Sinhala, to be used in extension material. The above two projects come within the UNDP funded extension project of the Ministry of Fisheries.

For promotion of NARA activities video footage on the following have been produced:

- activities of the National Hydrographic Office (NHO)
- NARA/FAO sea weed project
- lobster and crab project
- mussel culture project

For the same purpose, preparations are being done for 1) film 2) slide show, on a script written by the extension officer and visuals and slides by the photo technicians of NARA.

PROJECTED PLANS

Library and information systems were historically based on paper. Decades of tradition helped develop methods, standards, for handling paper work. Electronic systems, however developed so fast that the user is left bewildered. The task which lies ahead for MAARIS is to guide the users steadily in this transition from paper to electronic systems for handling information.

Introduction of CD-ROM form of the FAO/ASFIS database to our users was a definite help in this direction. Sri Lankan researchers have now come to appreciate the value of the ASFIS and all global electronic systems thereby, interest being created now for the input of their own papers to the ASFIS data base. An indirect service available to a researcher from an information facility, hitherto not utilized by the Sri Lankan users, is the dissemination of the information generated by their own work via any information system. Thus creates interest on another user in their work, which would in turn invariably lead to an exchange of communications with each other. The appreciation of Sri Lankan users in the ability of an information system to enable users to communicate with one another is definitely a step in the direction, of rapid information exchange.

A search of the ASFIS database has revealed only 256 papers from Sri Lanka, and only 26 from NARA, the premier national institution responsible for R & D activities in aquatic resources in Sri Lanka. MAARIS hopes to remedy this situation, as the ASFA Board at its annual meeting in 1987 recognized MAARIS centre as an ASFA Related Centre, and we hope soon to qualify to be an input centre. As mentioned earlier this is why the worksheet and other formats have been designed for the MAARIS data base in keeping with ASFIS Guidelines and the ASFIS thesaurus is used for its descriptors. The Common Communication Formats being developed by ASFIS for CDS/ISIS users would enable MAARIS to communicate its inputs even electronically.

It is proposed to expand the extension unit of NARA, to include a 'display and reception' facility to receive and introduce the current activities in marine affairs and aquatic resources at NARA and the country to the public. More and more people are making their way to NARA in search of information in this sphere. An information desk and conducted tours are being planned. Awareness programs for schools will be given priority with a program for schools to be organised at NARA every month. Each program will include about 100 school children who will spend the day at NARA familiarising themselves with the research going on and also on general awareness on this discipline. Collaboration with Zoological gardens and the Education Department will be sought in designing the 'NARA DAY' for schools. An information centre especially to serve the school children at 'Kadolkelle' a mangrove cove, (the conservation of which is being promoted by NARA), in the West Coast of Sri Lanka, is being designed. An excursion to this cove will be included and is envisaged to be an educational experience for school children as part of the awareness programme at NARA for their school projects.

It is realized that the need for the printing of the large volume of leaflets hand outs now necessary for the MAARIS extension activities, if done in-house would save much time and money. Therefore the present publications and printing facility would be strengthened into a fully equipped publications unit with an offset printer, plate maker, binder and laminator. A manuscript received at the documentation unit of MAARIS after editing and layout done at the computerised desk-top-publishing system would be handed over to the printing facility as a camera ready copy, for printing, assembling, binding and finishing.

MAARIS hopes to participate in regional information activities via the Indian Ocean Marine Affairs Cooperation (IOMAC) activities now being coordinated by its Secretariat in Colombo.

The Second Standing Committee of the IOMAC which met on 7-9 September 1987 had before its consideration a report of the Joint IOMAC/UNCTAD/UNDP Mission, on the establishment of a Marine Affairs Information Network for the IOMAC Region (IOMAC- 1/A/SC/3). In approving this scheme, the Committee noted that requisite provision had been made for support of this

activity in its preliminary phase, through the proposed UNDP core support project as outlined in the IOMAC-1/A/24/Rev. 2. In order to ensure closer integration within national systems and to maintain a resource orientation, it was decided to designate the system the **Indian Ocean Marine Affairs and Aquatic Resources Information System, IO-MAARIS.**

This regional information system would create three Marine Affairs & Aquatic Resources Information & Data Processing facilities in the three IOMAC countries. One such facility now being developed with the IOMAC Secretariat in Colombo, has identified the MAARIS library as its reference library as it is housed at NARA which is the IOMAC Focal Point for Sri Lanka. The "documentation & publishing unit" of MAARIS now services the IOMAC Secretariat with regard to its documentation & printing requirements, and will continue to be the repackaging unit of the IOMAARIS Node in Sri Lanka, in this net-work.

The computerized Data Centre for IOMAARIS, which will set up the in-house data files is also to be integrated within NARA making use of already existing computer facilities. MAARIS already has capabilities in terms of equipment, personnel and expertise in programming/system design, to receive data in electronic media and disseminate it to the region. The Bibliographical Data Base of MAARIS uses internationally accepted software (UNESCO/CDS/ISIS) which has facilities for processing numerical data and net-working facilities. In the design of the MAARIS data-base at NARA beginning from the input sheet, provision has been made for access and dissemination of information regionally.

MAARIS, node of this net-work at NARA, operating directly in conjunction with the IOMAC Secretariat; would when fully operational, act as a switch board service for exchange of information, for referral purposes. Though not designed as a repository, its in-house regional bibliographical data file, would contain references to publications from all IOMAC countries. A few more data-files would be set up, including a register of experts, now being processed at NARA.