INFORMATION CONTROL AND THE AQUATIC ENVIRONMENT OF THE SOUTH PACIFIC

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ABSTRACT

A presentation on information control and the aquatic environment: the role of PIMRIS. The authors illustrate and describe the type of information, management techniques and conservation efforts in the area of aquatic and marine science information in the South Pacific. The PIMRIS database and network system has been established to control this information, by collecting and describing materials, implementing computer systems, and training local professional. The future of information handling in the South Pacific is also examined.

INTRODUCTION

The "New Pacific" is comprised of twenty-two independent island states and territories, in a region covering 29 million square kilometers of ocean -- an area nearly 7 times the size of the Caribbean (Rolston). Less than 2% of this area is land. However, the exclusive economic zone claimed by the countries of this region is three and one quarter times the size of the land area of the United States. The region is dominated by its marine environment; consequently marine resources are vital to its existence. But as in every other marine area of the world, the South Pacific has its fair share of environment and resource management problems, such as:

a) marine pollution from effluent output, runoff from land clearing, garbage dumps, chemical dumping, and poor harbour management;

b) coastal erosion from deforestation, beach sand mining and improper placement of coastal structures;

c) natural hazard damage from earthquakes, volcanoes and cyclones;
d) uncontrolled exploitation of resources (driftnet fishing, illegal longline fishing, poaching of giant clam, precious coral and other inshore resources);

e) subsistence economies which necessitate the identification of new sources of revenue from unexploited or undiscovered resources.

For the 6 million people of the South Pacific, there is a continuing need for applied marine science projects, research and development to assist with resolving these problems, and to promote the wise and equitable use of ocean resources.

**SOUTH PACIFIC MARINE SCIENCE AGENCIES**

Government and intergovernmental agencies play the dominant role in managing the region’s resources. The principal bodies involved in marine science work are:

1) At the national level: most countries have a fisheries division and a lands and survey division; many also have a geological survey and an environment or conservation office. Often these divisions are grouped under departments of natural resources or marine resources.

2) At the regional level: A number of intergovernmental agencies, whose membership is restricted to countries of the region, have been established, with responsibilities for various aspects of the marine and aquatic environment.

The South Pacific Applied Geoscience Commission (SOPAC) has a mandate to investigate resource potential for coastal, nearshore and offshore minerals; to assess petroleum and wave energy potential of the region; to undertake physical environment surveys of the coastal zone to assist with resource management, hazard evaluation and coastal protection and development projects; to co-ordinate marine geological and geophysical research being carried out in the region; and to train island nationals in the implementation of their own work programmes.

The South Pacific Commission has a regional fisheries programme which conducts research into tuna stocks, improvement of fishing gear and techniques, sustainable exploitation of inshore and nearshore fisheries, fish product marketing, and undertakes training of fisheries personnel.

The South Pacific Forum Fisheries Agency facilitates the collection, analysis, evaluation, and dissemination of relevant statistical, scientific and economic information about the living marine resources of the region; assists with negotiations with foreign governments and corporations for fishing rights within the EEZ’s of FFA member states; and assists with surveillance programmes within the EEZ’s.

The South Pacific Regional Environment Programme (SPREP) amongst other
projects undertakes coastal water quality monitoring and provides advice on protected areas and species conservation, management of natural resources, waste management and pollution control, and environmental education and training.

Also at the regional level are the academic institutions: the University of the South Pacific, with its Institute of Marine Resources, and the University of Papua New Guinea, with its marine research station. The University of the South Pacific is currently developing a Marine Studies Programme which is mandated to provide Pacific Islanders with opportunities to manage and utilize their living and non-living marine resources: for research, education, training and employment in the marine sector; and for improved collaboration between the University, Island Nations and Regional and International bodies in their common goals in the marine sector (South).

3) At the international level: Aid agencies of developed countries provide bilateral assistance to national departments and regional bodies for equipment, consultants, training and applied research; regional offices of international agencies, in particular the FAO/UNDP regional fisheries support programme, also provide technical expertise. Valuable scientific data is also deposited in the region through the cruise programmes of foreign scientific research institutions.

MARINE PROJECTS AND RESEARCH

The tasks undertaken by these various bodies involve the identification, development and management of marine resources, from the inshore environment to the offshore EEZ's. Offshore projects include tuna stock assessment and fishing techniques, both traditional and modern. Mineral resource investigations for manganese nodules and cobalt crusts are still being carried out in the EEZ's of several countries. Nearshore projects include deep bottom fishing, precious coral sampling, and hydrocarbons investigations. Inshore projects include aquaculture of various species such as milkfish and eucheuma seaweed, as well as resource management of trochus and giant clam, and the artisanal fisheries. Assessment of beach and lagoonal sand and gravel resources is necessary to support local construction.

Problems of management of this information

A substantial amount of marine science information emanates from the work carried out at the national/regional/international levels but is largely ephemeral in nature and often considered to be confidential. From time to time, reports do appear as published scientific studies in international journals. However, more often the information is written up in consultant's reports with limited distribution, in-house report series, and single copy government memoranda.

a) Unpublished material is difficult to identify; and therefore difficult to obtain. Dissemination of this material often does not go beyond one consultant or agency and one government official. Reports "disappear" in
filing cabinets, and with the high turnover of staff (which is prevalent in the region) the knowledge of the existence of these reports is lost.

b) Rarely is there any information support structure in a government department: there is little or no formal records management and virtually no library support. In consultancies to regional fisheries and geology libraries, we have found the following common problems:

-- inadequate or no shelving,
-- no filing boxes,
-- no system, manual or automated, for recording the contents of the collections,
-- no supplies (labels, cards, paper, pens),
-- no budgets for purchase of materials,
-- untrained or no personnel (professional or clerical),
-- no services,
-- collections scattered throughout staff offices.

Consequently, government officials rely on personal contacts to obtain information: consultants who have worked in the region; people who have conducted training courses; or experts who have been based in the region for a long time. These contacts become the "gatekeepers" of information. Unfortunately, when gatekeepers leave the region, they take with them the knowledge of where material is to be found. Also they often depart with large personal collections of slides, maps, and documents.

c) There is little or no obligation on the part of researchers to deposit published scientific papers based on work carried out in the region. Countries do not have access to the major science bibliographic databases to search for these publications. Scientific information gathered in a country's EEZ during a foreign research cruise is meant to be deposited with that country as part of the permission granted to undertake the research; however, this requires time on part of government to ensure that such reports have been filed.

The repercussions of the loss of information are quite serious. Work in the region suffers because information which should be available is not. Furthermore, duplication of research effort and development projects has been known to take place. For example, at the present time, a survey of Hawksbill turtles is being repeated in one country because the original survey data has been lost. Shell specimen surveys, commercial lobster fishery feasibility studies, yellowfin tuna trolling surveys, and pearl oyster farming studies have also been duplicated time and again. Even international agencies run the risk of duplicating projects because they have found it difficult to familiarize themselves with work being carried out in the region. At the 19th annual session of SOPAC, ESCAP tabled a proposal regarding "Management of ocean space and resources under national jurisdiction". The Technical Advisory Group of SOPAC "cautioned against duplication with other similar programmes already undertaken in
the region, and urged ESCAP to support and reinforce existing programmes" (Creech, 1990a).

In light of all of these problems of information management, PIMRIS was established.

PIMRIS

PIMRIS is an information service which was initiated by the region, is run by the region, and serves the informational requirements of the region. The mandate of PIMRIS is to develop a regional information service for fisheries and marine resources. Specific objectives include:

1) the establishment of a regional database for fisheries and marine resources;

2) the production of a series of publications including general and specialized bibliographies, newsletters and brochures;

3) the provision of basic information services;

4) assistance to fisheries and marine libraries to establish and maintain libraries; and

5) the training of regional staff.

PIMRIS operates as a partially decentralized network. The Coordination Unit is based at the library of the University of the South Pacific and links with the regional focal point libraries of FFA, SOPAC and SPC. Information activities are directed at building the information infrastructure including those of the national marine libraries. All of the regional focal point libraries are actively involved in providing assistance to national governments. PIMRIS network links with the fisheries and geology libraries in the region are being established as these centres develop functioning libraries with trained personnel.

Funding for the Coordination Unit, FFA and SOPAC focal points is received from the International Centre for Ocean Development (ICOD) Canada. The SPC component of PIMRIS is funded by the Government of France. The parent organizations of FFA, SOPAC and USP contribute administratively, financially, and professionally to the development of the network.

During the past year PIMRIS has made significant strides towards the achievement of its goals and objectives. Specific accomplishments include the further development of the PIMRIS Moana database, including a regional meeting which established the structure and compatible formats and set policies and procedures
concerning content and exchange of records. Moana now contains the records of South Pacific marine resources materials from the libraries of FFA, SOPAC, SPC, IMR, Western Samoa, and American Samoa. In the near future, Moana will hold the relevant records from the holdings of USP library and records from within the region at the national level will continue to be added.

Two Pacific Island Nationals returned from completing Masters in Library Science at Universities in Canada and are now working at SOPAC and at PIMRIS at USP Library.

Collection development efforts have resulted in over 1500 marine documents being added to the USP Library’s Pacific Collection - a special collection consisting of South Pacific material. Over one thousand of these items were the result of a photocopying project carried out with FAO/UNDP in Suva.

Several consulting visits were made to countries in the region by the librarians at FFA, SOPAC and USP. Where possible, the standard PIMRIS database structure on CDS ISIS was installed on the Library PC’s and staff were trained in its use, as well as in basic library management. The level of assistance which is needed varies from country to country, depending on existing staff and resources. The following case studies illustrate the problems encountered and advice provided.

Case study: Solomon Islands Geology Division Library

The Solomon Islands Ministry of Natural Resources Library serves a technical staff of 40-50 persons. The library consists primarily of geology and forestry publications, most received on donation from overseas geological surveys, international and regional organizations, and expatriate staff on termination of contracts. The collection numbers, very roughly, 5,000 volumes, 2,000 reprints, and several bays of United States Geological Survey publications. These materials are located in two principle areas: the library room and the mapping section of the Geology Division. The remainder of publications received are shelved in staff offices. In the library, most publications received in the last year have been piled on the floor due to lack of shelf space. Up to this year, staffing of the library consisted of a technical records clerk and a part-time assistant. There is effectively no circulation system, no catalogue or list of holdings, only a partially classified section of monographs (using the 1948 edition of the Universal Decimal Classification Scheme), and no provision of information service.

The most notable problem of the library is the scattering of the library materials throughout the Division. Staff of the mapping section admit to taking the "best" materials out of the library and keeping them in their section, so they could be sure of finding them when needed. There is no reference section on Solomon Islands geology. The publications of the division are kept in the technical records office, not the library; other texts and reprints are again scattered throughout the division. An excellent bibliography on Solomon Islands geology was published in 1985, but many of
the titles listed there cannot be found easily, if at all, in the Division.

As part of a consultancy in 1990, the SOPAC librarian assisted with a major weeding of the collection. A three week training attachment was held in Suva with the technical records clerk in order to develop his skills in library organization. In the final report, the librarian recommended the following:

All library materials for the Ministry should have one principal location, although additional copies and working files could be kept elsewhere. A routing system for publications received by the Ministry should be established so that all materials are given first to the library, entered in library records and circulated by the library.

The library should rearrange and weed its collection to make it more accessible and more useful.

A Solomon Islands geology section should be established in the library, with copies of all Division reports, reports by external agencies and all other publications on Solomon Islands geology.

The library collection should be upgraded with new materials acquired through exchanges and donations from other institutions, and through purchases.

A simple library catalogue and serials list should be prepared (Creech, 1990b; Creech, 1990c).

Unfortunately, the technical records clerk did not implement any of the recommendations, and subsequently left the geology division. The SOPAC librarian has been asked to return on a follow-up visit to assist the Division with implementing these recommendations.

Case study: Department of Fisheries Library, Tonga

The library at the Tonga Fisheries Department had undergone several changes of hands over the past few years, and with the resulting lack of continuity, was in a neglected state. The collection, which consisted of about 2,000 items was in no recognizable order and there was no catalogue. The Department had recently hired a new person to look after the library and requested assistance from the PIMRIS Outreach Officer for training. The work program set up for the two week consultation covered: the total reorganization of the library; a weeding of the collection; the installation of the CDS ISIS software and database structure; and the training of the new staff.
The new librarian who had no previous experience of working in a library was responsible for its maintenance and for serving the 60 or so staff of the Fisheries Department. Because of her lack of experience, the training had to be basic, but also as comprehensive as possible. The reorganization of the library was undertaken with the new librarian and instruction was given on an ongoing basis. The idea that the books should be in subject order was a new concept as was the whole idea of a database as a catalogue.

At the end of the consulting visit, the new librarian requested further training in the form of an attachment at USP Library. This was arranged and six months after she came for a three week training session where she spent time in various sections of the library getting hands-on experience in a different environment and learning more about library procedures (McDowell, 1991).

The library at the Fisheries Department in Tonga has in a short period of time gone from an unused and disorganized collection of books to one which has a catalogued and maintained collection and is used by the Fisheries Officers.

THE FUTURE

Future efforts by PIMRIS to enhance the accessibility of information will include the expansion of information publications, the regular distribution on disk of the Moana database, follow-up visits to assist government marine libraries, additional training and attachments at PIMRIS, more coordination of the efforts of the regional libraries, further strengthening of the network links with the national marine libraries, and use of satellite communications.

As the efforts by PIMRIS at building the information infrastructure are taking hold, new sets of problems of information management arise. The marine libraries in the region are being established with sophisticated levels of technology for information handling. Catalogues are on PCs, not cards, and indexing and boolean logic are the basic concepts for information retrieval. However, the rapid technological advances have overtaken the availability of trained human resources. Furthermore, the cost involved in maintaining such an information system is high, and information projects in the region are still very dependent on aid. The sustainability of the programmes, because of the reliance on aid, is always at risk. The cost of telecommunications in the region is still prohibitively expensive which negates the possibility of the use of online databases or communications via modem. Other problems are not unique to the South Pacific. The constant promotion of information services is necessary because of the low status and priority of libraries.

In spite of problems, the future of the handling of marine information in the South Pacific is looking bright. More people are graduating from training programs and coming into the field with higher levels of education and awareness of information sources. Staff who move from one job to another within the region will take with them
an ever increasing expectation and demand for higher levels of information service.

PIMRIS, as a concept, was initiated by Fisheries Officers in the region in the mid '80s. They had already realized the value of information, and were anxious to support a marine information service for the South Pacific. Giving the region control over its own information has been one of the main impetuses behind the establishment of PIMRIS. This goal is on its way to being fulfilled.

REFERENCES


