



Submitted to: Executive Committee
October 1986

PROJECT NUMBER: 86-0037
DIVISION: Information Services

PROJECT SUMMARY

TITLE: Marine Information - Sri Lanka
(FORMER TITLE: Marine Affairs and Aquatic Resources Information System - Sri Lanka and Indian Ocean)

RECIPIENT/
IMPLEMENTING AGENCY: National Aquatic Resources Agency (NARA)
Sri Lanka. Joint project with IDRC.

START/DURATION: Could start immediately after receiving approval. Duration - 2 years.

SUMMARY:

This project called Marine Affairs and Aquatic Resources Information System (MAARIS) - Sri Lanka and Indian Ocean, received Approval-In-Principle from the Board in March 1986, pending the elaboration of the final project and details of IDRC support. The project has now been fully elaborated with the Project Leader, Mrs. Lalitha Bandanarayake and IDRC. IDRC will provide support to the Library and Documentation Units of MAARIS, while ICOD support is focussed on the establishment of the Extension/Outreach Unit of MAARIS. Both IDRC and ICOD projects are being submitted for approval in October so that they can operate in the same time frame.

For the Library Unit IDRC is providing funding over 3 years for library staff and training, equipment and supplies. UNDP will provide a one-time grant of \$5,000 US to expand the library collection as well as providing a subscription to the ASFA database on compact disk and reader.

For the Documentation Unit IDRC will provide funding for staff salaries, training and the costs of producing and printing these products.

The Extension/Outreach Unit is the primary target of ICOD support. This component will serve to disseminate MAARIS and NARA products, to publish and produce audio-visual material for promotion, training and school purposes, and to provide direct liaison between the national user community and MAARIS. The unit will promote the use of MAARIS and NARA services and products; it will liaise actively with the public, fishermen, government institutions, universities, schools, industrialists and the media, and it will provide feedback directly to the library and documentation units as to the user community's needs. This unit will also coordinate and handle the production of all NARA publications such as the Journal of NARA, produce exhibits, posters, demonstrations and video films. The typesetting and composing facilities at the Sri Lanka Scientific and Technical Information Center (SLSTIC) will be used for producing NARA and MAARIS publications.

An Extension Officer will be hired who will be in charge of the unit and assist in the planning for its establishment. The Publications Officer will be hired and will be trained locally or regionally in the first year. Training in the production of audio-visual materials will be provided to two technicians currently on staff in NARA, who will then become part of this unit. As such training is not available in Sri Lanka, it will probably take place in India.

One Liaison Officer will be hired in the first year and two more in the second year. The Liaison Officers will actively go out to the other libraries, institutions, government departments, researchers, private industry and schools to promote MAARIS and NARA services and to solicit feedback for MAARIS on their information requirements. A subsistence allowance has been budgeted to cover expenses associated with this travel.

The building currently used by the NARA library will be renovated to accommodate MAARIS. ICOD support will cover the costs of adding and strengthening existing flooring and the purchase of air conditioners for the new space.

JUSTIFICATION IN ICOD MANDATE:

1. Supports programmes in developing countries for the improved management and utilization of ocean resources;
2. Sponsoring the collection and dissemination of information relating to ocean resource development;
3. Supporting the development of indigenous expertise and institutions in developing countries.

DISADVANTAGE:

1. The establishment of MAARIS calls for at least 10 additional new personnel for the whole project and a large outlay for equipment and renovation in the first year. The Project Leader will have to ensure the adequate training and orientation of the new and existing personnel to ensure a smooth-running operation. The library building requires extensive renovation and this may cause some difficulties in setting up the units.

ADVANTAGES:

1. The Project Leader has participated in several international training programmes over the past two years in information-handling and in marine affairs. She was one of the students at the IOI Summer Training Programme. She is well qualified and has a good understanding of NARA's current role and of the possibilities and responsibilities for the future in Sri Lanka and the region that is rarely encountered.
2. MAARIS is a good concept that integrates institutional and national priorities and needs and that could easily be expanded upon to meet regional needs.

FINANCIAL IMPLICATIONS:

ICOD will spend about \$95,000 over 2 years.

\$66,500	Year 1
\$28,500	Year 2

IDRC will spend \$132,000 over 3 years.

NARA will contribute \$155,000 over 3 years.

EVALUATION/RECOMMENDATION:

Annual progress reports will be requested from MAARIS by both IDRC and ICOD as well as copies of the MAARIS outputs, eg. the director, leaflets, information packages, etc. as well as any audio-visual productions. At least one project-monitoring visit will be made by Information Services staff.

It is recommended that this proposal be approved because it could make a valuable contribution to the development of marine information services in Sri Lanka and the Indian Ocean region.



EC86/D2
Project #860034

Project Summary
(Approval)

Title: Fishermen's Assistance Programme, Dominican Republic

Division: Technical Assistance

Recipient Agency: La Isabela Fishermen's Association, Castillo Republica Dominicana.

Implementing Agency: Fundacion Desiderio Gomez (FDG) with the Organisation Canadienne pour la Solidarité et la Developpement (OCSO).

Commencement: November 1986.

Duration: One year from date commencement.

Financial: ICOD contribution will consist of \$67,325 Canadian for one year and assistance in identification and selection of appropriate advisors and instructors from Canada. FDG and OCSO commitment will consist of financial and administrative support for the on-site project coordinator.

Summary:

Background:

The Fundacion Desiderio Gomez is a non-profit volunteer organization, established by Presidential Decree, which is active in integrated community development in the Dominican Republic. The activities of this organization are primarily concentrated in the less developed regions of the northwest, near Castillo. Through its programmes with farmers in the region FDG was approached by the recently formed the Fishermen's Association of La Isabela for assistance in developing the communities fishing capabilities.

The La Isabela Fishermen's Association is a cooperative organization located in the village of Castillo, Dominican Republic. The Association presently has forty-two active members and three small boats. Unlike many cooperative groups in the Dominican Republic, this group has successfully organized their efforts within the constraints of the limited resources available, for the benefit of the entire community. The

Association interacts closely with the local farmers cooperative and village women's group.

The FDG, on behalf of the fishermen, approached ICOD through the Montreal based NGO, the Organisation Canadienne pour la Solidarité et la Développement (OCSD), to request support for the proposed project.

Proposal:

It is proposed that ICOD provide financial support for the provision of training and equipment in a three phase project with the La Isabela Fishermen's Association. The project will be coordinated and implemented by the Fundacion Desiderio Gomez who will select local trainers and instructors in fishing methods and gear technology, cooperative administration, and environmental/resource conservation. An on-site coordinator will be provided and supported by the Organisation Canadienne pour la Solidarité et la Développement (OCSD). The input of materials and equipment with appropriate training will allow the cooperative to expand operations beyond the limits imposed by its present resources. In addition, skills levels in boat construction and net manufacture will be improved through the on-the-job training made possible under the project.

Specifically, the project will consist of:

Phase (1) Project Development:

Assessment of available resources, identification of appropriate gear and purchase of some basic equipment already identified as necessary. Phase 1 will use local advisors provided by the FDG from state established technological and biological agencies.

Phase (2) Project Implementation:

Selection of on-site coordinator by ICOD and OCSD. Purchase of supplies to construct fishing gear. Provision of local instructors and trainers by FDG. Provision of training in cooperative management and fishing technology by instructors identified by ICOD (i.e. Coady Institute, etc.).

Phase (3) Extension Programme:

Transfer of information to other fishing communities by on-site coordinator. Workshops on fishing cooperatives by FDG and Fishermen's Association and the on-site coordinator.

The on-site coordinator will provide progress reports directly to ICOD, while financial statements will be provided by the FDG.

Justification in ICOD Mandate:

This project will contribute to the fulfillment of the ICOD mandate in the following ways:

- 1) initiate and support the programmes in developing countries for the improved management and utilization of ocean resources, particularly as a source of food;
- 2) enlist the expertise of people available in Canada and in the developing country;
- 3) develop and sponsor training programmes and technical assistance related to ocean resource development.

Advantages and Benefits:

This project will:

- 1) have a direct impact on the availability of high protein food along the northwest coast of the Dominican Republic, initially in Castillo;
- 2) provide an increase in revenues for the local fishermen from sale of excess catch, resulting in an increased standard of living;
- 3) stimulate community development activities in the Dominican Republic, based on the cooperative movement which has proven successful in other Latin American countries; and
- 4) provide ICOD with information for other potential activities within the Dominican Republic, contributing to the Centre's Latin American/Caribbean initiatives.

Disadvantages:

- 1) The project's initial expenditure focusses on capital equipment purchases. However, most of the work (boat building, net manufacture) will be done locally, and training and extension activities become relatively more important component as the project proceeds.

Relationship to Other Projects:

- 1) This project fits within the framework of ICOD activities related to artisanal fishermen's assistance through training and technical assistance. In future, a cooperant could be posted with this Association to

provide further training in improved fishing methods, fish handling techniques, and in marketing of excess catch. Such a cooperant would be helpful in transferring the benefits gained in this programme to other cooperatives within the Dominican Republic, as well as identifying other programme activities for ICOD in the region.

- 2) Development of cooperatives is a priority for many governments and donor agencies working in Latin America. There is considerable expertise available within the region, in Costa Rica and particularly in Belize (where Spanish is the second language).

Recommendations:

This project provides critical support to an active fishing cooperative working for self sufficiency. It is recommended that the Executive Committee approve the project.



EC86/D3
Project #860030

Project Summary
(Approval)

Title: Manual and Training Course on Research Vessel Operation and Management

Division: Information Services Division

Recipient/Implementing Agency: ICOD with assistance from the Inter-governmental Oceanographic Commission (IOC) and FAO. Recipients include numerous developing countries.

Commencement: November 1986.

Duration: Two years from date of commencement for completion of 3 sub-projects (see summary).

Financial:

The project costs for the three sub-projects are:

Sub-project 1	\$196,325
Sub-project 2	\$104,000
Sub-project 3	\$134,000
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Total	\$438,000

ICOD will provide administrative support for this project. IOC and FAO commitment will consist of in-kind support consisting of appropriate staff time (including travel costs to meetings) and access to information.

Summary:

As a result of the increased awareness of the needs for scientific investigation relating to exploration, exploitation and conservation of marine resources, many developing nations have acquired research vessels of a variety of types and sizes. This trend has been accelerated over the past few years by the requirement of improving the scientific information available to fulfill the obligations resulting from adoption of EEZ's by many coastal states, and by the Convention on the Law of the Sea.

It has become apparent that research vessels have often been required by developing countries without fully understanding the financial and infrastructural requirements of vessel operation. As a result, many vessels remain inoperative due to an inability

to finance, manage and/or operate these vessels. The Inter-governmental Oceanographic Commission (IOC) and the Food and Agricultural Organization of the United Nations (FAO) have received many requests from developing countries for assistance in improving their capability to manage and operate their vessels.

It has been identified, from the efforts of FAO and IOC, that there exists a need for a manual on improved research vessel operation and management, as well as a training course dedicated to improving the management, use and operation of research vessels. FAO and IOC approached ICOD with the task of preparing these materials.

Proposal:

It is proposed that ICOD finance, co-ordinate and administer a three-part project on the preparation of a Manual on research vessel management and operation, preparation of associated training materials and organization of a regional training course. ICOD, in collaboration with IOC, FAO and other agencies when required, will co-ordinate activities involved in the preparation of the Manual. The Centre will provide an ICOD staff project manager and select the expert consultant, in consultation with IOC and FAO. A steering group consisting of representatives from IOC, FAO, ICOD and the expert consultant will meet at specific date of the project. Representatives of other international agencies will be consulted as required.

The project consists of three sub-projects whose management will be overseen by the steering group. The steering group will be responsible for overall programme content and co-ordination; subject matter expert groups will be in charge of the content of each sub-project. In the case of Sub-Project 3, IOC and/or FAO will be responsible for making arrangements with the selected host country for the pilot regional training course.

Specifically, Sub-Project (1) will consist of the preparation of a manual on research vessel operation and management based on the following outline:

- I Introduction
- II General Implications of ownership
- III Planning
- IV Identification of Resources Needed
- V Operational Options
- VI Equipment
- VII Training
- VIII Operational Management
 - Vessel Management
 - Scientific Procedure

- IX Performance Monitoring
- X Other Sources of Information

Sub-project 2 will consist of the preparation of teaching materials consisting of text and audio-visual materials based on the manual prepared in sub-project 1.

Sub-project 3 will consist of the organization and delivery of a pilot regional training course on the management, operation and use of research vessels, aimed at senior professionals drawn from marine science and fisheries research institutions from developing countries.

Justification in Mandate/Corporate Plan:

This project would contribute to the fulfillment of ICOD's mandate in the following ways:

- i) Helps countries to develop their own expertise related to integrated ocean management;
- ii) Enlists the expertise of people and institutions in Canada and in a number of developing countries;
- iii) Facilitates the collection and dissemination of information related to ocean development;
- iv) Sponsors and develops training programmes, technical assistance and advisory services for ocean resource development;
- v) Supports research related to ocean resource development and management.

Advantages/Benefits:

- 1) Both sub-projects fill needs clearly identified by developing states at a previous international workshop.
- 2) The guidebook and the regional course offer cost-effective means of enhancing marine scientific research capabilities; a field which often involves expenditures beyond ICOD's budget.
- 3) ICOD will be able to draw upon the expertise and contacts of IOC and FAO in the implementation of the project.

Recommendations:

The project fills a critical gap in the development of marine scientific research capacities in developing states, with a very broad potential geographic scope.

It is recommended that the Executive Committee approves the three-part project.



EC86/D4
Project #860036

PROJECT SUMMARY
(Approval)

Title: Seamoss Cultivation Programme - Eastern Caribbean

Division: Technical Assistance

Recipient/
Implementing
Agencies:

Recipient - Government of Grenada
Implementing Agencies: Government of Grenada;
Eastern Caribbean Natural Areas Management
Programme (ECNAMP); St. Lucia Government
Fisheries Management Unit (FMU); OECS; ICOD

Commencement: November/December 1986.

Duration: 12 months.

Financial: ICOD contribution: \$85,000
Local contributions: Staff time and office space
as required.

Summary:

Background:

At its meeting of June 12-13, 1986, the Board of Directors gave approval in principle to a 2-year programme of seamoss, cultivation in the Eastern Caribbean involving ECNAMP and four countries. The general objective was to transfer artisanal sea-moss culture technology developed in St. Lucia to other parts of the region. Further investigations were undertaken at the request of the Board, resulting in the following modified plan of action. Major changes are: i) 12 month duration rather than 24, with future activities to depend on initial results; ii) greater involvement of St. Lucia government personnel (who were involved in the earlier project) with less use of expatriates; iii) focus on Grenada, at this stage, as the country with the most direct interest and available trained staff.

Plan of Action:

Funds will be channelled to the OECS Fisheries Desk, which will be responsible for field supervision of activities of the other agencies. The major tasks of the project are set out below:

- i) Training of Grenada Staff - A fisheries assistant from Grenada will be sent to St. Lucia for familiarization with the technology developed in the FMU/IDRC project. ECNAMP and FMU staff will provide approximately 2 weeks training in St. Lucia.
- ii) Site Identification: Grenada - FMU and ECNAMP personnel will undertake general (island-wide) and specific site identification surveys in Grenada.
- iii) Pilot Project Set-Up - ECNAMP and FMU staff will assist Grenada in the set-up of a pilot project for demonstration purposes. Operation of pilot project will be supervised by Grenada personnel, and will be used to generate local interest and assess most appropriate private participants.
- iv) Workshop - Once appropriate participants are identified, a training workshop will be held in St. Lucia. Primary organization by FMU, with participation of ECNAMP and one private operator. Emphasis on practical operations and exposure to private farmers.
- v) Assistance to Commercial Operations - A combination of FMU/ECNAMP staff visits and advisory services will be used to assist initial commercial operators in Grenada. Focus will be on rural women as primary beneficiaries of this activity.
- vi) Market Survey - A market survey will be undertaken to evaluate current and potential markets for seamoss and its products. This will require the initial services of a consultant to assist in the design stage of the survey, in order to ensure that a proper plan of action is prepared in advance.

The survey will be undertaken contemporaneously with the Grenada project. If it is justified by survey results and progress on the Grenada project, planning may be undertaken to pursue similar projects in other countries (e.g.'s Antigua, Trinidad).

Advantages/Benefits:

As in original Board submission.

Disadvantages:

As in original Board submission. Cost factors have now been dealt with satisfactorily.

Relationship to other Projects:

This project involves the OECS Fisheries Desk in an intra-regional transfer of technology, and relates directly to previous and present IDRC research activities in seamoss culture. Any refinements of existing technology generated by further IDRC research will be incorporated into this project.

Financial Implications:

ICOD funding will include: training of Grenada staff; set-up of pilot project in Grenada; training workshop for women from Grenada, to be held in St. Lucia; assistance in establishment of production units; a market survey for inter-island and extra-regional trade.

Local contribution will include personnel time beyond that included in budget, and portion of administrative costs.

ICOD Contribution: \$85,000 over one year.

Local contribution: Approximately \$25,000 over 1-year, to be detailed in Memorandum of Understanding.

Recommendations:

It is recommended that the Executive Committee approve this project.



BD 80/D 57

Proj # 850014

~~File 3004.2~~

PROJECT SUMMARY

Approval for Extension
of Project and Cost Increases

Division: Training

Project Title: One year Marine Affairs Diploma Program

Implementing Agencies: Université du Québec à Rimouski (UQAR)
and Dalhousie University

Commencement and Duration: Six Years
1986-1992

ICOD Costs: \$3,780,000

Background

In the 1985/86 fiscal year, proposals were invited from universities across Canada for the development of a one year Diploma Program in Marine Affairs.

The Marine Affairs Program was designed in response to the lack of trained managers and professionals in coastal states who are required to address the short and long term problems associated with ocean management. At present, no university-affiliated program in Marine Affairs is offered in Canada.

A one year program in Marine Affairs will enable qualified individuals from developing countries and Canada to receive such training. Two Canadian universities, one Anglophone (Dalhousie University) and one Francophone (UQAR), have been selected by ICOD to design and deliver the program. This program is intended to provide training at a graduate level for administrators, policy makers, and managers in government, business/industry, and international organizations who are involved in administering and designing policies concerned with marine affairs.

To ensure that professionals from the Third World have access to the programs, ICOD will award 20 scholarships per year to students from developing coastal nations who are accepted into the program. Ten scholarships will be reserved for the Anglophone program students, and ten for the Francophone students.

The extension of marine jurisdictions poses enormous planning and resources management challenges for developing countries. There is a need to provide managers, policy makers and those responsible for decision making with a broad overview of the problems associated with the exploitation and conservation of marine resources. There is also a need to provide training in analyzing and synthesizing issues related to conflict resolution and creative problem solving.

Since the large majority of developing coastal states lack the trained manpower which is required to adequately manage their extended jurisdictions, this program addresses a very real need for enhancing human resources development.

Proposal

The university sector has emphasized that it is desirable and necessary to start new programs with 5 to 8 years assured funding support for staff and students. This time span permits the program to become integrated into the overall budgetary framework of the university and assures that the activity (and participants) will not be abandoned suddenly as a consequence of a lack of funds. The universities recommend that approval be given by ICOD to extend the period of support beyond the four year term proposed. Under current conditions of fiscal restraint it is very unlikely that any new program which as the Marine Affairs diploma could receive an independent budget allocation from within university sources. Over a period of six years it may be anticipated that the base of support will be broadened from various international and Canadian sources and that there will also be internal university redistribution and development mechanisms employed.

Financial Implications

Since the project was originally conceptualized in 1985, ICOD has received detailed financial estimates from the universities. ICOD has revised the budget forecast to take into consideration the actual financial forecasts submitted by the universities, inflationary aspects, and the increases in current scholarships rates.

During the August 13-14, 1985 Board meeting, the ICOD Board approved unanimously three interconnected projects in the area of Marine Affairs:

	\$ Costs up to:
A. Materials Development	\$580,000
B. Marine Affairs Course	\$348,000
C. Marine Affairs Diploma at Anglophone and Francophone Universities for 3-5 years	<u>\$1,950,000</u>
Total	<u>\$2,878,000</u>

Item B, the Marine Affairs course will not be undertaken. This represents a savings of \$348,000 over the next three years.

The revised ICOD contribution for program start up and operations for ~~six~~ years will amount to \$850,000 for each of the two universities. Scholarships provisions for the two university programs will amount to a total of \$2,080,000 for five years. The overall cost for both program implementation and scholarships will amount up to #3,780,000.00 for six years.

The universities will contribute in kind towards the project through support services to students, professors and researchers, faculty supervisory time, teaching time, communications, facilities e.g. furniture, equipment, library facilities, international student services.

Forecasted costs for a six year period will amount to the following for both universities:

Program Implementation Initial year I 1986-87	\$200,000
Course Delivery Years 2-6 1987-92	\$1,500,000
Scholarships - 20 per year for years 2-6, 1987-92	<u>\$2,080,000</u>
Total up to	<u>\$3,780,000</u>

Recommendation

That approval be given to revise the budget and extend the Marine Affairs Diploma program for two additional years up to 1992 as described in BD86/D.

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International Centre for Ocean Development
Centre international d'exploitation des océans

EC87/D8
Project #86-0065

PROJECT SUMMARY

Title: Preparatory Study for the Establishment of the Pacific Islands Marine Resources Information System.

Division: Information

Recipient/
Implementing: University of the South Pacific/Pacific
Agency Information Centre

Start/
Duration: May - June, 1987

Summary

As recommended by the 18th Regional Technical Meeting on Fisheries held in Noumea, New Caledonia, from 4th to 8th August 1986, a SPC/USP/FFA meeting was held in Noumea, New Caledonia, March 23-27, 1987 with the following objectives:

- (a) to discuss the development and the implications of a regional marine resources information system based on strengthening of existing resources, staff and equipment, automation and communications.
- (b) to discuss a preliminary draft project proposal prepared by USP/SPC and to produce from this a final draft project proposal for submission in 1987 to the South Pacific Regional Technical Meeting on Fisheries in August, the University of the South Pacific Council in October, the South Pacific Commission Committee of Representatives of Participating Governments to the FFC, and ultimately to prospective donors.

The SPC/USP/FFA Fisheries Information Advisory Group accordingly approved a draft project proposal (Appendix A). Because insufficient information was available at the time of the Advisory Group Meeting to define precise funding requirements of



each fisheries department or focal point for the draft proposal, the proposal recommends that, as a preparatory activity, an information gathering task be undertaken to determine funding requirements for those parts of Phase I (years 1 and 2) of the proposed PIMRIS, where such information is not already available.

The information required for each focal point falls into two categories. The first concerns the organization of local or national fisheries information collections; the second information services for fisheries personnel. In order to determine the exact nature of local or national fisheries information collections, to budget for their organization and enhancement, and to plan for input to the proposed fisheries and marine regional database, the following information is needed:

- 1) Size and type of collection
- 2) Growth rate of collection
- 3) Needs for a basic reference collection
- 4) Extent of interface with a national library, where one exists
- 5) Equipment available, what it is used for at present, and its capabilities
- 6) Library and fisheries information staff, numbers, capabilities, and training needs
- 7) Training needs
- 8) Numbers, type and level of fisheries personnel
- 9) Information needs of fisheries personnel

The survey will be coordinated by the Pacific Information Centre (PIC). PIC will design a questionnaire which will be the basis for eliciting hard facts from the focal points. Information for each focal point will be compiled by a librarian and a fisheries officer. In some cases local personnel will perform this task and no visit is required. In other cases a two person librarian/fisheries officer team will visit the focal points. Results of the survey will be sent to PIC where they will be synthesized.

A full report will also be provided for ICOD.

Justification in ICOD Mandate:

This project contributes to the ICOD mandate in the following ways:

- support for the collection and dissemination of information relevant to ocean resource development.
- indigenous expertise and institutions in developing countries are strengthened.



Advantages/Benefits

1. Without more precise information on the size and nature of existing local and national fisheries and marine information collections, the services that can be provided and the needs of users, budgeting for the PIMRIS proposal cannot be estimated adequately.
2. The information obtained in this study will, in addition to providing data for budgeting, provide ICOD with baseline data on information needs and capabilities in the region. This will be used for strategic planning of the Information Division's future project priorities in the South Pacific.

Relationship to Other Projects

This project links up with ongoing Technical Assistance projects in the region and is a direct outgrowth of the Fakahau and Shepard recommendations on fisheries research needs in the South Pacific.

Financial Implications

The detailed budget is still being prepared but will not exceed \$20,000. Funding is needed for travel and per diem expenses of the 2 person team. Personnel will be supplied by the participating institutions at no cost.

Travel: \$13,000 (estimate)
Per diems: \$ 7,000 (estimate)

Evaluation/Recommendation

This small project will enable the Pacific Islands states to better focus their costs for fisheries and marine information services and will provide ICOD with usable baseline information on which to make funding decisions for anticipated future project proposals concerning support for regional information systems in the Pacific Islands.

It is recommended that this project be supported.



International Centre for Ocean Development
Centre international d'exploitation des océans

APPROVED PROJECTS

January 30, 1987

TECHNICAL ASSISTANCE

Caribbean Basin
(regional)

85-0010 OECS Fisheries Desk - A Fisheries Support Desk is being established within the Organization of Eastern Caribbean States (OECS). This unit will provide the countries of the region with a permanent regional fisheries capability and will promote, coordinate, and facilitate regional fisheries cooperation. \$668,000 Cdn. (3 years).

86-0036 Sea Moss Cultivation Programme (Eastern Caribbean) - In cooperation with the Organization of Eastern Caribbean States, the St. Lucia and Grenada Governments, and the Eastern Caribbean Natural Areas Management Programme, support is being provided for inter-island transfer of small-scale seamoss mariculture techniques. \$85,000 Cdn. (1 year).

(bilateral)

86-0033 Fish Marketing (Costa Rica) - Expert advisors are being provided to work with the Instituto de Fomento Cooperativo in Costa Rica to assist the Federation of Fishing Cooperatives in identifying and recommending a well-defined marketing strategy focussed on both domestic and export markets. \$27,000 Cdn. (1 year).

86-0072 Economic Analysis and Economic Policy Development (Costa Rica) - Economic policy recommendations for promoting the development of Costa Rican fisheries based on an economic analysis of existing and potential fisheries are being prepared for the Ministry of Agriculture and Livestock. \$160,000 Cdn. (1½ years).

86-0034 Fishermen's Assistance Programme (Dominican Republic)- Technical and advisory assistance are being provided to enable the La Isabela Fishermen's Cooperative to develop an artisanal fisheries extension programme along the North coast of the Dominican Republic. \$70,000 Cdn. (1 year).



Technical Assistance -
Approved Projects

- 86-0035 Fisheries Training (Pictou) - Training in outboard motor and diesel engine maintenance for 15 fishermen from St. Lucia and Barbados was held at Pictou College in August 1986. \$60,000 Cdn. (2 months).
- 86-0048 Dominica Licensing System - A draft set of fisheries regulations have been refined in order to enable Dominica to establish a fisheries licensing scheme. \$10,000 Cdn. (1 month).

Indian Ocean
(bilateral)

- 86-0051 Economically Important Reef Fish (Maldives) - On behalf of the Ministry of Fisheries, the wide variety of economically important reef fish in the Maldives will be identified and catalogued with the help of taxonomic experts and underwater photography. The resulting species identification sheets will be used by marine scientists, fishermen and government officials. \$92,150 Cdn. (6 months).
- 86-0094 Marine Surveillance - Maldives - The Ministry of Defence and National Security has requested an assessment of the requirements, costs and the national capacity for surveillance of the Exclusive Economic Zone and for a Search and Rescue Patrols program suitable to Maldivian conditions. Detailed recommendations and a plan-of-action for the development and implementation of these programs will be prepared. \$79,500 Cdn. (6 months).

South Pacific
(regional)

- 85-0011 FFA Surveillance - This project will enable the South Pacific Forum Fisheries Agency (FFA) to enhance the surveillance and enforcement capabilities of its independent member states. The specific objectives include the establishment of a regional surveillance and enforcement advisory service, support for its related operations and the training of surveillance officers. A Canadian surveillance advisor has been posted to FFA for a two year period. \$600,000 Cdn. (3 years).

- South-South exchanges in this key area are being encouraged (see project 86-0092).



Technical Assistance -
Approved Projects

85-0013 Fisheries Research Needs and Assessment - The research
86-0075 needed to advance the further management and
development of the South Pacific fisheries and the
potential role of Canadian expertise in expanding the
region's small-scale fisheries were assessed in a study
carried out by a Canadian and a South Pacific
consultant on behalf of the South Pacific Forum
Fisheries Agency. \$55,000 Cdn. (6 months).

- In 1987, this assessment will be extended to
countries not previously covered. \$25,000 Cdn.
(3 months).

86-0086 Research Institute Feasibility - In cooperation with
the University of the South Pacific (USP) and the South
Pacific Forum Fisheries Agency, a feasibility study and
review of the fisheries research activities of the USP,
including recommendations for the creation of a
regional fisheries research institute, will be
undertaken by Canadian and Pacific personnel. \$45,000
Cdn. (6 months).

86-0041 Regional Marine Geology Programme (CCOP/SOPAC) - The
Committee for Co-ordination of Joint Prospecting for
Mineral Resources in South Pacific Offshore Areas
(CCOP/SOPAC) is developing a programme for the
identification and management of nearshore mineral
resources in the South Pacific. A Canadian geologist
will be posted to the CCOP/SOPAC Secretariat in Fiji
for two years. \$250,000 Cdn. (2 years).

(bilateral)

85-0012 Vanuatu Fisheries Extension Centres - In cooperation
with CUSO, this project will assist the Department of
Fisheries in furthering artisanal fisheries extension
centres and services in Vanuatu villages. \$23,400 Cdn.
(2 years).

86-0082 VFDP Evaluation - A comprehensive review of the five-
year Village Fisheries Development Programme (VFDP) is
being undertaken by a Canadian consultant to assist the
Government of Vanuatu in the long-term planning for its
small-scale fisheries. The results of this review also
will assist ICOD and other organizations to assess
applications for similar programs in other islands in
the region. \$45,000 Cdn. (1 year).



Technical Assistance -
Approved Projects

- 86-0083 Vanuatu Fishermen's Study/Training Tour - An overseas training tour for leading village fishermen to expose them to improved fish catching and handling methods is being supported on behalf of the Government of Vanuatu. In addition to providing insight into two important target markets, the project will contribute to a general programme for the improvement of fish handling and marketing in Vanuatu. \$41,000 Cdn. (2 months).
- 86-0085 Fisheries Short Courses - In cooperation with CUSO, two short courses will be delivered at fisheries extension centres in Vanuatu which will focus on fishing skills and cooperative management procedures. \$3,000 Cdn. (1 month).
- 86-0079 Communications Study (FSM) - In cooperation with the South Pacific Forum Fisheries Agency, a surveillance communications system for the Federated States of Micronesia is being designed with the help of a Canadian consultant to facilitate communications between these widespread islands. \$15,000 Cdn. (1 month).
- 86-0087 Kiribati Boundary - Advisory assistance is being provided to Kiribati on positions with respect to maritime boundary delimitation issues. \$20,000 Cdn. (2 months).

West Africa
(bilateral)

- 86-0053 Morocco Marine Science Advisory Mission - In collaboration with the Food and Agriculture Organization of the United Nations, a team of two advisors were sent to Morocco to prepare detailed recommendations for the establishment of a post-graduate marine science programme at the University of Mohammed V and for the development of a research programme to study upwelling phenomena in Northwest Africa at the Institut scientifique des pêches maritimes. \$10,000 Cdn. (1 month).



Technical Assistance -
Approved Projects

86-0054 Morocco Fisheries Investigation - In response to a
86-0055 request from the Institute scientifique des pêches
maritimes, fisheries management and development in
Morocco were examined and evaluated. ICOD assistance
was requested in the field of fisheries data management
(86-0055) \$10,000 Cdn. (1 month).

- In response to Morocco's request, a Canadian expert is being provided to assist the Moroccan Ministry of Fisheries to develop and implement a national fisheries data management system. \$150,000 Cdn. (2 years).

Global

86-0030 Research Vessel Operation - A multi-authored manual, associated training materials and regional workshops are being prepared on research vessel operation and management, in cooperation with FAO and IOC, to maximize the use and benefit of research vessels in the developing countries. ICOD is also directly providing the coordination for this program. \$434,100 Cdn. (3 years).

86-0093 Boundary Delimitation (Computer Programme) - Under the technical supervision of the Canadian Hydrographic Service, an improved method for the computer generation of maritime boundary delimitation using microcomputers is being developed. The resulting programme and user's manual will be distributed internationally. \$15,000 Cdn. (3 months).

86-0092 Indian Ocean - South Pacific Exchange - The participation of a representative of the Seychelles government to the Surveillance Workshop in Honiara in November 1986 was funded as part of a program to enhance cross-regional exchange of information and experience. \$5,000 Cdn. (1 month).



INFORMATION DIVISION

Indian Ocean

- 86-0037 Marine Information (Sri Lanka) - The establishment of a Marine Affairs and Aquatic Resources Information System (MAARIS) at the National Aquatic Resources Agency in Sri Lanka is being co-funded by the International Development Research Centre and ICOD. ICOD funding is focussed on the establishment of an Extension Unit as part of MAARIS. \$88,000 Cdn. (2 years).
- 86-0064 Indian Ocean Newsletter - Support was provided for the production and distribution of a newsletter updating the status of marine affairs in the Indian Ocean region by the Indian Ocean Marine Affairs Cooperation (IOMAC) Secretariat in advance of the IOMAC Conference held in January 1987. \$5,000 Cdn. (1 month).
- 86-0077 Regional Compendium (Indian Ocean) - In collaboration with the Food and Agriculture Association of the United Nations, a compendium on fisheries legislation in the Indian Ocean region has been prepared for distribution to fisheries officers, government officials, planners and researchers in the region. \$36,400 Cdn. (3 months).

South Pacific

- 86-0065 Study of Information Systems (South Pacific) - In collaboration with the South Pacific Forum Fisheries Agency, the South Pacific Commission and the Pacific Information Centre, an assessment of current fisheries and marine information and data and statistics systems and recommendations for the South Pacific are being prepared. \$15,000 Cdn. (1 month).

Global

- 85-0020 Marine Affairs Bibliography - Two hundred one-year subscriptions to the Marine Affairs Bibliography published quarterly by the Dalhousie Law School were distributed to selected developing country institutions for reference and evaluation. This publication collects references to private and public elements of marine law, and other disciplines in the social and natural sciences relevant to marine affairs. \$19,000 Cdn. (1 year).



Information Division -
Approved Projects

85-0021 Ocean Training Directory - The first phase of producing
86-0063 a directory database identifying marine-related
training and education available in Canadian
universities, colleges, government departments and the
private sector was carried out by DPA Group Inc.
\$37,500 Cdn. (6 months).

- The information gathered in Phase I is now being
verified, updated, and prepared for printing.
\$34,000 Cdn. (4 months).

86-0023 World Fisheries Map - In cooperation with the World
Food Day Association and with World Food Day 1986, a
world map of fisheries resources was prepared in french
and english to demonstrate the role of fisheries for
the world economy. \$70,000 Cdn. (1 year).



TRAINING DIVISION

Courses

West Africa (regional)

- 86-0060 Stock Assessment Training (CECAF) - In response to a request from the Fishery Committee for the Eastern Central Atlantic (CECAF), a training course in tropical stock assessment will be designed and delivered in French in Sénégal for participants from francophone countries in West Africa. In collaboration with international experts in tropical stock assessment, a team of Canadian experts will develop and deliver this course. \$373,000 Cdn. (2 years).

Global

- 85-0014 Marine Affairs Diploma Course - A multi-disciplinary, one-year diploma programme in Marine Affairs is being established at the Université de Québec à Rimouski and at Dalhousie University to commence in the 1987-88 academic year. The Programmes will focus on the various uses of the oceans and the interrelationships among sectors. Funding has been provided for the development of this program and to supplement university financing for five years. \$1,700,000 Cdn. (6 years). (See also 86-0074 under Scholarships.)
- 86-0070 Marine Affairs Diploma Materials - Assistance is being provided to the Université de Québec à Rimouski and to Dalhousie University for the preparation and publication of curriculum materials required for effective delivery of the core course of the Marine Affairs Diploma Programme (85-0014). \$475,000 Cdn. (4 years).
- 85-0022 Stand Alone Materials (WMU) - Key background materials are being developed for reference use by students from developing countries. The materials will be used in conjunction with courses in marine affairs as well as technical subjects. They are being developed in conjunction with the Marine Affairs Training Advisory Group (86-0071) and with the ICOD sponsored Marine Affairs Courses in Canada (85-0014) and WMU (85-0015). \$195,000 Cdn. (3 years).



Training Division -
Approved Projects

- 85-0071 Marine Affairs Training Advisory Group - An international body of experts will be convened in March, 1987 to advise on the development of the "stand-alone" materials on marine affairs (85-0022) and to assist in the identification of teaching materials in marine affairs by the Université de Québec à Rimouski and Dalhousie University (85-0070). \$50,000 Cdn. (4 years).
- 85-0015 WMU Marine Affairs Course - Assistance is being
85-0069 provided to the World Maritime University (WMU), Sweden, for the design and delivery in May 1986 and August 1987 of a short interdisciplinary training course in marine affairs accompanied by teaching materials, aimed at senior experts and administrators of developing countries. This course is now compulsory for all incoming students. \$65,000 Cdn. (2 years).
- The marine affairs course was modified and delivered in November 1986 at the special request of the 71 graduating students of World Maritime University who did not participate in the May 1986 delivery of the course. \$35,000 Cdn. (6 months).
- 85-0016 WMU Maritime Law Course - A short course in maritime law at the World Maritime University was developed and delivered along with course materials in July 1986. The course will be further refined and repeated in 1987. \$25,000 Cdn. (2 years).
- 86-0028 Non-Fuel Mineral Course (Halifax) - A two-week course in offshore non-fuel mineral resource assessment and planning will be developed and delivered in conjunction with experts from Canada's Department of Energy, Mines and Resources and the United Nations - Oceans, Economics and Technology Branch in March 1987. Enrollment is limited to 15 senior-level geologists selected from developing countries, eight of whom will be sponsored by ICOD and three by the Canadian International Development Agency. \$50,000 Cdn. (1 year).
- 86-0059 Ocean Boundary Making (SEAPOL) - A training course in ocean boundary making from a legal and policy perspective being developed by South East Asia Project on Ocean Law, Policy and Management (SEAPOL) and the Institute for Transportation and Ocean Policy Studies will be held in June 1987 in Singapore for participants from Thailand, Phillipine, Malaysia and Indonesia. A team of Canadian and Southeast Asian experts, including an ICOD staff member, will deliver the course. \$92,200 Cdn. (1 year).



Training Division -
Approved Projects

86-0078 Maritime Boundary Delimitation (Erindale College) - In cooperation with Erindale College of the University of Toronto, a six-week technical course on maritime boundary delimitation is being developed. This course will be delivered as a pilot on a one-on-one basis for participants from three Caribbean nations in early 1987. \$35,500 Cdn. (2 months).

Scholarships

Caribbean Basin

85-0024 Short Term Academic Exchange ('86-'88) - A limited number of scholarships are awarded to students registered in a post-graduate marine-related program at the University of the West Indies to pursue short-term graduate-level study at Canadian universities. \$50,000 Cdn. (2 years). (See also 86-0025).

Indian Ocean

86-0081 IOI Scholarships (Indian Ocean) ('87) - A limited number of awards are being granted to participants from the Indian Ocean region to attend the International Ocean Institute's Summer Training Programme in the Management and Conservation of Marine Resources: The Exclusive Economic Zone, held in the Indian Ocean region. \$50,000 Cdn. (1 year). (See also 86-0018).

South Pacific

86-0026 Fishing Skills Course (SPC) - Two scholarships for participants from the Solomon Islands and Vanuatu were awarded for a course in fishing skills extension methods offered by the South Pacific Commission (SPC) in 1986. \$10,000 Cdn. (2 months).

86-0062 Tropical Fisheries Diploma - Seven scholarships were granted to students from the South Pacific region to pursue a three-year Tropical Fisheries diploma programme at the University of the South Pacific. \$232,300 Cdn. (4 years).



Training Division -
Approved Projects

Global

- 85-0017 ICOD Scholarship Programme ('85-'87) - Forty-four scholarships and twenty-seven renewals were granted under this programme to qualified students from developing countries for the pursuit of marine-related study at the Master's level in Canadian universities. \$473,000 Cdn. This programme is being replaced in 1987 by 86-0076. (2 years).
- 86-0076 ICOD Scholarship Programme ('87-'91) - Twenty scholarships are granted annually to qualified candidates from selected developing countries for study at the Master's level in marine-related fields at Canadian universities. \$2,984,700 Cdn. (4 years).
- 86-0074 Marine Affairs Diploma Scholarships ('87-'92) - A total of twenty scholarships will be granted annually to qualified candidates from selected developing countries to pursue the multi-disciplinary one-year Diploma programme in Marine Affairs in Canada (85-0014). Ten of these scholarships will be awarded for study at Dalhousie University and ten will be awarded for study at the Université de Québec à Rimouski. \$2,080,000 Cdn. (5 years).
- 85-0018 IOI Scholarships (Halifax) ('86-'92) - Up to four awards are granted annually to participants from selected developing countries to attend the International Ocean Institute's Summer Training Programme in the Management and Conservation of Marine Resources: The Exclusive Economic Zone, held in Halifax. \$208,000 Cdn. (6 years). (See also 86-0081).
- 85-0019 World Maritime University ('85-'91) - Two scholarships are granted annually to candidates from selected developing countries for study leading to the Master's degree at the World Maritime University. \$403,200 Cdn. (6 years).
- 86-0025 Regional University Scholarships ('86-'91) - A total of six scholarships are granted annually to qualified candidates from selected developing countries for studies at the Master's level in marine-related fields at regional universities. Three of these scholarships are granted for study at the University of the West Indies and three are granted for study at the University of Papua New Guinea or the University of the South Pacific. \$576,000 Cdn. (5 years).



International Centre for Ocean Development
Centre international d'exploitation des océans

March 2, 1987

Our File/Notre référence
4008

Your File/Votre référence

Dear Sir/Madam,

Attached, for your information is a current list of projects approved for support by the International Centre for Ocean Development.

ICOD focusses exclusively on ocean-related aid provided primarily through training, information and technical assistance with a special emphasis on institution-building. Because of our small size and sectoral focus, ICOD is able to concentrate on small, discrete projects which often fall below the threshold of concern of major funding agencies, but are nonetheless critical to the establishment of coordinated ocean management in developing countries and regions. Large, capital-intensive projects are avoided and emphasis is placed on the provision of information, advice, and training rather than hardware or machinery.

As you will note from the list of approved projects attached, in its early years ICOD is focussing on the coastal states of the South Pacific, Caribbean Basin, West African and selected countries in the Southwest Indian Ocean regions. In particular, our funds are targetted for the support of projects in the smaller states in these regions which require fundamental support in building their own ocean management institutions and expertise. Support is provided for projects directed at cooperative regional management of ocean resources as well as for bilateral projects which contribute directly to "grass-roots" or community level development.

Requests for up-dated versions of this list, or for further information on ICOD programmes, should be addressed to the care of the Director, Information Division, at ICOD.

Sincerely,

A handwritten signature in dark ink, appearing to read 'G. Vernon', with a long horizontal flourish extending to the right.

Gary C. Vernon
President

GCV:ZS/ad
Attach.



International Centre for Ocean Development
Centre international d'exploitation des océans

APPROVED PROJECTS

January 30, 1987

TECHNICAL ASSISTANCE

Caribbean Basin
(regional)

- 85-0010 OECS Fisheries Desk - A Fisheries Support Desk is being established within the Organization of Eastern Caribbean States (OECS). This unit will provide the countries of the region with a permanent regional fisheries capability and will promote, coordinate, and facilitate regional fisheries cooperation. \$668,000 Cdn. (3 years).
- 86-0036 Sea Moss Cultivation Programme (Eastern Caribbean) - In cooperation with the Organization of Eastern Caribbean States, the St. Lucia and Grenada Governments, and the Eastern Caribbean Natural Areas Management Programme, support is being provided for inter-island transfer of small-scale seamoss mariculture techniques. \$85,000 Cdn. (1 year).
- (bilateral)
- 86-0033 Fish Marketing (Costa Rica) - Expert advisors are being provided to work with the Instituto de Fomento Cooperativo in Costa Rica to assist the Federation of Fishing Cooperatives in identifying and recommending a well-defined marketing strategy focussed on both domestic and export markets. \$27,000 Cdn. (1 year).
- 86-0072 Economic Analysis and Economic Policy Development (Costa Rica) - Economic policy recommendations for promoting the development of Costa Rican fisheries based on an economic analysis of existing and potential fisheries are being prepared for the Ministry of Agriculture and Livestock. \$160,000 Cdn. (1½ years).
- 86-0034 Fishermen's Assistance Programme (Dominican Republic)- Technical and advisory assistance are being provided to enable the La Isabela Fishermen's Cooperative to develop an artisanal fisheries extension programme along the North coast of the Dominican Republic. \$70,000 Cdn. (1 year).



- 86-0035 Fisheries Training (Pictou) - Training in outboard motor and diesel engine maintenance for 15 fishermen from St. Lucia and Barbados was held at Pictou College in August 1986. \$60,000 Cdn. (2 months).
- 86-0048 Dominica Licensing System - A draft set of fisheries regulations have been refined in order to enable Dominica to establish a fisheries licensing scheme. \$10,000 Cdn. (1 month).

Indian Ocean
(bilateral)

- 86-0051 Economically Important Reef Fish (Maldives) - On behalf of the Ministry of Fisheries, the wide variety of economically important reef fish in the Maldives will be identified and catalogued with the help of taxonomic experts and underwater photography. The resulting species identification sheets will be used by marine scientists, fishermen and government officials. \$92,150 Cdn. (6 months).
- 86-0094 Marine Surveillance - Maldives - The Ministry of Defence and National Security has requested an assessment of the requirements, costs and the national capacity for surveillance of the Exclusive Economic Zone and for a Search and Rescue Patrols program suitable to Maldivian conditions. Detailed recommendations and a plan-of-action for the development and implementation of these programs will be prepared. \$79,500 Cdn. (6 months).

South Pacific
(regional)

- 85-0011 FFA Surveillance - This project will enable the South Pacific Forum Fisheries Agency (FFA) to enhance the surveillance and enforcement capabilities of its independent member states. The specific objectives include the establishment of a regional surveillance and enforcement advisory service, support for its related operations and the training of surveillance officers. A Canadian surveillance advisor has been posted to FFA for a two year period. \$600,000 Cdn. (3 years).
- South-South exchanges in this key area are being encouraged (see project 86-0092).



Technical Assistance -
Approved Projects

- 85-0013 Fisheries Research Needs and Assessment - The research
86-0075 needed to advance the further management and
development of the South Pacific fisheries and the
potential role of Canadian expertise in expanding the
region's small-scale fisheries were assessed in a study
carried out by a Canadian and a South Pacific
consultant on behalf of the South Pacific Forum
Fisheries Agency. \$55,000 Cdn. (6 months).
- In 1987, this assessment will be extended to
countries not previously covered. \$25,000 Cdn.
(3 months).
- 86-0086 Research Institute Feasibility - In cooperation with
the University of the South Pacific (USP) and the South
Pacific Forum Fisheries Agency, a feasibility study and
review of the fisheries research activities of the USP,
including recommendations for the creation of a
regional fisheries research institute, will be
undertaken by Canadian and Pacific personnel. \$45,000
Cdn. (6 months).
- 86-0041 Regional Marine Geology Programme (CCOP/SOPAC) - The
Committee for Co-ordination of Joint Prospecting for
Mineral Resources in South Pacific Offshore Areas
(CCOP/SOPAC) is developing a programme for the
identification and management of nearshore mineral
resources in the South Pacific. A Canadian geologist
will be posted to the CCOP/SOPAC Secretariat in Fiji
for two years. \$250,000 Cdn. (2 years).
- (bilateral)
- 85-0012 Vanuatu Fisheries Extension Centres - In cooperation
with CUSO, this project will assist the Department of
Fisheries in furthering artisanal fisheries extension
centres and services in Vanuatu villages. \$23,400 Cdn.
(2 years).
- 86-0082 VFDP Evaluation - A comprehensive review of the five-
year Village Fisheries Development Programme (VFDP) is
being undertaken by a Canadian consultant to assist the
Government of Vanuatu in the long-term planning for its
small-scale fisheries. The results of this review also
will assist ICOD and other organizations to assess
applications for similar programs in other islands in
the region. \$45,000 Cdn. (1 year).



Technical Assistance -
Approved Projects

- 86-0083 Vanuatu Fishermen's Study/Training Tour - An overseas training tour for leading village fishermen to expose them to improved fish catching and handling methods is being supported on behalf of the Government of Vanuatu. In addition to providing insight into two important target markets, the project will contribute to a general programme for the improvement of fish handling and marketing in Vanuatu. \$41,000 Cdn. (2 months).
- 86-0085 Fisheries Short Courses - In cooperation with CUSO, two short courses will be delivered at fisheries extension centres in Vanuatu which will focus on fishing skills and cooperative management procedures. \$3,000 Cdn. (1 month).
- 86-0079 Communications Study (FSM) - In cooperation with the South Pacific Forum Fisheries Agency, a surveillance communications system for the Federated States of Micronesia is being designed with the help of a Canadian consultant to facilitate communications between these widespread islands. \$15,000 Cdn. (1 month).
- 86-0087 Kiribati Boundary - Advisory assistance is being provided to Kiribati on positions with respect to maritime boundary delimitation issues. \$20,000 Cdn. (2 months).

West Africa
(bilateral)

- 86-0053 Morocco Marine Science Advisory Mission - In collaboration with the Food and Agriculture Organization of the United Nations, a team of two advisors were sent to Morocco to prepare detailed recommendations for the establishment of a post-graduate marine science programme at the University of Mohammed V and for the development of a research programme to study upwelling phenomena in Northwest Africa at the Institut scientifique des pêches maritimes. \$10,000 Cdn. (1 month).



Technical Assistance -
Approved Projects

86-0054 Morocco Fisheries Investigation - In response to a
86-0055 request from the Institute scientifique des pêches
maritimes, fisheries management and development in
Morocco were examined and evaluated. ICOD assistance
was requested in the field of fisheries data management
(86-0055) \$10,000 Cdn. (1 month).

- In response to Morocco's request, a Canadian expert is being provided to assist the Moroccan Ministry of Fisheries to develop and implement a national fisheries data management system. \$150,000 Cdn. (2 years).

Global

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INFORMATION DIVISION

Indian Ocean

- 86-0037 Marine Information (Sri Lanka) - The establishment of a Marine Affairs and Aquatic Resources Information System (MAARIS) at the National Aquatic Resources Agency in Sri Lanka is being co-funded by the International Development Research Centre and ICOD. ICOD funding is focussed on the establishment of an Extension Unit as part of MAARIS. \$88,000 Cdn. (2 years).
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- 86-0077 Regional Compendium (Indian Ocean) - In collaboration with the Food and Agriculture Association of the United Nations, a compendium on fisheries legislation in the Indian Ocean region has been prepared for distribution to fisheries officers, government officials, planners and researchers in the region. \$36,400 Cdn. (3 months).

South Pacific

- 86-0065 Study of Information Systems (South Pacific) - In collaboration with the South Pacific Forum Fisheries Agency, the South Pacific Commission and the Pacific Information Centre, an assessment of current fisheries and marine information and data and statistics systems and recommendations for the South Pacific are being prepared. \$15,000 Cdn. (1 month).

Global

- 85-0020 Marine Affairs Bibliography - Two hundred one-year subscriptions to the Marine Affairs Bibliography published quarterly by the Dalhousie Law School were distributed to selected developing country institutions for reference and evaluation. This publication collects references to private and public elements of marine law, and other disciplines in the social and natural sciences relevant to marine affairs. \$19,000 Cdn. (1 year).



Information Division -
Approved Projects

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- The information gathered in Phase I is now being
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Food Day Association and with World Food Day 1986, a
world map of fisheries resources was prepared in french
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the world economy. \$70,000 Cdn. (1 year).



TRAINING DIVISION

Courses

West Africa (regional)

86-0060 Stock Assessment Training (CECAF) - In response to a request from the Fishery Committee for the Eastern Central Atlantic (CECAF), a training course in tropical stock assessment will be designed and delivered in French in Sénégal for participants from francophone countries in West Africa. In collaboration with international experts in tropical stock assessment, a team of Canadian experts will develop and deliver this course. \$373,000 Cdn. (2 years).

Global

85-0014 Marine Affairs Diploma Course - A multi-disciplinary, one-year diploma programme in Marine Affairs is being established at the Université de Québec à Rimouski and at Dalhousie University to commence in the 1987-88 academic year. The Programmes will focus on the various uses of the oceans and the interrelationships among sectors. Funding has been provided for the development of this program and to supplement university financing for five years. \$1,700,000 Cdn. (6 years). (See also 86-0074 under Scholarships.)

86-0070 Marine Affairs Diploma Materials - Assistance is being provided to the Université de Québec à Rimouski and to Dalhousie University for the preparation and publication of curriculum materials required for effective delivery of the core course of the Marine Affairs Diploma Programme (85-0014). \$475,000 Cdn. (4 years).

85-0022 Stand Alone Materials (WMU) - Key background materials are being developed for reference use by students from developing countries. The materials will be used in conjunction with courses in marine affairs as well as technical subjects. They are being developed in conjunction with the Marine Affairs Training Advisory Group (86-0071) and with the ICOD sponsored Marine Affairs Courses in Canada (85-0014) and WMU (85-0015). \$195,000 Cdn. (3 years).



Training Division -
Approved Projects

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- 85-0015 WMU Marine Affairs Course - Assistance is being
85-0069 provided to the World Maritime University (WMU), Sweden, for the design and delivery in May 1986 and August 1987 of a short interdisciplinary training course in marine affairs accompanied by teaching materials, aimed at senior experts and administrators of developing countries. This course is now compulsory for all incoming students. \$65,000 Cdn. (2 years).
- The marine affairs course was modified and delivered in November 1986 at the special request of the 71 graduating students of World Maritime University who did not participate in the May 1986 delivery of the course. \$35,000 Cdn. (6 months).
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Training Division -
Approved Projects

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Scholarships

Caribbean Basin

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Indian Ocean

- 86-0081 IOI Scholarships (Indian Ocean) ('87) - A limited number of awards are being granted to participants from the Indian Ocean region to attend the International Ocean Institute's Summer Training Programme in the Management and Conservation of Marine Resources: The Exclusive Economic Zone, held in the Indian Ocean region. \$50,000 Cdn. (1 year). (See also 86-0018).

South Pacific

- 86-0026 Fishing Skills Course (SPC) - Two scholarships for participants from the Solomon Islands and Vanuatu were awarded for a course in fishing skills extension methods offered by the South Pacific Commission (SPC) in 1986. \$10,000 Cdn. (2 months).
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Training Division -
Approved Projects

Global

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- 85-0018 IOI Scholarships (Halifax) ('86-'92) - Up to four awards are granted annually to participants from selected developing countries to attend the International Ocean Institute's Summer Training Programme in the Management and Conservation of Marine Resources: The Exclusive Economic Zone, held in Halifax. \$208,000 Cdn. (6 years). (See also 86-0081).
- 85-0019 World Maritime University ('85-'91) - Two scholarships are granted annually to candidates from selected developing countries for study leading to the Master's degree at the World Maritime University. \$403,200 Cdn. (6 years).
- 86-0025 Regional University Scholarships ('86-'91) - A total of six scholarships are granted annually to qualified candidates from selected developing countries for studies at the Master's level in marine-related fields at regional universities. Three of these scholarships are granted for study at the University of the West Indies and three are granted for study at the University of Papua New Guinea or the University of the South Pacific. \$576,000 Cdn. (5 years).



Project 860101

Project Title: Feasibility Study: National Marine Resource Management Policy

Division: Technical Assistance Division

Recipient/
Implementing Agency: Government of Mauritius/Ministry of Economic Planning and Development

Timing: Expected to begin following completion of two preceding projects, and for a period of 6-8 weeks.

Financial: FY 1987-88 \$48,400

Contribution
From Mauritius: \$ 5,000

Project Summary:

Background:

This work is in preparation for the eventual undertaking to produce a National Marine Resource Management and Planning Policy.

Mauritius does not have a coordinated policy bringing together resource planning, environmental protection, socio-economic implications, and regulatory/legislative imperatives. The Government recognizes the necessity of such a policy, however, and desires assistance in the development of relevant study guidelines and considerations. The expert consultants are, in effect, laying the groundwork for devising the follow-on, multi-disciplinary policy, and recommending whether preparing the planning document is a viable undertaking.

Project Description:

The study will be undertaken by a two-person team consisting of a marine biologist and a development planner.

The assessment includes an accounting of information and indigenous personnel available for the overall policy development exercise; financial and administrative inputs available for marine resource management; determining the need for such a policy, including assessment of problems and constraints; identifying ways in which Canada can assist the larger effort; recommending viability of the concept.



Should the project appear feasible, the team will assist the Mauritian Government to formulate the objectives, scope, and elements of the management/planning policy. Detailed reference terms necessary for implementing the policy study will also be prepared, as will study cost estimates and timetable of execution.

Advantages/Benefits:

1. Authorities will have sufficient information by which to determine the propriety of proceeding with the management policy.
2. Results produced by the sand/coral study and a pollution contingency planning study conducted by UNEP and an American consulting firm can be incorporated into a multi-disciplinary resource management and planning policy.
3. The methodology employed by the expert consultants can be transferred to appropriate Mauritians for long-term benefits.

Relationship to Other Projects:

This exercise begins to draw together the other project proposal in the package as a single entity within the overall policy plan.

If the initial work is satisfactory, a larger follow-on study may be submitted for ICOD funding. It has been made clear to the Mauritian Government that approval of the preliminary investigation does not imply automatic approval of the later, larger submission.

Financial Information:

ICOD will support the expenses of a two-person team for the following items: professional fees, international travel and living expenses, and report preparation. The Government of Mauritius will supply telex, telephone, postage, support staff, office space, internal travel; counterpart officers.



Budget:

Professional Fees (two people X seven days X six weeks)	\$29,400
International travel	\$10,000
Per Diems of \$150/day for 15 days	\$ 4,500
Report Preparation	\$ 2,000
Contingencies	<u>\$ 2,500</u>
TOTAL	\$48,400

Recommendation:

It is recommended that this project be approved in principle subject to satisfactory completion of the pollution contingency and sand/coral removal projects.



International Centre for Ocean Development
Centre international d'exploitation des océans

EC/87/D7
Project #860032

PROJECT SUMMARY

Project Title: Study for a Regional Surveillance System for
Southwest Indian Ocean Maritime Resources

Division: Technical Assistance

Recipient/
Implementing
Agency: Mauritius/Indian Ocean Commission (Commission
de l'Océan Indien)

Duration: Approximately eight months

Financial: SWIOC Contribution is: \$ 7,700
ICOD Contribution is : \$119,900

Summary:

Background:

The Indian Ocean Commission (I.O.C.) is a regional political grouping consisting of Comoros, Madagascar, Mauritius and Seychelles. A substantial long-line tuna fishery operates in the region, producing up to 100,000 tonnes per year. Purse seining operations are also becoming an important factor in the region. To date, only the Seychelles has a surveillance and licensing system, although Madagascar has signed an access agreement with the EEC which will provide for licensing. A regional seminar in 1984, organized under the FAO South West Indian Ocean Programme (SWIOP), recommended the investigation of a regional surveillance programme to reduce costs and facilitate control of wide ranging fleets.

Project Description:

This project will fund an assessment of regional requirements for a system of monitoring, surveillance and control (MSC). Included in the undertaking will be collection of pertinent economic and technical data - along with governmental policies - for the four countries comprising the regional political grouping (Comoros, Seychelles, Madagascar, Mauritius).

The technical experts funded by ICOD will address the following broad categories: evaluation and recommendation of appropriate alternative systems, including aerial and marine



appropriate alternative systems, including aerial and marine components; start-up and operating costs, including the determination of apportioning such costs among the four countries and respective benefits derived therefrom; estimates of external funding resources required to implement the system and identification of potential donors.

The investigation may also include the production of sample flight plans and at least one regional fly-over. The fly-over demonstrates the benefits of aerial platforms for multi-task missions.

ICOD support covers an eight-month consultancy for two prime consultants and participation on an "as-required" basis by appropriate FFA surveillance project personnel.

At the conclusion of the draft report, the consulting team, accompanied by the ICOD Project Officer, will present preliminary findings to the four respective governments. The final document will be presented to the Commission by ICOD.

Advantages/Benefits:

1. The four national participants state that a ministerial meeting will approve the final project document and will take responsibility for setting up a regional organization to implement the recommendations.
2. The opportunity exists within this project to capitalize on ICOD's experience and contracts arising out of the FFA Surveillance Project, possibly extending to use of FFA personnel in the project team.

Relationship to Other Projects:

- 1) The project is supported and will have the cooperation of the SWIOP, including the assistance of the regional FAO representative.
- 2) ICOD's FFA Surveillance Project is related to this project, and may provide additional expertise from FFA staff to assist in the study.
- 3) The European Development Fund is supporting a regional tuna project, providing research on tuna stocks and fishery development. This programme encompasses Madagascar, Mauritius and Comoros, with full cooperation from the Seychelles.



- 4) Norway and FAO, through SWIOP, have funded previous consultant missions at the national level which included, among other issues, monitoring and surveillance.

Financial Implications:

I. Implementing Agency Contribution Estimate

a. In-country transportation	\$ 2,000
b. Counterpart Officer	\$ 2,000
c. Support Services	\$ 1,200
d. Office, telex, telephone, postage	<u>\$ 2,500</u>
Sub-total	\$ 7,700

II. ICOD Contribution Estimate

a. Professional Fees: Canada-based experts: \$300/day for 208 mandays	\$62,400
b. International/Regional Travel	\$18,000
c. Per Diems at \$150/day for 110 mandays	\$16,500
d. Report Preparation	\$ 3,500
e. Proposed Surveillance Demonstration Flight	\$ 3,500
f. FFA Personnel Fees, Expenses	\$ 6,000
g. Contingencies	<u>\$10,000</u>
Sub-Total	\$119,900

Evaluation/Recommendations:

It is clear that the membership of the regional political organization is fully and officially supportive of the project. Given that expressed desire to undertake and support the investigation, implementation is now likely.

It is therefore recommended that the Executive Committee, in keeping with the Board's earlier "approval in principle", give its final approval to the project.

The Government of Mauritius has asked ICOD to consider funding a package of project proposals for technical assistance.

The package consists of three discrete, complementary requests which will form the basis of a national marine resource planning document. It is likely that Mauritius will approach ICOD to fund the later work that results in the creation of the plan. However, ICOD intends to clearly state to Mauritius that approval of any projects contained herein does not imply ICOD approval for the follow-on undertaking. It is important, though, to advise the ICOD Executive Committee that a future submission to Technical Assistance Division is probable.

The three projects which ICOD is asked to consider are:

1. Preparation of a national action plan for dealing with toxic spills in the marine environment;
2. Evaluating immediate and longer-term damage to the coastal zone - including lagoons and the encircling coral reef - from large-scale removal of sand and coral deposits;
3. Establishing terms of reference and project guidelines pursuant to creating a multiscope, national marine resource planning policy.

Attached is a diagram (Fig. 1) delineating the inter-relationships among the three submissions and their positions relative to the overall plan.

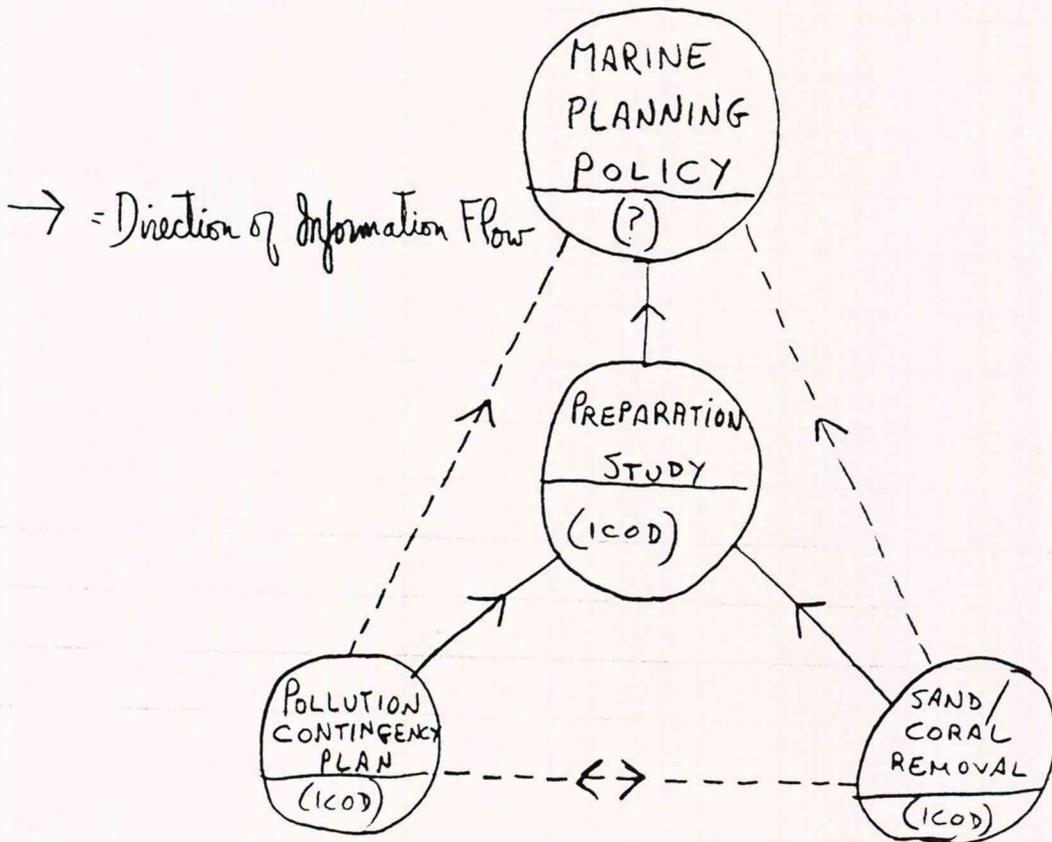


FIG. 1 : Project Complementarity and Interrelation

Title: Preparation of a National Marine Pollution Contingency Plan

Division: Technical Assistance Division

Recipient/
Implementing Agency: Government of Mauritius/Ministries of Economic Planning and Development, and Environment

Timing: Project Commencement on or about May 1, 1987 and extend over four to five months

Financial: FY 1987-88 \$48,500

Contribution from
Mauritius: \$5,000

Background:

The Mauritian Government recently prepared a White Paper on National Conservation Strategy. Contained within that document is a National Marine Pollution Contingency Plan. It is pursuant to this latter Plan that Mauritius has requested ICOD assistance.

Specifically, ICOD is requested to provide an expert consultant to develop the contingency plan and make recommendations for training and system procurement.

The project is one major element of a high priority national resource planning and management exercise. A proposal was made to UNEP over a year ago, and received a negative response due to shortage of UNEP funds.

Yankin

Project Development:

Both the Ministry of Economic Planning and Development and the Ministry of the Environment view this project as one having major import for tourism and protection of fishing grounds.

ICOD will provide an expert consultant, either from a provincial or federal environment ministry or from the private sector.

The consultant will inventory and assess the current stock of marine pollution protection and cleanup equipment as well as levels of training in relevant ministries. The second step is to both qualify and quantify the marine pollution threat - toxic cargoes carried, proximity to Mauritian landfall, quantities of cargoes. The consultant will then

prepare recommendations forming the heart of the contingency plan, e.g. training of ministry personnel; procurement of specified containment and cleanup equipment; suggestions for toxic cargo transshipment policy; incremental costs; deployment of manpower and systems.

Advantages/Benefits:

1. Guidance on necessary training for contingency teams;
2. Specific expert recommendations for cost-effective and appropriate containment/cleanup equipment;
3. Establishes parameters of the high-priority National Marine Pollution Contingency Plan;
4. Permits Mauritian Government to rapidly respond to environmental catastrophes with minimal effects on fishery and resort centres.

Relationship to Other Projects:

1. Comprises a major element of the overall National Resource Management and Planning Policy.
2. Is complementary to the request for assistance vis-a-vis the Sand and Coral Removal evaluation.

Financial Implications:

ICOD's contribution covers expert consultant fees and expenses, including international travel, per diems, and report preparation.

The Mauritian contribution encompasses internal travel, office space, counterpart officers, telex, telephone, postage and secretarial support.

Budget:

Professional fees for 75 Man-Days over five months		
International Travel	\$30,000	
Per Diem, Accommodation (\$150/day)	9,000	4,500
Report Preparation	1,000	
Contingencies	4,000	
TOTAL	\$48,500	

Recommendations:

It is recommended that this project be approved.

Title: Coastal Sand and Coral Removal - Effects on Lagoon Environment and Marine Life

Division: Technical Assistance Division

Recipient/
Implementing Agency: Government of Mauritius; Ministry of Environment; Ministry of Economic Planning and Development

Timing: The project would begin in June 1987 and extend over nine months

Financial: FY 1987-88 \$119,500

Contribution from
Mauritius: Approximately \$15,000

Background:

Approximately 300,000 tons of coastal sand deposits and coral are removed from lagoons and beaches each year. The resource is utilized in the construction industry throughout the island and the island of Rodriguez.

Scientific evidence thus far collected points to a 4,000-year cycle of regeneration of the sand deposits, rendering that resource virtually a non-renewable one. At the same time, coral is being removed from lagoons faster than the rate of regeneration.

While the government is aware of the long-term damage resulting from the removals, there is no hard data to support restrictions or a total ban on sand and coral removal.

There is an urgent need to assess the potential damage; the likelihood of resource replenishment from natural actions of littoral drift and other forces; and to recommend alternative measures whereby construction material may be obtained.

During a recent visit by the ICOD Senior Programme Officer and ICOD consultant Mr. Harry Winsor, senior Mauritian officials (including Deputy Prime Minister, Sir Satcam Boolill) stressed the immediate need for this investigation and of its high priority.

There is little question that Mauritius will implement recommendations produced by the ICOD consultant, given the critical nature of the problem and the immediacy with which solutions must be implemented. There is general consensus that tourism and the inshore fishery will be adversely and

possibly irreversibly affected by continual destruction of beaches and coral reefs.

The ICOD expert consultant would provide that foundation.

Project Development:

The consultant will

- i) investigate the effect of large scale sand and coral removal from the lagoon and its effect on the changes that can occur in the coastal environment and to marine life in that area;
- ii) study the morphology of the area and establish the potential sand deposit in the lagoon;
- iii) investigate the littoral drift along the coast and establish the rate of sand replenishment in the proposed dredged area. Any irreversible changes that may be caused to the sand budget of the area should also be highlighted;
- iv) investigate the possible pollution that can be generated in the lagoon as a result of the dredging activities;
- v) investigate any other problems, which may be relevant to the study;

Finally, the consultant will present a series of recommendations for follow-up action based on study findings.

Advantages/Benefits:

1. Authorities will have the necessary evidence to support the implementation of new regulations for environmental protection.
2. Damage to beach and coastal environments, along with the coral reefs, will be minimized and/or halted. Both the inshore fishery and the important tourist industry will be major beneficiaries.
3. The study will provide substantial amounts of baseline data which may be useful for other purposes.

Relationship to Other Projects:

This project is an important component of the overall plan to implement a National Resource Management Policy.

Financial Information:

The ICOD contribution encompasses expert professional fees, per diem and international travel expenses, report preparation.

Mauritius will provide office space and support services; counterpart officers; telex, telephone, postage; internal travel; computer time; vessels and crew; university personnel and facilities.

Budget:

Professional Fees, expert consultant at \$450/day for 180 days	\$81,000
International travel	\$10,000
Per Diem/Accommodation (\$150/day) for 40 days	\$ 6,000
Report Preparation	\$ 2,500
Contingencies	\$10,000
Computer Time (Canada)	\$10,000
TOTAL	\$119,000

Recommendations:

It is recommended that this project be approved.

Title: Prefeasibility Investigation: National Marine Resource Management Policy

Division: Technical Assistance Division

Recipient/Implementing Agency: Government of Mauritius/Ministry of Economic Planning and Development

Timing: Expected to begin during April or May, 1987 over a period of 6 weeks.

Financial: FY 1987-88 \$48,400

Contribution From Mauritius: \$ 5,000

Background:

This work is in preparation for the eventual undertaking to produce a National Marine Resource Management and Planning Policy.

Mauritius does not have a coordinated policy bringing together resource planning, environmental protection, socio-economic implications, and regulatory/legislative imperatives. The Government recognizes the necessity of such a policy however, and desires assistance in the development of relevant study guidelines and considerations. The expert consultants are, in effect, laying the groundwork for devising the follow-on, multi-disciplinary policy, and recommending whether preparing the planning document is a viable undertaking.

Project Description:

The study will be undertaken by a two-person team consisting of a marine biologist and a development planner.

The assessment includes an accounting of information and indigenous personnel available for the overall policy development exercise; financial and administrative inputs available for marine resource management; determining the need for such a policy, including assessment of problems and constraints; identify ways in which Canada can assist the larger effort; recommend viability of the concept.

Should the project appear feasible, the team will assist the Mauritian Government to formulate the objectives, scope, and elements of the management/planning policy. Detailed reference terms necessary for implementing the policy study will also be prepared, as will study cost estimates and preparation timetable.

Advantages/Benefits:

1. Authorities will have sufficient information by which to determine the propriety of proceeding with the management policy.
2. Results produced by the sand/coral and the pollution contingency investigations can be incorporated into a multi-disciplinary resource management and planning policy.
3. The methodology employed by the expert consultant's can be transferred to appropriate Mauritians for long-term benefits.

Relationship to Other Projects:

This exercise begins to draw together the other project proposals in the package as a single entity within the overall policy plan.

Given a satisfactory result of the initial work, the larger follow-on study is likely to be submitted for ICOD funding. It has been made clear to the Mauritian Government that approval of the preliminary investigation does not imply automatic approval of the later, larger submission.

Financial Information:

ICOD will support the expenses of a two-person team for the following items: professional fees, international travel and living expenses, and report preparation. The Government of Mauritius will supply telex, telephone, postage, support staff, office space, internal travel; counterpart officers.

Budget:

Professional Fees (two people X seven days X six weeks)	\$29,400
International travel	\$10,000
Per Diems of \$150/day for 15 days	\$ 4,500
Report Preparation	\$ 2,000
Contingencies	\$ 2,500
TOTAL	\$48,900

Recommendation:

It is recommended that this project be approved.

file 810120

THE UNIVERSITY OF PAPUA NEW GUINEA



P. O. BOX 320
UNIVERSITY
PAPUA NEW GUINEA
TELEPHONE: 253900
TELEX: NE 22366
FACULTY OF LAW
P. O. BOX 317

Reference:

Action Officer:

24th December, 1987.

Ms. CAROL STANISH
Programme Officer,
Training Division,
International Centre for Ocean Development,
Halifax, Nova Scotia,
Canada.

Dear Ms. Stanish,

RE: UPNG LAW FACULTY PROPOSAL

Referring to your letter of 11 December, 1987, it is true that UPNG is under further financial constraints for next year 1988. However, the Law Faculty has not been affected by these constraints and I confirm that the Law of the Sea course will be offered as an optional unit once introduced.

For the interim period 1989, as some lecturers will be leaving either because their contracts will expire at the end of 1988 or national staff going on long term study leave, we are hoping to recruit somebody with Law of the Sea specialisation to teach LOS. If we cannot recruit such a person, we would certainly request for assistance from ICOD. We will know this by mid or end of 1988.

Since the person who has been teaching Environmental Law has transferred to another Faculty, we would certainly favour a person who could teach Environmental Law as well to be sent by ICOD under the proposal.

I hope the above answers your queries.

Yours sincerely,


.....
JOHN NONGGOR (Mr)
Dean of Law.

*This letter forwarded
to my home
by TUN S
CFS*



International Centre for Ocean Development
Centre international d'exploitation des océans

CONFIDENTIAL

EC87/D12
Project #870131
February 4, 1988
(Revised)

PROJECT SUMMARY

(Approval)

<u>Project Title:</u>	University of Papua New Guinea; Law Faculty Assistance
<u>Division:</u>	Training
<u>Recipient/ Implementing Agency:</u>	University of Papua New Guinea
<u>Duration:</u>	Commencement; May 1988 through May 1990 (24 months)
<u>Financial:</u>	
ICOD Contribution:	\$144,000
Recipient Contribution:	\$ 7,900
Project total:	\$151,900

(This portion for details of approval)

Conditions of Approval or Comments

Record of Approval



Summary:

Background:

The Law Faculty of the University of Papua New Guinea (UPNG) has offered a course in "Law of the Sea" as part of its LLB programme. The specialist teaching this course left the University for another post, thus, the faculty was unable to offer the course in the 1987 academic year.

The University has established a staff development programme which permits support for young Papua New Guinean staff. The programme is intended to provide the opportunity for fellows to gain teaching experience and to support post-graduate study. Owing to substantial cuts in the University's budget, the staff development programme has been severely restricted.

The UPNG Law Faculty has requested ICOD assistance in order to re-establish its capacity to offer the "Law of the Sea" course and to support the training of a national specialist in this field.

Project Description

- A) Project Objective: The objective of this project is to assist the Law Faculty of the University of Papua New Guinea to develop its capacity in the specialized field of Law of the Sea. This objective will be met through the provision of a Canadian specialist to teach two Law of the Sea courses (1988 and 1989) and through support for the post-graduate training of a national specialist in Canada.
- B) Project Components: The Law of the Sea course is normally offered to LLB students in the June/November semester of each academic year. A Canadian specialist will be posted to the Law Faculty to conduct the 1988 and 1989 courses. The first placement would begin in May 1988 in order to permit an adjustment and preparation period prior to commencement of the course.



During the initial phase, the specialist will be assisted by a Papua New Guinean teaching fellow selected by the University. The teaching fellow will pursue an LLM degree, specializing in the area of Law of the Sea, at a Canadian university in September of 1988.

Prior to completion of the teaching fellow's studies in Canada, a second placement will be required to conduct the 1989 Law of the Sea course.

In the past, the UPNG professor teaching Law of the Sea has undertaken consultancy work within the region. The Canadian specialist may also be requested to assist on a limited basis.

- C) Project Beneficiaries: The initial beneficiary of the project will be the Law Faculty of the University of Papua New Guinea. However, the primary beneficiaries would be both national and regional students interested in a Law of the Sea concentration. Law graduates will generally enhance the region's expertise in this field.
- D) Project Management: The project will be jointly managed by ICOD and the University of Papua New Guinea.

Project Appraisal/Constraints:

APPRAISAL

- a) Provides support for an indigenous academic institution in a field of general importance to the South Pacific region;
- b) Supports the training of a national faculty member, thus displacing the need for expatriate expertise. Cost of such expertise is one of the major problems in the development of UPNG.

CONSTRAINTS

- a) Should the UPNG teaching fellow not gain admission to a Canadian Law School, the project will be compromised;



- b) This project has received "Approval in Principle" subject to the provision that ICOD investigate the availability of Canadian professors on sabbatical leave who might accept the post at less than a full salary. This provision was intended to reduce the overall cost of the project. Investigations indicate that available and qualified specialists prepared to consider the assignment expect a salary in the range indicated in this and the previous budget.
- c) One major constraint is the incertitude regarding the future of the Faculty of Law at UPNG. Should the University decide to close the Faculty, this project would no longer be relevant. As UPNG is closed for summer vacation, no information is presently available. ICOD will reserve the option to cancel the project if it is no longer required. If the response from UPNG is positive, the project must be undertaken in May 1988.
- d) Considering the cost of training the UPNG fellow in Canada, it was suggested to explore the possibility to train him in Australia. Information was requested but is not available at the present. It appears moreover, that this part of the project corresponds to the philosophy of the "Study in Canada" programme, which intends to promote Canadian expertise while training students from developing countries.

Relationship to Other Projects (ICOD and Other Donors):

There is no direct relationship to other ICOD projects. However, through the regional scholarship programme, ICOD is sponsoring a student from Papua New Guinea in a Master's degree programme at UPNG. Also, ICOD has supported other projects related to the development of expertise in the Law of the Sea field. A PNG student is presently studying at Simon Fraser University under the "Study in Canada" project.



Financial Information:

1) Projected ICOD Disbursements by Fiscal Year.	
FY 1988-89	\$63,000
FY 1989-90	\$73,000
FY 1990-91	\$ 8,000
2) ICOD Budget Components (see detailed estimates attached as Annex A).	
- Canadian Specialist (salary + expenses); 1988 course	\$ 49,167
- Canadian Specialist (salary + expenses); 1990 course	\$ 49,167
- UPNG Counterpart Scholarship (September 1988 to May 1990)	\$ 40,000
Subtotal	\$138,334
Contingency	\$ 5,666
TOTAL ICOD CONTRIBUTION:	<u>\$144,000</u>
3) Recipient Budget Components.	
- 1988 Accommodation for Canadian Specialist (\$130/wk for 30 wks)	\$ 3,960
- 1989 Accommodation for Canadian Specialist (as above)	\$ 3,960
	*\$ 7,920

* .6627 Kina = \$1.00 Cdn

NOTE: Other recipient contributions include the salary of the national counterpart (June-August 1988), office space, secretarial services, and assistance for joint research; however, no estimates are available.



Project #870131

Page 6

Recommendation:

It is recommended that final approval be given to project #870131, University of Papua New Guinea, Law Faculty Assistance, to a maximum ICOD contribution of \$144,000 Canadian.



ANNEX A

ICOD BUDGET COMPONENTS

A.	Canadian Specialist; 1988 course	
-	Salary (7 months at \$50,000/year)	\$ 29,167
-	Return air fare PNG and associated travel expenses	\$ 7,000
-	Internal/regional travel for research/consultancy work	\$ 5,000
-	Insurance (medical and personal effects)	\$ 8,000
		\$ 49,167
B.	Canadian Specialist; 1989 course (as per item A)	\$ 49,167
C.	UPNG Counterpart Scholarship (September 1988 to May 1990)	
-	estimate for return travel, living allowance, academic expenditures and insurance based on ICOD "Study in Canada" scholarship project	\$ 40,000
	Subtotal	\$138,334
	Contingency	\$ 5,666
	TOTAL ICOD CONTRIBUTION	\$144,000



International Centre for Ocean Development
Centre international d'exploitation des océans

CONFIDENTIAL

EC87/D11
Project #870128
January 11, 1988

PROJECT SUMMARY
(Approval)

Project Title: Mariculture Training , Micronesia
Division: Training
Recipient/
Implementing
Agency: Micronesian Mariculture Demonstration Centre
Duration: Commencement (on approval);
duration (two years)
Financial:
ICOD Contribution: \$65,000
Recipient Contribution: None *why?*
Project total: \$65,000

(This portion for details of approval)

Conditions of Approval or Comments

Record of Approval



Summary:

Background:

The Micronesian Mariculture Demonstration Centre (MMDC) is a Palau Government facility established to promote the cost effective cultivation of economically important Marine species. Founded in 1973, the MMDC conducts applied research on the biology of high-priority species, develops the technology to culture the species in a closed environment, and transfers the technology through demonstration, training, information dissemination and seed distribution.

The MMDC undertook a two-year project (November 1984/October 1986) which consisted of research on the cultivation of giant clams (Tridacnia derasa) and the development of an appropriate culture method. Giant clams are a high-valued food commodity harvested to virtual extinction in many areas of the tropical Pacific. The development of technology for the mass production of clams through aquaculture could be applied on a regional scale for the purposes of resource enhancement, subsistence food production, and commercial farming.

During the project period, the MMDC facility produced giant clam larvae using a low density, low-technology method of culture appropriate for use in remote areas. The culture method, consisting of hatchery, nursery and growout phases, requires no feeding and relatively low inputs of energy, capital and labour. The majority of the seed produced at MMDC was planted in the ocean nursery adjacent to the hatchery. The clam seed not planted at MMDC was either distributed free of charge for promotion or demonstration purposes, or sold to generate revenue. In the past four years, there have been a total of fifty international clam seed shipments throughout the region.

A major component of the giant clam project was the on-site mariculture training programme. Thirty-six representatives from governments, universities and private companies completed training at MMDC. Following training, MMDC staff assisted in the establishment of demonstration clam farms in Yap, Majuro, Pohnpei, Truk and Saipan.



The Palau Bureau of Resources and Development has requested financial assistance for trainees to attend the MMDC course, as there exists a shortage of trainee support relative to demand.

Project Description:

- A) Project Objective: The objective of this project is to provide financial assistance to candidates from Palau, the Federated States of Micronesia, and the Marshall Islands to undertake training in giant clam cultivation methods at the Micronesian Mariculture Demonstration Centre which will provide an opportunity for Micronesians to use their labour to achieve nutritional security with a traditional food source. Following training, clam nurseries will be established to develop breeding colonies of clams in islands where they are extinct or very rare.
- B) Project Components: ICOD would provide funding, over a two year period, for the training of twelve representatives from the three Former American Trust Territories. Each year, one participant from Palau, four from the Federated States of Micronesia, and one from the Marshall Islands would be selected by their governments to attend a one-month training course.

Training courses are conducted throughout the year for small groups of trainees.

The programme includes instruction in biology, management and ocean culture of giant clams as well as a certified diving course. Following completion of the course, each trainee is given 1,000 yearling clams and the equipment necessary to start a home island nursery.

MMDC will coordinate travel arrangements, accommodation, and arrange for the shipment of clams. They will conduct follow-up in-country studies (i.e. growth, survival, community impact). Follow-up studies would necessarily extend beyond the termination of ICOD funding.



- C) **Project Beneficiaries:** The primary beneficiaries of the project are the governments of the Former American Trust Territories in that a core group of trained technicians will be available to establish clam nurseries.
- D) **Project Management:** The project will be managed by MMDC.

Project Appraisal/Constraints:

APPRAISAL

- a) The meat of the giant clam is a traditional food source. The project will increase the availability of this food in islands where the species is becoming close to extinction.
- b) Giant clams are a threatened species. The distribution of seeds would create new breeding stocks and then promote the conservation of the species.
- c) The project permits the transfer of simple and appropriate mariculture techniques, at an appropriate level.
- d) ICOD would support a programme established by a dynamic regional institution with a proven regional influence.

CONSTRAINTS

- a) At the last Board Meeting, this project received "approval in principle" subject to the resolution of an external technical comment to the effect that the simple methodology used by MMDC involves unfiltered sea water and, thus, there is a danger that pathogens or parasites could be transported to the areas where the clams will be introduced. The comment was made by ICLARM which also questioned the economic viability of the MMCD approach and the potential environmental impact of introduction of a new species.

ICOD has made further inquiries related to the above and received comments from:



- 1) The Bureau of Resources and Development, Palau, which indicates that, to date, no problems have been encountered as a result of international clam shipment. Further, in November 1987, FAO purchased and delivered two quarantine systems for the MMDC hatchery and all future clam shipments will be quarantined;
- 2) The Forum Fisheries Agency, which notes that clam seed shipments have been dispatched to Cook Islands, American and Western Samoa, Philippines, Marianas, Marshall Islands and Federated States of Micronesia. Early consignments have resulted in the successful experimental trials with hatcheries now proposed for operation in these countries. FFA verifies that the FAO quarantine system is now in place at MMDC and that future shipments will be treated;
- 3) The FAO (South Pacific Aquaculture Project) confirmed that the quarantine system is in place at MMDC. The system involves a filtered-recirculating system with an ultra-violet purifying device, a method recommended by the South Pacific Commission.
- 4) The Department of Biological Sciences, Simon Fraser University, was not familiar with the specific activities of MMDC but, with minor reservations on the cost of living at MMDC, supported the funding of the project.
- 5) MMDC usually does an environmental study. Both FFA and FAO do not see any environmental problem, particularly because MMDC now has a quarantine system to treat the shipped seeds.

Why not involve the local?

- b) ICLARM is developing another technique and the MMDC's technique may be seen as obsolete. Considering that the Micronesian technicians do not receive any training in aquaculture, the MMDC course, which teaches a low technology system, appears to be more appropriate.
- c) It was proposed to explore the possibility of involving other organizations in the project. The MMDC programme is well implemented and appears to function normally with local expertise as shown by indications of strong supports which were voiced by FAO and FFA.

Relationship to Other ICOD projects (ICOD and Other Donors):

- a) There is no direct relationship to other ICOD projects.
- who?* b) The Pacific Fisheries Development Foundation funded the two year research and development phase of the MMDC Clam project. Further, the UNFAO (South Pacific Regional Aquaculture Development programme) has provided funding support for trainees from other Pacific Island countries.

Financial Information:

- 1) FY Disbursements:
- | | |
|------------|-----------|
| FY 1988-89 | \$ 32,500 |
| FY 1989-90 | \$ 32,500 |
- 2) ICOD Budget Components (see detailed estimates attached as Annex A).
- | | |
|--------------------------|------------------|
| Training costs | \$ 21,564 |
| Yearling clams | \$ 15,960 |
| Equipment Costs | \$ 9,571 |
| Travel Costs | <u>\$ 13,300</u> |
| Sub Total | \$ 60,295 |
| Contingency | <u>\$ 4,706</u> |
| TOTAL ICOD CONTRIBUTION: | \$ 65,000 |
- 3) Recipient Budget
- None

Recommendation:

It is recommended that final approval be given to Project #870128, Mariculture Training, Micronesia, to a maximum ICOD contribution of \$65,000 (Cdn).



Annex I
(Project Costs)

<u>Item</u>	<u>Cost</u>
Training Costs	
a) Trainee housing at MMDC dormitory (30 days at \$20.00 Cdn per day) x 12	\$ 7,200.00
b) Trainee food allowance (30 days at \$13.00 Cdn per day)	\$ 4,680.00
c) Mariculture course fee	\$ 4,788.00
d) Scuba certification course	\$ 3,192.00
e) Course materials: (text books, articles, etc.)	\$ 1,596.00
f) Yearling clams (1,000 clams at \$1.33 each) x 12	\$15,960.00
Equipment	
a) Equipment (Dive gear, calipers etc.)	\$ 2,394.00
b) Clam cages (67 at \$6.95 Cdn each) x 12	\$ 5,588.00
c) Air freight shipment (clams and cages)	\$ 1,596.00
Travel	
a) Return air travel to Koror (10 off-island trainees)	<u>\$13,300.00</u>
Sub Total	\$60,294.00
Contingency	\$ 4,706.00
Total ICOD contribution, up to	\$65,000.00*

* Based on a rate of \$1.33 Cdn = \$1.00 US



International Centre for Ocean Development
Centre international d'exploitation des océans

CONFIDENTIAL

EC87/D15
Project #870132
January 21, 1988

PROJECT SUMMARY

Approval

Project Title: Fisheries Data Management:
Institutional Enhancement Programme.

Division: Technical Assistance

Recipient/
Implementing Agency: Recipient: Member States of the
Organisation of Eastern Caribbean
States.
Implementing Agency: OECS Fisheries
Support Unit.

Duration: Commencement (Early 1988); Duration (One
Year)

Financial:

ICOD Contribution:	\$ 195,000
Recipient Contribution:	\$ <u>80,525</u>
Project total:	\$ 275,525

Conditions of Approval or Comments

Record of Approval



Summary:

Background:

Introduction of regional fisheries management plans has been identified as a priority within the Eastern Caribbean. However, management planning activities are hindered by the unavailability of baseline information and an historical record of catch and landing statistics.

In early 1987, the OECS with assistance from FAO, undertook a regional survey of the fisheries within the Eastern Caribbean to collect detailed information on the existing situation of the participating islands. On the basis of this survey, and using tools and principles agreed upon at the ICOD funded workshop on Fishery Data Collection Systems, data collection systems, which could provide the information necessary for managing the regions fisheries, were designed for each of the eastern Caribbean islands.

The general approach to the data collection systems is to utilize all possible sources of data, and to spread the responsibility of data collection throughout the industry wherever possible. This will result in a considerable amount of useful data; hence an increase in the need for upgrading the data analysis capabilities of the national fisheries divisions. In order to alleviate some of this increased demand on the fisheries divisions, expert assistance is required to establish improved data handling and analysis methods and to introduce computerized methods of fisheries data compilation and analysis.

It is important that the process of enhancing national data handling capabilities be undertaken in a method which is consistent and compatible throughout the region. The OECS Fisheries Unit has already undertaken the task of designing regional data collection forms and reporting forms which will facilitate data sharing. These forms will also be used by the OECS Fisheries Unit to collect and compile relevant data on a regional basis in order to provide the baseline information needed to develop a regional fisheries management plan. It is, therefore, desirable that the OECS Fisheries Unit work closely with the member and neighbouring states to improve fisheries data collection and analysis procedures.



Project Description:

The objective of this project is to enhance the fisheries management capabilities within the eastern Caribbean by supporting the development of fisheries data management expertise. In order to assist member states in improving their data collection and analysis capabilities, the OECS is requesting financial and advisory support for a regional fisheries data management programme. Specifically, within this programme the OECS staff and consultants will:

- A) Assist member states in the acquisition of computer hardware and software packages (R Base V and Lotus 123) which are compatible with OECS Support Unit equipment.
- B) Provide member states with technical and advisory assistance related to computer set-up and data collection, compilation and analysis (consultants and OECS Fisheries Unit Staff).
- C) Provide member states with technical advice during design sessions and sub-regional workshops on design of island specific data bases, data analysis and report production applications.
- D) Assist in follow-on sessions with Fisheries Divisions to verify system application (consultants and OECS Support Unit Staff)

Project Appraisal/Constraints:

- a) The project will promote the collection of fisheries data on a regional scale which is necessary for regional fisheries management;
- b) The project is designed to enhance the technical capabilities of the national fisheries divisions within the eastern Caribbean;
- c) The project includes a relatively large capital component which is necessary for computer acquisition.

While the CIDA Caribbean Desk strongly supports this project as it will facilitate planned CIDA activities within the region, it is unlikely funds will be made available due to the heavy administrative workload relative to the amounts required.



- 3
- d) Although the technical infrastructure and human resources are sufficient in some member states to introduce computerized data analysis methods, the situation in others may require more of the consultants attention in order to assure successful implementation of this project.

Relationship to Other Projects (ICOD and Other Donors):

- a) This project is a direct follow-on activity resulting from the ICOD funded workshop on Fishery Data Collection systems and will support the OECS Fisheries Unit in establishing its role as a regional fisheries data centre.
- b) This project will provide basic infrastructure, data, and trained personnel which will facilitate implementation of the proposed CIDA funded CARICOM resource survey.
- c) This project will result in information required for a recently approved FAO technical cooperation project in which a regional fisheries management plan will be developed in cooperation with the OECS Fisheries Unit.

Financial Information:

1)	Fiscal year 1987/88:	\$ 42,000.00	
	Fiscal year 1988/89:	\$153,000.00	
2)	ICOD Budget Components		<u>CDN</u>
1)	Computer Hardware	\$ 36,000.00	
2)	Computer Software	11,700.00	
3)	Computer Room Facilities	16,200.00	
4)	Project Manager	11,000.00	
5)	Computer Consultant	15,750.00	
6)	Fisheries Statistician	30,375.00	
7)	Fisheries Biologist (Project Advisor)	6,750.00	
8)	Air Travel	12,700.00	
9)	Living Expenses and Land Travel	31,050.00	
10)	Report Preparation	<u>4,000.00</u>	
	Subtotal	\$175,525.00	
11)	Contingency	<u>19,475.00</u>	
	Total (up to)	\$195,000.00	
3)	Recipient Budget Components (estimated)		<u>In-kind</u>
1)	Office space	\$ 3,500.00	
2)	Data entry personnel/statistician (\$5000 per island)	\$45,000.00	
3)	Secretarial and clerical support (\$1000 per island)	\$ 9,000.00	
4)	Conference Room and Facilities	\$ 3,000.00	
5)	OECS staff travel and accommodation	\$20,025.00	
6)	Computer maintenance and servicing costs to be determined		
	Estimated total recipient contribution (in-kind)	\$80,525.00	



Project #870132

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Recommendation:

It is recommended that final approval be given to project #870132 - Fisheries Data Management: Institutional Enhancement - Eastern Caribbean -- to a maximum ICOD contribution of \$195,000.00 Canadian.



Annex 1

Approximate Cost Breakdown

1) Computer Hardware (\$4,000 per Island)	\$ 36,000
2) Computer Software (\$300 per Island)	11,700
3) Computer Room Facilities-power supplies, desk, etc. (\$1,800 per Island)	16,200
4) Project Manager (part-time)	11,000
5) Computer Consultant (\$350 per day x 45 days)	15,750
6) Fisheries Statistician (\$225 per day x 135 days)	30,375
7) Fisheries Biologist-Project Advisor (\$225 per day x 30 days)	6,750
8) Air Travel (Canada-Eastern Caribbean Return x 3 Inter-Island Travel)	12,700
9) Living Expenses and Land Travel (Computer Consultant-45 days; Statistician-135 days; Biologist-30 days; Manager-45 days)	31,050
10) Report preparation (typing and reproduction distribution)	<u>4,000</u>
TOTAL	\$175,525



International Centre for Ocean Development
Centre international d'exploitation des océans

CONFIDENTIAL

EC87/D14
Project #870153
January 21, 1988

PROJECT SUMMARY

(Approval)

Project Title: Technical Support for Nicaragua's
Industrial Fisheries

Division: Technical Assistance

Recipient/
Implementing Agency: Institute Nicaraguense de la Pesca
(INPESCA)

Duration: Commencement (Early 1988); Duration (Two
years)

Financial:

ICOD Contribution:	\$305,000
Recipient Contribution:	<u>\$ 45,200</u> (in kind)
Project total:	\$350,200

Conditions of Approval or Comments

Record of Approval



Summary:

Background:

Nicaragua's fishery consists of a national industrial fishery and a small boat (canoe) artisanal fishery which are both administered and supported by the Institute Nicaraguense de la Pesca (INPESCA). Primarily based along the Atlantic Coast, the industrial fisheries produces high-valued shrimp and lobster for export. By-catch from the industrial fleet of shrimp trawlers and lobster (trap) boats is sold on the national market and represents 6-8% of the total national market share.

Nicaragua is reported to have the richest fishery resources in Central America. While the country has had a reasonably well structured industry, which produced millions of pounds of lobster and shrimp tails for export, the industry has fallen into a state of disrepair. Shortages in spare parts and qualified, experienced maintenance personnel has lead to a considerable decay of the fleet and plant facilities. This has resulted in a serious decline in effort, hence a reduction in catch, and a decline in capacity to properly store catch, hence a loss of foreign markets. Canada has recently declined purchases of Nicaraguan shrimp and lobster due to poor quality resulting from improper storage and handling. Nicaragua previously supplied 4.81% of Canada's imports of lobster (ranking 3rd largest supplier after USA and Cuba) and 3.18% of Canada's imports of shrimp (ranking 6th after USA, Hong Kong, USSR, PRC and Cuba)

The primary task facing INPESCA is not one of building a new industry but one of upgrading the existing infrastructure so that previous levels of catch and quality can be reestablished. To this end, the Inter-American Development Bank has financed a programme which will provide administrative and infrastructure support to the industrial fishery. The terms of this programme, which is being implemented by the Nova Scotia Research Foundation, include a restructuring programme for INPESCA, acquisition of 25 new vessels and spare parts for older vessels not beyond repair. There is, however, still a shortage of personnel qualified to undertake the repair of the existing fleet and plant facilities with the newly acquired spare parts and a need to increase the industries capacity to properly maintain and repair the new and revitalized vessels and fish plants.



Project Description:

The objective of this project is to promote sustainable development within Nicaragua's industrial fishery. In order to meet the needs associated with improving and maintaining a "rejuvenated" industrial fishery, INPESCA has requested technical assistance in marine engineering and refrigeration. Specifically, INPESCA is requesting ICOD to provide the services of a marine engineer and technician and a refrigeration engineer and technician for one year each.

The engineers will be responsible for working with counterparts in INPESCA (plant and fleet management) to select vessels and equipment best suited for repair, introduce proper maintenance and repair procedures, and set up maintenance/repair schedules.

The technicians will be responsible for overseeing implementation of the activities and providing "hands-on" training of ship and plant staff as required.

Although based in Managua, the engineers will work for two-month periods in each of the major fishing centres (Corinto, San Juan del Sur, Bluefields, El Bluff, and Corn Island). Follow on "visits" by the technicians will be on a regular schedule.

The project will be phased over a two-year period.

Project Appraisal/Constraints:

- (1) This project will support the development of the principal natural resource in the east coast region of Nicaragua.

Provision of greater autonomy to regional governments in education, culture, and economics is one of the objectives of new legislation in Nicaragua. It is felt that improvements to the fishing industry, the largest source of employment and revenue in the east coast, will contribute to the economic development of the region, and facilitate the process of establishing more autonomous regional governments.

- (2) This project directly contributes to the sustainable development of an industry which will provide both food and foreign exchange, thus contributing to Nicaragua's economic well being.



- (3) Considering the present political situation within Central America, ICOD will need to monitor Nicaragua's commitment to providing support for the industrial fishery.
- (4) This project appears to support an industrial fishery which might compete with the artisanal fishery for fishery resources.

However, it should be noted that within the context of this proposal the term "artisanal" applies to the canoe fishery which primarily exploits Nicaragua's fin-fish resources. INPESCA supports development of this fishery through cooperative programmes and marketing assistance, primarily within Nicaragua. This fishery has over an 85% share of the domestic market.

The "industrial" fishery, which includes shrimp trawlers and vessels (25-36 ft.) from which lobster traps are set, harvests the underutilized shrimp and lobster resources of Nicaragua's continental shelf. The two fisheries are not in direct competition, considering that this fishery is concentrated on export markets.

Relationship to Other Projects (ICOD and Other Donors):

This project will complement the following on-going programmes of:

- a) NORAD, in which the Norwegian aid agency is providing gear to the artisanal fishery, thus improving the capability of this fishery to provide the national market;
- b) OXFAM (Canada) and the Maritime Fishermens' Union, in which gear and advisors have been sent to assist lobster fishermen in the east coast region. These fishermen will be better able to reach foreign markets through sales to the fish plants which are improved through this project;
- c) the Inter-American Development Bank. On-going advisory support provided by this project will assure long-term success of an IDB programme to revitalize the industrial fishery, through provision of funds for 25



new trawlers and the restructuring of INPESCA. The IDB project, which is being implemented by the Nova Scotia Research Foundation, will be completed in early 1988 after Nicaragua takes possession of the new trawlers.

Financial Information:

1)	Fiscal Year 1988/89:	\$200,000	
	Fiscal Year 1989/90:	\$105,000	
2)	ICOD Budget Components		
1)	<u>Salaries and Living Expenses</u>		
	Refrigeration Engineer		\$ 70,000
	Technician (Refrigeration)		\$ 50,000
	Marine Engineer		\$ 65,000
	Technician (ships mechanic)		\$ 50,000
2)	International Travel (Canada-Nicaragua return X 4)		\$ 16,000
3)	In-country Travel		\$ 10,000
4)	Communications		\$ 6,000
5)	Insurance and Miscellaneous		\$ 10,000
6)	Evaluation		\$ 8,000
		Subtotal	\$285,000
7)	Contingency		\$ 20,000
	TOTAL ICOD CONTRIBUTION (UP TO)		<u>\$305,000*</u>

3)	Recipient Budget Components (estimated)		in-kind
1)	Counterpart salaries (part-time)	\$ 20,000	
2)	Clerical and Secretarial support	\$ 5,200	
3)	Office space	\$ 10,000	
4)	In-country travel	\$ 10,000	
	TOTAL RECIPIENT CONTRIBUTION (IN KIND)		<u>\$ 45,200</u>

* If this programme is administered through an NGO organization, such as the (OCSD) the total project cost could be reduced to approximately \$190,000.

2

2



Project #870153

Page 6

Recommendation:

It is recommended that final approval be given to project #870153 -- Technical Support for Nicaragua's Industrial Fisheries -- to a maximum ICOD contribution of \$305,000 Canadian.



Annex 1

Approximate Cost Breakdown

(1) Refrigeration Engineer (Salary-\$50,000 + Living Expenses-\$20,000)	\$ 70,000
Technicians (Salary-\$30,000 + Living Expenses-\$20,000)	50,000
Marine Engineer (Salary-\$45,000 + Living Expenses-\$20,000)	65,000
Technician (Salary-\$30,000 + Living Expenses-\$20,000)	50,000
(2) International Travel (Return Ticket + Overnight Accommodation + Expenses = 4,000 x 4)	16,000
(3) In-Country Travel (Vehicle Rental, Airfares and Accommodation)	10,000
(4) Communications (Telephone, Telex, Telefax)	6,000
(5) Insurance and Miscellaneous (2,500 per person x 4)	10,000
(6) Evaluation (consultant's fees \$350 x 10 days plus travel and accommodation)	<u>8,000</u>
SUBTOTAL	\$285,000
(7) Contingency	<u>20,000</u>
TOTAL	\$305,000



International Centre for Ocean Development
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CONFIDENTIAL

EC87/D13
Project #870161
January 22, 1988

PROJECT SUMMARY

(Approval)

Project Title: Vanuatu Fisheries Extension Advisor.

Division: Technical Assistance.

Recipient/
Implementing Agency: Vanuatu Fisheries Department.

Duration: Two years; commencement early 1988.

Financial:

ICOD Contribution:	Up to	\$92,000
Recipient Contribution:	Approximately	\$10,000
Other Donors:	Approximately	\$31,500
Project total:		\$133,500

Conditions of Approval or Comments

Record of Approval



Summary:

Background:

The Vanuatu Village Fisheries Development Programme (VFDP) has created a number of small-scale fishing enterprises throughout Vanuatu. Advisory assistance for these projects has been provided by the posting of expatriate advisors at the village level. Given the increasing self-sufficiency of the fishing groups, and the need to service them with a limited number of technical staff, Vanuatu is now moving to establish a centralized extension service to provide advice and support to the groups established under the VFDP. Under a European Development Fund (EDF) project, Vanuatu will establish a network of eleven extension centres over the next three to five years, each providing extension services (including demonstration fishing and fishing supply stores) to approximately ten village fishing projects.

Project Description:

The objective of this project is to assist in the development of a rural fisheries extension service in Vanuatu, through the provision of advisory assistance by an experienced fisherman from Canada. This specific objective is stated within the context of a broader objective in the Vanuatu national development plan to increase food self-sufficiency and rural employment by development of the artisanal fishery.

The EDF funding limits advisor recruitment to nationals of the European Economic Community (EEC). However, Vanuatu has found it difficult to recruit the quality of advisor it desires in sufficient numbers, and wishes to take advantage of the pool of Canadian expertise built up during a period of CUSO support for the VFDP. This project would provide a Canadian fisherman, with previous experience in Vanuatu, for a two-year period as an extension advisor at one of the new centres. The duties of this advisor would also include periodic assistance to less-experienced advisors at other centres.

ICOD funding would include the salary, benefits and associated costs of the advisor. The EDF project will provide capital funding for the centre, an extension vessel, motorcycle and all equipment. Local funding will include a contribution to housing, office and administrative support.



Project Appraisal/Constraints:

- a) This project enables ICOD to take a high-profile role (i.e. the personnel component) in a project with extensive capital funding from another source. It also builds on a past record of successful Canadian involvement in an innovative programme.
- b) No major constraints are seen, although it will be necessary to closely monitor the counterpart component to promote the eventual transfer of this position to a local officer. Given that rural development is a long-term task, it is possible that a future phase of this project could be requested if results are satisfactory.
- c) The project is in direct furtherance of a stated corporate plan objective of utilizing the expertise of small-scale Canadian fishermen overseas.
- d) In addition to a possible extension of this project, successful implementation could lead to further requests for assistance of this type, employing Canadian fisheries expertise in other centres.

Relationship to Other Projects (ICOD and Other Donors):

The project is directly related to the multi-year EDF project in support of the VFDP, which will provide approximately \$5 million in capital and other support on a country-wide basis. It is also a follow-on from previous ICOD activities - support for counterpart training at two other extension centres (project #85-0012) and the VFDP Evaluation (Project #860082). The interim report of the evaluation is in support of the new project direction of the VFDP.

Financial Information:

1) Projected ICOD Disbursements by Fiscal Year.

1987/1988	\$CDN	25,000
1988/1989		46,000
1989/1990		21,000

2) ICOD Budget Components

1. Salary (2 years)	\$64,000
2. Benefits (insurance etc.)	\$ 4,000
3. Passage (return)	\$ 7,000
4. Relocation and repatriation	<u>\$ 5,000</u>

Sub-total \$80,000

Approx. 15% contingency 12,000**TOTAL ICOD CONTRIBUTION \$ 92,000**

3) Recipient Budget Components

1. Housing Costs	\$3,000
2. Administrative, office support (secretary, supplies)	<u>\$7,000</u>

TOTAL RECIPIENT CONTRIBUTION \$10,000

4) Other Donor Components (EDF)

1. Housing Costs	\$4,000
2. Vessel and Equipment	\$8,000
3. Motor cycle	\$1,300
4. Fishing supplies and Store	\$2,000
5. Counterpart Salary (2 years)	<u>\$16,200</u>

TOTAL OTHER DONOR \$31,500Recommendation:

It is recommended that final approval be given to project #870161 -- Vanuatu Fisheries Extension Advisor -- to a maximum ICOD contribution of \$92,000 Canadian.



International Centre for Ocean Development
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CONFIDENTIAL

EC87/D12
Project #870131
January 22, 1988

PROJECT SUMMARY

(Approval)

<u>Project Title:</u>	University of Papua New Guinea; Law Faculty Assistance
<u>Division:</u>	Training
<u>Recipient/ Implementing Agency:</u>	University of Papua New Guinea
<u>Duration:</u>	Commencement; June 1988 through February 1990 (20 months)
<u>Financial:</u>	
ICOD Contribution:	\$144,000
Recipient Contribution:	<u>\$ 7,900</u>
Project total:	\$151,900

(This portion for details of approval)

Conditions of Approval or Comments

Record of Approval



Summary:

Background:

The Law Faculty of the University of Papua New Guinea (UPNG) has offered a course in "Law of the Sea" as part of its LLB programme. The specialist teaching this course left the University for another post, thus, the faculty was unable to offer the course in the 1987 academic year.

The University has established a staff development programme which permits support for young Papua New Guinean staff. The programme is intended to provide the opportunity for fellows to gain teaching experience and to support post-graduate study. Owing to substantial cuts in the University's budget, the staff development programme has been severely restricted.

The UPNG Law Faculty has requested ICOD assistance in order to re-establish its capacity to offer the "Law of the Sea" course and to support the training of a national specialist in this field.

Project Description

- A) **Project Objective:** The objective of this project is to assist the Law Faculty of the University of Papua New Guinea to develop its capacity in the specialized field of Law of the Sea. This objective will be met through the provision of a Canadian specialist to teach two Law of the Sea courses (1989 and 1990) and through support for the postgraduate training of a national specialist in Canada.

- B) **Project Components:** The Law of the Sea course is normally offered to LLB students in the June/November semester of each academic year. A Canadian specialist will be posted to the Law Faculty to conduct the 1988 and 1989 courses. The first placement would begin in May 1988 in order to permit an adjustment and preparation period prior to commencement of the course.



During the initial phase, the specialist will be assisted by a Papua New Guinean teaching fellow selected by the University. The teaching fellow will pursue an LLM degree, specializing in the area of Law of the Sea, at a Canadian university in September of 1988.

Prior to completion of the teaching fellow's studies in Canada, a second placement will be required to conduct the 1989 Law of the Sea course.

In the past, the UPNG professor teaching Law of the Sea has undertaken consultancy work within the region. The Canadian specialist may also be requested to assist on a limited basis.

- C) **Project Beneficiaries:** The initial beneficiary of the project will be the Law Faculty of the University of Papua New Guinea. However, the primary beneficiaries would be both national and regional students interested in a Law of the Sea concentration. Law graduates will generally enhance the region's expertise in this field.
- D) **Project Management:** The project will be jointly managed by ICOD and the University of Papua New Guinea.

Project Appraisal/Constraints:

APPRAISAL

- a) Provides support for an indigenous academic institution in a field of general importance to the South Pacific region;
- b) Supports the training of a national faculty member, thus displacing the need for expatriate expertise. Cost of such expertise is one of the major problems in the development of UPNG.

CONSTRAINTS

- a) Should the UPNG teaching fellow not gain admission to a Canadian Law School, the project will be compromised;



- b) This project has received "Approval in Principle" subject to the provision that ICOD investigate the availability of Canadian professors on sabbatical leave who might accept the post at less than a full salary. This provision was intended to reduce the overall cost of the project. Investigations indicate that available and qualified specialists prepared to consider the assignment expect a salary in the range indicated in this and the previous budget.
- c) One major constraint is the incertitude regarding the future of the Faculty of Law at UPNG. Should the University decide to close the Faculty, this project would no longer be relevant. As UPNG is closed for summer vacation, no information is presently available. ICOD will reserve the option to cancel the project if it is no longer required. If the response from UPNG is positive, the project must be undertaken in May 1988.
- d) Considering the cost of training the UPNG fellow in Canada, it was suggested to explore the possibility to train him in Australia. Information was requested but is not available at the present. It appears moreover, that this part of the project corresponds to the philosophy of the "Study in Canada" programme, which intends to promote Canadian expertise while training students from developing countries. *Why doesn't he study with the visiting professor there?*

Relationship to Other Projects (ICOD and Other Donors):

There is no direct relationship to other ICOD projects. However, through the regional scholarship programme, ICOD is sponsoring a student from Papua New Guinea in a Master's degree programme at UPNG. Also, ICOD has supported other projects related to the development of expertise in the Law of the Sea field. A PNG student is presently studying at SFU under the "Study in Canada" project.

Financial Information:

- 1) Projected ICOD Disbursements by Fiscal Year.

FY 1988-89	\$63,000
FY 1989-90	\$73,000

- 2) ICOD Budget Components (see detailed estimates attached as Annex A).

- Canadian Specialist (salary + expenses); 1988 course	\$ 49,167
- Canadian Specialist (salary + expenses); 1990 course	\$ 49,167
- UPNG Counterpart; 18 months scholarship	<u>\$ 40,000</u>
Subtotal	\$138,334
Contingency	<u>\$ 5,666</u>
TOTAL ICOD CONTRIBUTION:	<u>\$144,000</u>

- 3) Recipient Budget Components.

- 1988 Accommodation for Canadian Specialist (\$130/wk for 30 wks)	\$ 3,960
- 1989 Accommodation for Canadian Specialist (as above)	<u>\$ 3,960</u>
	*\$ 7,920

* .6627 Kina = \$1.00 Cdn

NOTE: Other recipient contributions include the salary of the national counterpart (June-August 1988), office space, secretarial services, and assistance for joint research; however, no estimates are available.



Project #870131

Page 6

Recommendation:

It is recommended that final approval be given to project #870131, University of Papua New Guinea, Law Faculty Assistance, to a maximum ICOD contribution of \$144,000 Canadian.

ANNEX A

ICOD BUDGET COMPONENTS

A.	Canadian Specialist; 1988 course	
-	Salary (7 months at \$50,000/year)	\$ 29,167
-	Return Air Fare PNG and associated travel expenses	\$ 7,000
-	Internal/regional travel for research/consultancy work	\$ 5,000
-	Insurance (medical and personal effects)	\$ 8,000
		\$ 49,167
B.	Canadian Specialist; 1989 course	
	(as per item A)	\$ 49,167
C.	UPNG Counterpart Scholarship (18 months)	
-	estimate for return travel, living allowance, academic expenditures and insurance based on ICOD "Study in Canada" scholarship project	\$ 40,000
	Subtotal	\$138,334
	Contingency	\$ 5,666
	TOTAL ICOD CONTRIBUTION	\$144,000



International Centre for Ocean Development
Centre international d'exploitation des océans

CONFIDENTIAL

EC88/D03
Project #870183
April 13, 1988

PROJECT SUMMARY

(Approval)

Project Title: Fishing Vessel Evaluation-Seychelles

Division: Technical Assistance

Recipient/
Implementing Agency: Seychelles Fishing Authority, Government
of Seychelles

Duration: Commencement: July 1988
Duration: Twelve months

Project Components: ICOD's Master Fisherman and Naval
Architect to advise on vessel design and
fishing techniques; Seychelles to
provide counterpart staff and fishing
vessels.

Financial:

ICOD Contribution:	\$121,000
Recipient Contribution:	<u>\$111,000</u>
Project total:	\$232,000

Conditions of Approval or Comments

Record of Approval



Summary:

Background:

The artisanal fishing fleet in Seychelles is composed of older wooden schooners which are in poor repair and smaller open boats. Catch levels are low in part because of the nature of the reef stocks but also because of the quality of vessels and the difficulty of attracting young men to the fishery.

In 1984 the African Development Bank (ADB) approved a Fisheries Development Project for the Seychelles which provided funding for the design and construction of five 8m-12m fiberglass boats, five 12m-16m wooden schooners, and five 20m-22m wooden schooners. These vessels were to be constructed according to both ADB and Lloyd's specifications. Final design was to be accompanied by complete building plans and design drawings.

Technical assistance was offered by Spain and accepted by Seychelles. The Spanish have not provided design drawings or plans and the two 21.5m vessels and three 11.6m vessels nearing completion to date do not conform to ADB or Lloyd's specifications. The Spanish technical assistance has subsequently been terminated and the Seychellois are currently under ADB pressure to evaluate what has been accomplished and to make program adjustment as a result of that evaluation. In addition one GRP (glass reinforced plastic) vessel of Nordic design was obtained from a Somali boatyard.

The problem, then, is twofold:

- 1) to review what kind of fishery the quantity and the nature of the stocks will support;
- 2) on that basis, to evaluate the design and specifications of the vessels to be funded under the ADB project.

Project Description:

The long-term objective of this project is to increase the productivity and catch levels of the Seychellois artisanal fleet consistent with available stocks.

It is proposed that ICOD post a master fisherman to the Seychelles for one year. He will review reports on fisheries development (one of which has recently been



submitted by the Overseas Development Agency of the UK) and will advise on the factors to be considered in ensuring profitability in the fishery and on the potential productivity of the proposed vessel types in the ADB project.

To assist the master fisherman in the evaluation of existing fishing vessel prototypes for local conditions ICOD will provide a naval architect.

The naval architect will evaluate:

- 1) The technical performance of the following fishing vessels:
 - a. 8.5m GRP (Somali prototype).
 - b. extended L'Ekonomie GRP (local design).
 - c. 11.6 wooden (Spanish).
 - d. 22.5 wooden (Spanish).
- 2) The seaworthiness, suitability of design and optimum operating plans for each class of vessel.

The master fisherman will evaluate:

- 1) Suitable fishing techniques and equipment aboard the fishing vessels under consideration.
- 2) The economic aspects of operation plans and their impact on further development of the artisanal fishery in Seychelles.
- 3) The social aspects and level of acceptance by the fishing community.
- 4) The long term fish resource potential available to vessels of these classes.

From the above evaluation the consultants will make recommendations for the design, construction and operation of a future fleet based on these modified vessels. This will involve identification of necessary modifications and preparation of any further construction drawings and specifications.



The Seychelles Government through the Seychelles Fishing Authority, the Seychelles Marketing Board and the Island Development Authority will provide counterpart support through an economist, biologist, vessel crews and administrative staff, and prototypes of the vessel types to be evaluated.

Project Appraisal/Constraints:

- a) The evaluation of existing fishing vessel prototypes is a crucial condition of the ADB loan, particularly as Spanish technical assistance has not satisfied ADB requirements nor the operational needs of the Seychellois fleet. The ADB will withdraw the loan offer unless Seychelles commences an evaluation of vessels.

If it is established that existing reef stocks can sustain an increase in fishing effort, more cost-effective vessels and fishing methods would increase the artisanal fish catch which amounted to 4000 metric tons in 1987.

- b) Constraints and risks: The reef stocks, particularly on the inshore/central zone of the Mahe plateau, may not sustain significant increases in total catch over time if fishing is not closely regulated;

The distances travelled from ports to alternative outer-island demersal fishing grounds may limit profitability of the artisanal fishery unless adjustments are made in fuel taxes and other government controlled costs;

Hence, the Seychelles Government must be prepared to take necessary action to deal with the recommendations of the ICOD advisers.

To avoid the possibility of the African Development Bank cancelling the loan both ICOD and Seychelles must ensure that the Bank's criteria are met and that it is kept informed of the progress of the program.

Relationship to Other Projects (ICOD and Other Donors):

This project has a direct bearing on the ADB loan to Seychelles. When project goals are satisfied, Seychelles can access the ADB loan fund to modernize its artisanal fleet.



3) Recipient Budget Components:

Counterparts (incl. economist, biologists, etc.)	\$ 15,000
Office , workshops, supplies	5,000
Support Services	5,000
Housing for Master Fisherman	9,000
Internal Transport	2,000
Vessels and Operating Costs, net (Fishing revenues will defray costs)	<u>\$ 75,000</u>
TOTAL RECIPIENT CONTRIBUTION:	\$111,000

Recommendation:

It is recommended that final approval be given to project #870183 -- "Fishing Vessel Evaluation- Seychelles"-- to a maximum ICOD contribution of \$121,000 Canadian.



ANNEX A: ICOD CONTRIBUTION DETAILS

1)	Remuneration:	
	Master Fisherman, 12 months	\$ 42,000
	Naval Architect, 90 days @ \$300/day	27,000
2)	<u>International Travel, Master Fisherman</u>	
	One return trip each, Fisherman and spouse	8,000
	<u>International Travel, Naval Architect</u>	
	Two return trips	8,000
3)	<u>Living Expenses (incl. Settlement, Resettlement)</u>	
	Master Fisherman (12 months) \$3600 + \$5000 (Settlement/Resettlement)	8,600
	Naval Architect (no settlement, resettlement) 60 days @ \$100/day	6,000
4)	<u>Equipment</u>	
	Books, software, misc.	5,000
5)	Contingency	10,400
6)	Evaluation	<u>6,000</u>
	TOTAL ICOD CONTRIBUTION:	\$121,000



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CONFIDENTIAL

EC88/D05
Project # 880186
April 18, 1988

PROJECT SUMMARY

(Approval)

Project Title: Maritime Boundary Delimitation Workshop
- South Pacific

Division: Technical Assistance

Recipient/
Implementing Agency: Forum Fisheries Agency (FFA)

Duration: Commencement: July-August/1988
Duration: Ten days

Project Components: Five Canadian and one non-Canadian
expert; 28 participants (travel and per
diem).

Financial:

ICOD Contribution:	Up to \$111,000
Recipient Contribution:	<u>\$ 9,000</u>
Project total:	\$120,000

Conditions of Approval or Comments

Record of Approval



Summary:

Background:

Consistent with negotiation and adoption of the Law of the Sea Convention and international practice, two hundred mile exclusive economic zones have been declared by all countries in the South Pacific. Only a fraction of the zones border on the high seas, with the rest being contiguous or overlapping. Although declarations took place largely in the late 1970's, only a very few boundaries have been settled, and these involve metropolitan powers, Australia and New Zealand. Approximately 30 delimitation agreements must be concluded.

Governments have regularly called for assistance in delimitation, as it is recognized as an important area. In 1981, the South Pacific Forum Governments agreed on a Regional Research and Development Plan (RRDP) for fisheries, which included delimitation as one of the eleven areas for further development. Delimitation is the only area within that programme in which relatively little progress has been made to date. The Forum Fisheries Committee, while recognizing the sensitivity of the issue, has agreed that a meeting should be held which would explain broadly the technical and legal bases for maritime boundary delimitation, and examine prospects for future action. In addition, issues connected with the establishment of non-formal boundaries of licensing zones for the U.S. Tuna Treaty require discussion.

Project Description

The objective of this project is to develop and organize a regional boundary delimitation workshop for policy-makers from all FFA member states, with the following general purposes:

- a) to describe the importance and relevance of maritime boundary delimitation to the development of marine resources;
- b) to assess the region's needs, and the nature and extent of work to be done in relation to boundaries and interim licensing zones;



- c) to improve the understanding of participants about the processes involved in the delimitation of maritime boundaries; and
- d) to identify future steps and possible project areas.

It is proposed to hold the workshop in Western Samoa in July or August 1988. Two representatives from each member state would attend, in addition to extra-regional resource persons.

Project Appraisal/Constraints:

- a) The project responds to an expressed regional need, with backing from member governments.
- b) ICOD's profile is further developed in an identified area of sectoral concentration.
- c) The project builds on an area of existing Canadian expertise.
- d) Although the total cost appears high, the cost per participant (\$3,964) is at or below the average for similar previous activities. The total cost is largely a result of the high cost of travel in the region combined with the number of participants (28). It is important that participation be open to both legal and technical representatives of FFA Member States, making any reduction difficult.

Relationship to Other Projects (ICOD and Other Donors):

- a) SEAPOL Boundary Workshop (860059) - Although the South Pacific workshop is seen as a policy development exercise rather than training, it will be possible to utilize aspects of the SEAPOL course in the Pacific. A representative of FFA attended the SEAPOL course for assessment purposes, and has recommended incorporation of certain aspects and some resource persons from SEAPOL in the Pacific workshop.
- b) Erindale College Boundary Course (870123) - The training offered by ICOD for hydrographic aspects of boundary delimitation will be discussed as an option for future regional participation. South Pacific trainees have attended this course.



- c) Bilateral Boundary Assistance - ICOD has already established a presence in the region in this sector, through the provision of delimitation assistance to Kiribati (860087), Cook Islands (870163), and Western Samoa (870165).
- d) CFTC Involvement - The Commonwealth Fund for Technical Cooperation may participate through provision (on CFTC funding) of resource persons. CFTC has been involved in boundary delimitation in the region.
- e) Computerized Delimitation Programme (870141) - FFA has expressed interest in utilizing DELMAR, ICOD's computerized boundary delimitation programme, at a regional level. It is proposed to incorporate DELMAR in the workshop.

Financial Information:

1)	Projected ICOD Disbursements by fiscal year:	
	FY 1988/89:	\$111,000
2)	ICOD Budget Components:	
	1. <u>Participants</u>	
	Airfares (26)	\$ 29,900
	Living Allowance, Accommodation	28,080
	2. <u>Experts (6)</u>	
	Airfares	30,000
	Living Allowance, Accommodation	5,400
	Fees	7,200
	3. <u>Other</u>	
	Organizational Meeting	4,000
	Reception	500
	Stationery, photocopying	<u>1,000</u>
	Sub-total	106,080
	Contingency (Approx. 5%)	<u>4,920</u>
	TOTAL ICOD	\$111,000



3) Recipient Contribution:

1. Administrative Support	\$ 2,500
2. Staff Time	3,500
3. Communications	1,000
4. Computer Services	<u>2,000</u>
TOTAL FFA	\$ 9,000

BUDGET NOTES

1. Estimated on 26 participants at average of 12 days in travel status. Additional two participants are based in Samoa.
2. Expert costs assume 5 Canadian experts, 1 Australian for average of 10 days travel status. Fees estimated for 3 experts only, at average of \$300/day for 8 days.
3. Organizational meeting provides for one visit of FFA Legal Officer to meet Canadian experts to discuss final agenda and presentations.

Recommendations:

It is recommended that final approval be given to project #880186--"South Pacific Boundary Delimitation Workshop"--to a maximum ICOD contribution of \$111,000 Canadian



International Centre for Ocean Development
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CONFIDENTIAL

EC88/D04
Project #870182
April 18, 1988

PROJECT SUMMARY

(Approval)

Project Title: Production Assistance for Artemia salina
--Mauritius.

Division: Technical Assistance

Recipient/
Implementing Agency: Ministry of Agriculture, Fisheries and
Natural Resources, Government of
Mauritius

Duration: Commencement: November/December 1988;
Duration: Nine months, including
evaluation.

Project Components: ICOD consultant for initial study and
implementation; construction of ponds
and purchasing cysts by Mauritius.

Financial:

ICOD Contribution: \$ 56,500

Recipient Contribution: \$ 48,750

Project total: \$105,250

Conditions of Approval or Comments

Record of Approval



Summary:

Background:

The Ministry of Fisheries plan to significantly increase its cultivation of prawns. The primary feed stock for prawns is the brine shrimp Artemia salina, sought by countries around the world for their respective fish and prawn culture programs, and which results in a continuing strong demand for the product. In order to feed current shrimp production (supported by a Japanese-funded aquaculture centre), Mauritius imports 600 kg. of freeze-dried, flaked Artemia cysts (the juvenile stage of development) per year at a cost of US \$45,000. No acceptable substitute for Artemia has yet been found.

In 1986, Mauritius produced approximately 50 metric tons of prawns and by end of 1988 it is hoped to double that volume. Because prawns are protein-rich, high-value, and marketable, Mauritius hopes to substantially increase production over the coming years.

Large-scale culture of the Artemia cyst under local conditions will result in significant production cost savings and enhance the knowledge base at the Albion Fisheries Research Centre. Thailand, where Artemia salina is not native, has successfully developed commercial production techniques in man-made ponds using locally available materials. It is expected that the experience gained there and elsewhere can be utilized by Mauritius.

Project Description:

- A) The longer term objective is to establish a production system for commercial volumes of Artemia salina, leading to increased prawn production.
- B) Under the project, ICOD would provide a consultant to work with counterparts in Mauritius to:
 - a) Identify locally available, inexpensive feed for the A. salina and assist with plans for future production levels.
 - b) Plan the infrastructure and capital components of an Artemia production system.



The government of Mauritius plans to build up to six rectangular ponds of 20m x 10m x 1m equipped with water supply. The consultant will assist with pond site selection and construction preparation.

- C) The consultant will return when the artemia is introduced to the ponds and production commences.
- D) At the end of the technical assistance time period, the consultant will turn project management over to Mauritians. A follow-up evaluation visit, after a two-month interval, will be undertaken to monitor the project and suggest adjustments to the program if required.
- E) Beneficiaries are the Ministry of Fisheries and ultimately the aquaculture sector in Mauritius.

Project Appraisal/Constraints:

- A) The project is a major component of the Government's policy to encourage local production of protein-rich seafood. The high priority has been confirmed by the Minister of Fisheries, who expects to double prawn production to 100 metric tons/year by end 1988.

Substantial foreign exchange will be saved through local production and an opportunity could be created for regional exports of A. salina and prawns themselves.

- B) Constraints and risks: The success of the overall project hinges on the government's commitment to build the production ponds. Success is also dependent on the identification of cheap and plentiful supplies of food for A. salina which is the only guarantee of long-term economic viability.

Relationship to Other Projects (ICOD and Other Donors):

This project is follow-up to the Artemia salina SEAFDEC workshop participation project 87-0180 funded by ICOD.



Financial Information:

- 1) Projected ICOD Disbursements: FY 1988/89: \$45,000
 FY 1989/90: \$11,500

- 2) ICOD Budget Components (Details in Annex A):

Consulting Fees	\$27,250
International Airfares	12,000
Living Allowance	12,190
Equipment	<u>2,000</u>
Subtotal	\$53,440
Contingency	<u>3,060</u>
TOTAL ICOD CONTRIBUTION:	<u>\$56,500</u>

- 3) Recipient Budget Contribution:

Counterpart Salaries	\$ 5,000
Concrete Pond Construction (6 units)	40,000
Water Pumps	2,000
Purchase of <u>Artemia</u> cysts	1,000
Internal Transport	250
Office and Support Services	<u>500</u>
RECIPIENT CONTRIBUTION:	<u>\$48,750</u>



Project #870182

Page 5

Recommendation:

It is recommended that final approval be given to project #870182--"Production Assistance for Artemia salina-Mauritius"--to a maximum ICOD contribution of \$56,500 Canadian.



ANNEX A: ICOD CONTRIBUTION DETAILS

Consulting Fees:

109 days @ \$250 (14 days planning, 90 days implementation, and 5 days follow-up)	\$27,250
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International Airfares:

One trip (planning)	4,000
One trip (implementation)	4,000
One trip (follow-up)	4,000

Living Allowance:

104 days @ \$110/day (long-term accommodation)	11,440
5 days @ 150/day (short-term accommodation)	750

Equipment:

Books, journals, specialized software	<u>2,000</u>
TOTAL	\$53,440
CONTINGENCY	<u>3,060</u>
TOTAL	\$56,500



ANNEX B

A NOTE ON

ARTEMIA

1. Introduction:

The commercialisation of the Artemia industry first occurred in the early 50's. The industry is expected to expand significantly in the future. Higher worldwide sales are expected as a result of the fast development of the shrimp aquaculture industry especially in South East Asia and South America and by a further diversification of Artemia products.

2. Sales:

In 1985, about 80-90 metric tons of Artemia cysts were marketed. By the year 2000, sales volume is expected to reach 150-170 metric tons, per year.

3. Supply:

On a worldwide basis, stocks at the end of June 1987, were estimated at 200 metric tons. Thus, there is no real shortage in the supply of Artemia cysts at present, except for quality product. Only 50% of available cysts have a hatching quality of more than 50% hatching. The nutritional composition of cysts is often a function of their geographical origin. Hatcheries of shrimps and marine fish could improve their outputs when provided with details of the fatty acid content of commercial cyst catches.

It has been noted that there are large differences in product quality cyst prices, ranging from US \$30 per kg to US \$80 per kg.

4. Production:

In 1987, more than 3500 metric tons of Artemia biomass (adults) were harvested on an annual basis from natural systems and commercialised as a live or frozen product mostly for the tropical or ornamental pet fish industry.



5. Future Prospects:

In view of the fast expanding aquaculture industry for which Artemia biomass has proven to be in very valuable food, it is predicted that the demand for biomass will increase very significantly in the years to come. The frozen dried product appears to have the highest potential although its production cost is much higher than for frozen Artemia (an extra US \$14 per kg for dried product). This preference for freeze-dried product over frozen product stems from the reduction in transport and storage costs, consistency in quality and its availability as an off-the-shelf product.

Artemia producers/suppliers are convinced that the natural production systems will be able to meet, without any problems, all future demands for Artemia biomass by the fast growing aquaculture industry.

It has been stated that the development of small scale Artemia business in many developing countries will become more and more important. Local independency has, in many cases, almost become a reality by proper integration of extensive Artemia farming into their aquaculture plant, which makes the brine shrimp application very promising. This type of artisanal Artemia production, eventually integrated in existing pond production of shrimp and/or fish will gain more interest as it contributes to local independence of costly and vital imports of Artemia.

Source: Workshop Report on "Artemia As a Business", Artemia Newsletter, June, 1987.



International Centre for Ocean Development
Centre international d'exploitation des océans

CONFIDENTIAL

EC88/D24
Project #880214
August 29, 1988

PROJECT SUMMARY

(Approval)

Project Title: Eastern Caribbean- Fisheries Monitoring,
Control and Surveillance

Division: Technical Assistance

Recipient/
Implementing Agency: The Organisation of Eastern Caribbean
States

Duration: Commencement: Upon Approval
Duration: One Year

Project Components: Surveillance Coordinator, Surveillance
Advisor, Observers' Workshop

Financial:

ICOD Contribution:	\$ 155,200
Recipient Contribution:	<u>3,289,240</u>
Project total:	\$3,444,340

(This portion for details of approval)

Conditions of Approval or Comments

Record of Approval



Summary:

Background:

In keeping with increased responsibilities resulting from the adoption of extended fishing zones the OECS Fisheries Unit intends to mount a comprehensive regional fisheries monitoring, control and surveillance (MCS) program. As a first step, the Unit intends to undertake a one year project, during which detailed plans for the regional MCS program will be prepared.

Initial surveillance and enforcement activities undertaken by the OECS Fisheries Unit, and supported by ICOD, included a consultancy which focused on the identification of surveillance requirements and enforcement capabilities within the region (ICOD project 870175). The consultant's report was discussed in detail at a regional workshop on Fisheries Access, Monitoring, Control and Surveillance, in Dominica, August 1988 (ICOD project 880199), where it was recommended that the OECS Fisheries Unit implement a regional surveillance program which would include:

- a) The development and implementation of a regional licensing system which would be administered by a central authority, such as the OECS Fisheries Unit;
- b) The development and coordination of regional surveillance exercises and patrols;
- c) The establishment and maintenance of a regional register of foreign fishing vessels operating in the region;
- d) The establishment of a coastwatchers' program, utilizing the general public and making them aware of the problems and their responsibilities towards the protection and conservation of the regions maritime resources;
- e) The establishment of a regional coordinating center for fisheries surveillance and enforcement at the Fisheries Unit. This center would collect and disseminate information that could assist Member States to arrest and prosecute vessels caught fishing illegally. The center would also standardize forms and procedures related to monitoring and control of foreign fishing in the region.



The success of early regional surveillance initiatives, which included arrests of foreign vessels fishing illegally, has resulted in Member States providing more support for surveillance operations. After the conclusion of the ICOD supported pilot project in aerial surveillance most Member States have included funds for aerial surveillance in the Fisheries Division budgets for the current fiscal year, while the remainder have stated their intention to do so in the future. Similarly, national Coast Guards, which operate regular patrol operations for drug enforcement and search and rescue, agreed in principle during the workshop to undertake a minimum of five days of fisheries patrol per month. These patrols will be conducted within a regional fisheries surveillance plan and carry a representative of the national Fisheries Division on board.

Project Description:

- A) The general objective of this project is to assist the OECS and its Member States in the management of the region's fishery resources. The specific objectives of this project are to:
- i) Plan and establish a regional fisheries observer program for implementation during the 1988 swordfishing season.
 - ii) Prepare a detailed regional fisheries monitoring, control and surveillance plan for implementation under the direction of a regional Surveillance Coordinator.
- B) The project will consist of support for a regional Surveillance Coordinator, to be recruited by the OECS, for one year, a Canadian consultant advisor to assist the Surveillance Coordinator and a regional planning workshop for a Fisheries Observer program.

Based upon the review and evaluation of initial results of the one year project, ICOD will be asked to consider follow-on support for the implementation of all, or part, of a comprehensive regional fisheries monitoring, control and surveillance program.



The OECS will identify and recruit a regional Surveillance Coordinator who will be responsible for planning a regional surveillance program for implementation by Member States. This plan will be prepared within guidelines recommended during the OECS Workshop on Fisheries Access, Monitoring, Control and Surveillance as approved by the OECS Authority. The Canadian consultant will work closely with the Surveillance Coordinator to assist him/her in preparing detailed surveillance plans.

As part of the planning activities, the OECS will organize and host a regional workshop on Fisheries Observers which will focus on the design of a regional fisheries observer program to be implemented as an integral part of the surveillance plan. Resource persons from Canada and, if required, the South Pacific will be made available for this workshop.

Project Appraisal/Constraints:

A) Appraisal:

- 1) This project supports a priority fisheries management initiative identified for the OECS Fisheries Unit. By increasing the capacity of the OECS Fisheries Unit to respond to the needs of the OECS Member States the project will permit the Fisheries Unit to address a critically important aspect of regional fisheries development.
- 2) The project promotes the development of an indigenous capacity to control foreign fisheries activity on a regional basis.
- 3) This project involves participation of fishermen in fisheries management on a regional basis through such activities as the vessel observer program which will be implemented under the direction of the Surveillance Coordinator.
- 4) This project enables the OECS to access an area of proven Canadian expertise.
- 5) This project could facilitate south-south cooperation in technology transfer, particularly with the South Pacific.



- 6) Subject to the adoption and implementation of a regional fisheries monitoring, control and surveillance program, Member States of the OECS can benefit from increased revenues from foreign fishing licenses, the reduction of competition for local fishermen from illegal foreign fishing activity, and possibly from fines collected from vessels caught illegally fishing.

B) Constraints:

- 6) A statement of long-term commitment for the Surveillance Coordinator will be required before proceeding with follow-on support for other activities within the regional monitoring, control and surveillance program.
- 7) The ultimate success of the program will depend on the commitment of OECS Member States to the principles, planning and execution of fisheries management in the Sub-Region.

Relationship to Other Projects (ICOD and Other Donors):

This project:

- a) follows up on progress made by the OECS with the ICOD funded pilot project - Fisheries Surveillance - Eastern Caribbean (870175) and the OECS Workshop on Fisheries Access, Monitoring, Control and Surveillance (880199);
- b) strengthens the on-going activities of the OECS Fisheries Unit (850010) in the area of regional fisheries management;
- c) forms the foundation upon which a comprehensive ICOD supported regional fisheries monitoring, control and surveillance within the Eastern Caribbean could be based; and,
- d) facilitates the transfer of knowledge and experience gained in the South Pacific on the ICOD funded fisheries surveillance project (850011 - FFA Surveillance) to the Eastern Caribbean.

Financial Information:

A) Projected ICOD Disbursements by Fiscal Year.

Fiscal Year 1988/89:	\$78,500
Fiscal Year 1989/90:	\$76,700

B) ICOD Budget Components (see detailed estimates attached as Annex A)

1) Recruitment Expenses	\$ 4,700
2) Surveillance Coordinators' Salary	25,000
3) Travel	12,800
4) Consultant Advisor	58,950
5) Communications	3,000
6) Observers Workshop	30,560
7) Report Production	3,000
Sub-Total ICOD Expenses	<u>138,010</u>
8) Contingency (9%)	12,445
9) Evaluation	4,745
Total ICOD Expenses	<u>\$155,200</u>

C) OECS Budget Components (in-kind)

1) Office Space	\$ 6,000
2) Secretarial and Clerical Support	25,000
Total OECS Contribution	<u>\$31,000</u>

D) OECS Member States Components (in-kind)

1) Marine Surveillance (\$50,000 per 5 day cruise per island x 8 months)	\$3,200,000
2) Aerial Surveillance (\$910 per month per island x 8 months)	<u>58,240</u>
Total Member State Contribution	\$3,258,240

Recommendation:

It is recommended that final approval be given to project #880214 -- Eastern Caribbean Fisheries Surveillance, Monitoring and Control -- to a maximum ICOD contribution of \$155,200 Canadian.



ANNEX A

ICOD BUDGET DETAILS

Recruitment Expenses

1) Travel Interviews	\$ 4,000
2) Advertising	200
3) Telephone/Telex	500

Personnel Expenses

4) Surveillance Coordinators' Salary	25,000
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Travel Expenses
(based on two 2.5 day trips per island)

5) Inter-island air fares	6,400
6) Accommodation and Living Expenses	6,400

Consultant Expenses

7) Fees (100 days at \$300 per day)	30,000
8) Travel (Canada-Caribbean return) (inter-island)	4,950
9) Accommodation and Living Expenses (150 days at \$160 per day)	24,000

Communications

10) Telephone and Telex	3,000
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Observers Workshop
(based on 3 participants per island for 5 days)

11) Participants Travel	4,800
12) Accommodation and Living Expenses	16,800
13) Resource Persons- Fees (5 days at 350 per day)x2	3,500
14) Resource Persons- Travel (Canada-Caribbean)x2	3,500
15) Resource Persons- Accommodation and Expenses	1,960

Report Production

16) Printing and Distribution	<u>3,000</u>
SUB-TOTAL ICOD EXPENSES	\$138,010
17) Contingency	12,445
18) Evaluation (consultant fees, travel and expenses for 5 days)	<u>4,745</u>
TOTAL ICOD EXPENSES	\$155,200



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International Centre for Ocean Development
Centre international d'exploitation des océans

October 26, 1988

APPROVED PROJECTS LIST

SOUTH PACIFIC

Technical Assistance

- 85-0011 FFA Surveillance - This project enables the South Pacific Forum Fisheries Agency (FFA) to enhance the surveillance and enforcement capabilities of its independent member states. The specific objectives include the establishment of a regional surveillance and enforcement advisory service, support for its related operations and the training of surveillance officers. A Canadian surveillance advisor was posted to FFA for a two year period. His term finished in December 1987. A replacement has been posted to continue this project. A 2-year project extension has been approved to begin in 1989.
\$600,000 Cdn. (3 years).
Extension - \$400,000 Cdn. (2 years).
- 85-0012 Vanuatu Fisheries Extension Centres - In cooperation with CUSO, this project assists the Department of Fisheries in furthering artisanal fisheries extension centres and services in Vanuatu villages.
\$25,500 Cdn. (2 years).
- 85-0013 Fisheries Research Needs Assessment - The research
86-0075 needed to advance the further management and development of the South Pacific fisheries and the potential role of Canadian expertise in expanding the region's small-scale fisheries were assessed in a study carried out by a Canadian and a South Pacific consultant on behalf of the South Pacific Forum Fisheries Agency. \$55,000 Cdn. (6 months).
- In 1987, this assessment was extended to countries not previously covered. The recommendations of the consultants led to the establishment of a Research Coordination Unit at FFA (Project #87-0116). \$25,000 Cdn. (3 months).
- 86-0041 Regional Marine Geology Program (CCOP/SOPAC) - The Committee for Co-ordination of Joint Prospecting for Mineral Resources in South Pacific Offshore Areas (CCOP/SOPAC) is developing a program for the identification and management of nearshore mineral resources in the South Pacific. A Canadian geologist has been posted to the CCOP/SOPAC Secretariat in Fiji for two years. \$250,000 Cdn. (2 years).



- 86-0047 Coastwatchers Pilot Project - ICOD funded a pilot project in the Solomon Islands to establish a network of surveillance assistants on outer islands to monitor foreign vessels. Training and equipment (radio, binoculars) were provided. \$15,000 Cdn. (1 month).
- 86-0079 Communications Study (FSM) - In cooperation with the South Pacific Forum Fisheries Agency, a surveillance communications system for the Federated States of Micronesia was designed with the help of a Canadian consultant to facilitate communications between these widespread islands. \$15,000 Cdn. (1 month).
- 86-0082 VFDP Evaluation - A comprehensive review of the five year village Fisheries Development Program (VFDP) was undertaken by a Canadian consultant to assist the Government of Vanuatu in the long-term planning for its small-scale fisheries. The results of this review also will assist ICOD and other organizations to assess applications for similar programs in other islands in the region. \$56,900 Cdn. (1 year).
- 86-0083 Vanuatu Fishermen's Study/Training Tour - An overseas training tour for leading village fishermen to expose them to improved fish catching and handling methods was supported on behalf of the Government of Vanuatu. In addition to providing insight into two important target markets, the project contributed to a general program for the improvement of fish handling and marketing in Vanuatu. \$40,000 Cdn. (2 months).
- 86-0085 Fisheries Short Courses - In cooperation with CUSO, two short courses were delivered at fisheries extension centres in Vanuatu. The courses focused on fishing skills and cooperative management procedures. \$2,300 Cdn. (1 month).
- 86-0086 Research Institute Feasibility - In cooperation with the University of the South Pacific (USP) and the South Pacific Forum Fisheries Agency (FFA), a feasibility study and review of the fisheries research activities of the USP, including recommendations for the creation of a regional fisheries research institute, was undertaken by Canadian and South Pacific personnel. Recommendations from this study led to the establishment of an FFA Research Coordination Unit (Project #87-0116). \$48,000 Cdn. (6 months).



- 86-0087 Kiribati Boundary - Advisory assistance was provided to Kiribati on issues with respecting maritime boundary delimitation. \$26,600 Cdn. (2 months).
- 87-0116 Research Coordination Unit - Forum Fisheries Agency - A Research Coordination Unit is being established within the Forum Fisheries Agency, with the objective of providing advice on the planning, formulation and implementation of national and regional fisheries research projects. This Unit will also facilitate the provision of funding through other agencies for the conduct and monitoring of research activities, and encourage transfer of expertise to national research scientists on attachment to the Agency. A coordinator was posted in January 1988. \$490,000 Cdn. (3 years).
- 87-0120 Surveillance Statistics Consultancy - The Australian and New Zealand Air Forces conduct overflights of the South Pacific for fisheries surveillance purposes. In order to assist the tasking of this activity by the Forum Fisheries Agency, the FFA conducted a detailed analysis of existing surveillance data. A consultant familiar with the database was hired for the project. \$12,800 Cdn. (1 month).
- 87-0144 Tradition and Inshore Fisheries Development - South Pacific - In most countries of the South Pacific, the traditional base for inshore fisheries is still of social importance. In recognition of this, the Forum Fisheries Agency plans to establish a program of assistance for member governments wishing to examine, document and utilize tradition in developing their inshore fisheries. This project will make it possible to retain the best elements of traditional inshore fisheries while using modern management principles and stock assessment methods. The Solomon Islands will be the first to survey its traditional methods and a report of the findings will be produced. \$16,500 Cdn. (7 months).
- 87-0150 Rural Fishing Groups - Solomon Islands - This project will support the development of four small-scale fishing groups in Western Province, Solomon Islands, through assistance in boat-building, fisheries extension and marketing. ICOD will support a project officer/advisor, boat-building materials and working capital on a loan basis. An advisor was posted in May 1988. \$73,000 Cdn. (2 years).



- 87-0161 Vanuatu Fisheries Extension Advisor - This project will assist the development of a rural fisheries extension service in Vanuatu through the provision of advisory assistance by an experienced fisherman from Canada. The extension service will provide advice and support to small scale fishing enterprises created under the Vanuatu Village Fisheries Development Program (VFDP). The advisor was posted in June 1988. \$92,000 Cdn. (2 years).
- 87-0162 Regional Fisheries Database Implementation - This project is expected to improve the capacity of the Forum Fisheries Agency's (FFA) computer services section. A series of three short-term consultancies will assist in the implementation of new software on FFA's minicomputer. The focus will be the integration of the regional fishing register, log sheet data, the mapping system, licensing data and the United States tuna treaty system in one database. This integration will improve the efficiency and effectiveness of FFA's data management systems. \$32,000 Cdn. (3 months).
- 87-0163 Cook Islands Boundary Delimitation Assistance - Two Canadian consultants provided technical and legal advice respecting maritime boundary delimitation issues in the Cook Islands. \$30,500 Cdn. (2 months).
- 87-0164 South Pacific Prosecutions Procedures Study - The ICOD/FFA Prosecutions Workshop (Project 87-0115) recognized the need for proper prosecutions procedures. This project provides a consultant to draft standard fisheries offenses and penalties; prepare supplementary regulations; establish evidentiary provisions and prepare a procedures manual for prosecutors. \$48,500 Cdn. (5 months).
- 87-0165 Western Samoa Boundary and Legislation Assistance - This project provided assistance in a review of marine legislation and maritime boundary issues in Western Samoa. Two consultants (one legal and one technical) advised the Western Samoan government on these issues. \$29,000 Cdn. (2 months).
- 87-0169 Vanuatu Fisheries Extension Program - Monitoring System - A Canadian consultant assisted the Vanuatu Fisheries Department to establish a data collection and analysis system for the monitoring of inshore fisheries and artisanal fisheries extension services. \$9,300 Cdn. (1 month).



- 87-0170 Support for Inshore Fishery Resource Workshop - South Pacific - The Inshore Fisheries Research Project (IFRP), established by the South Pacific Commission is conducting a workshop for regional scientists in March 1988, in cooperation with FFA. This workshop facilitated the exchange of research information in the region and will feature several key note speakers who are experts in their field. ICOD support under this project allowed the participation of five Island national experts in the workshop. Ref. #87-0157. \$16,000 Cdn. (2 weeks).
- 87-0173 Legal Affairs Unit - Forum Fisheries Agency - Interim salary and program support for the FFA legal unit is provided by this project. The legal officer provides legal advisory services in fisheries matters to FFA member governments, supports fisheries access negotiations, reviews fisheries legislation, provides legal training and prepares policy papers and briefs for FFA member governments. \$49,000 Cdn. (5 months).
- 87-0176 Small Projects Fund - FFA - Assistance was provided to the FFA to undertake six discrete sub-projects within its approved regional work program. These included economic analysis of national project proposals, legal consultancies and computer development in fisheries departments. \$26,500 Cdn. (2 months).
- 87-0178 Vessel Surveillance System Feasibility Study - A Canadian consultant is reviewing technical options and feasibility for a proposed Vessel Surveillance System based on on-board data transponders, utilizing Canadian technology. \$40,000 Cdn. (4 months).
- 88-0186 Maritime Boundary Delimitation Workshop - South Pacific - In cooperation with the FFA, a regional workshop on maritime boundary delimitation issues will be developed and implemented. Policy makers from all countries in the region will assess regional needs and identify areas for potential cooperation at the regional level. \$11,000 Cdn. (2 weeks).



- 88-0215 Regional Fisheries Observer Program - The regional tuna treaty in the South Pacific provides for the placement of fisheries observers on board vessels, to ensure compliance with access terms and to further collection of scientific data on the tuna resource. The observer program is to be operated on a regional basis, with observers placed on vessels for the duration of trips encompassing several national fishing zones.
\$110,000 Cdn. (2 years).

Information

- 86-0065 Study of Information Systems (South Pacific) - In collaboration with the South Pacific Forum Fisheries Agency, the South Pacific Commission and the Pacific Information Centre, an assessment of fisheries and marine information and data and statistics systems and recommendations for the South Pacific have been prepared. \$19,500 Cdn. (2 months).
- 86-0096 Representatives to Regional Fisheries Information Meeting - At the request of the South Pacific Forum Fisheries Agency, support was provided for the participation of representatives from seven Pacific island states to the Regional Fisheries Information Meeting. The objective of this meeting, held in Noumea, New Caledonia, March 23-28, 1987 was to elaborate the framework for a Regional Fisheries Information System for the South Pacific.
\$20,000 Cdn. (1 month).
- 87-0106 Preparatory Study for the Establishment of the Pacific Islands Marine Resources Information System - Further to the regional meeting held in New Caledonia, March 1987, a preliminary proposal for the establishment of the Pacific Islands Marine Resources Information System (PIMRIS) has been developed. However, further information on existing information resources and training requirements still needed to be gathered for some islands in order to finalize the proposal. Regional and local personnel carried out this task under the coordination of the Pacific Information Centre of the University of the South Pacific.
\$20,000 Cdn. (2 months).



- 87-0130 Development of the Regional Coordination Unit at the Pacific Information Centre (PIC) for a Pacific Islands Marine Resources Information System (PIMRIS) - A marine resources information system in the South Pacific has been identified as a crucial factor in providing access to information in the Region. PIMRIS is expected to provide that access. It will consist of a coordinating centre at PIC, and three focal points, one each at the Forum Fisheries Agency (FFA), the South Pacific Commission (SPC) and Committee for the Coordination of Joint Prospecting in South Pacific Offshore Areas (CCOP/SOPAC). This project supports the coordinating unit at PIC. See also Project #870137 and #880193. \$367,500 Cdn. (3 years).
- 87-0137 Strengthening Technical Information Services in Marine Geology and Non-Living Resources for the South Pacific Region - As one of the focal points of PIMRIS, CCOP/SOPAC requires upgrading of its library and publication services. This project will provide a trained librarian, a well organized library, an effective publication service, and increased information services that are not now available. All of these aspects will improve the effectiveness of researchers and other users of the information system and support CCOP/SOPAC's Technical Secretariat. See also Project #870130 and 880193. \$326,700 Cdn. (3 years).
- 87-0168 Publication: Management of Marine Resources in Kiribati - A book, entitled Management of Marine Resources in Kiribati and authored by Mr. Roniti Teiwaki, is expected to contribute to the understanding of marine resources management. It provides an account of past developments, major problems of evolving an effective fisheries management system and the problems of ocean mineral and security interests. \$8,000 Cdn. (3 months).
- 87-0179 Environmental Education Kit on Coastal Zone Protection - ICOD will assist the South Pacific Regional Environmental Programme (SPREP) by supporting this project to develop education material relating to coastal zone protection. An information kit consisting of booklets, posters, a fact sheet and case study leaflet will be put together by a consultant writer and a Noumea based graphic artist. \$39,500 Cdn. (7 months).



- 88-0193 Enhancement of Fisheries Information Handling Capabilities at the Forum Fisheries Agency (FFA) - This focal point for PIMRIS at FFA requires staff, publication and information services support. The project will assist the FFA to collect, synthesize and distribute information on fish marketing, legal matters, statistics and industry intelligence. An Information Officer and a librarian will staff the information centre and carry out the Agency's role as a clearing house for information between member states and outside sources. See also Project #870130 and #870137. \$358,000 Cdn. (3 years).
- 88-0196 Fisheries Training Videos on Fish Chilling - A recognized need for a series of training videos that will demonstrate technical aspects of onboard and onshore fish handling, processing and storage methods will be met through ICOD's support of the South Pacific Commission on this project. Three 10 to 15 minute videos on fish chilling will be produced. Subjects to be covered are handling and storage on board a vessel, handling and storage onshore and exporting chilled fish. \$29,500 Cdn. (6 months).
- 88-0205 Marketing Studies of Marine Products (FFA) - Since 1983 various market studies on specific products (Tuna loins, Giant Clams, Precious coral, Marine aquarium fish, Eucheuma seaweeds, Specimen shells, Pearl and trochas shells, Beche-de-mer, and Fresh fish transport and marketing in Japan, Australia, Hawaii and New Zealand) were conducted by, or in collaboration with, the FFA. This project will support the publication of a consolidated volume of these market studies and disseminate the results of these studies as widely as possible, within the South Pacific region. The FFA is responsible for the compilation and preparation of the final text, and the Institute of Pacific Studies at the University of the South Pacific will edit, typeset, publish and market the book. \$20,000 Cdn. (6 months).

Training

- 86-0057 CCOP/SOPAC Non-Fuel Marine Mineral Resources Management Course - As a follow-up to the Non-Fuel Mineral Course held in Halifax in March, 1987 (Project #86-0028), a regional training program is being designed in cooperation with CCOP/SOPAC for geologists and senior decision-makers. The proposed course, to be held in Savusavu, Fiji, in October 1988, will be tailored to the particular needs and interests of the South Pacific island nations. Member country participants will be provided with the basic skills and theoretical background to assess the potential non-fuel mineral resources of their nearshore areas and to formulate appropriate plans and policies to develop and manage mining in their coastal and economic zones. ICOD will also provide sponsorship for 12 participants to attend the course. \$80,000 Cdn. (1 year).
- 87-0111 SPC Fisheries Extension Skills Course - A South Pacific Commission (SPC) survey of member countries indicated that training in the area of fisheries extension work was considered a priority. In response, SPC developed a course in Fisheries Extension Skills and Communication Techniques for senior Pacific Island Fisheries Officers. The regional course, conducted in Fiji, was intended to "train trainers" so that similar courses could be conducted for national fisheries departments. \$88,000 Cdn. (1 month).
- 87-0113 FFA Observer Training Course - The provisions of the Fisheries Treaty between the Forum Fisheries Agency (FFA) and the United States permits the placement of member country observers on foreign fishing vessels. In order to train observers, the FFA will conduct two two-week courses which will cover legal, scientific and marine aspects of observer duties (project #85-0011). The first of the two courses was held in Western Samoa. \$46,200 Cdn. (3 months).
- 87-0115 FFA Fisheries Enforcement Workshop - The Forum Fisheries Agency (FFA) has conducted a workshop designed to assist Member States to effectively enforce regional and sub-regional fisheries access agreements. The objective of the workshop, attended by fisheries prosecution experts, was to standardize the approach to fisheries prosecutions in the South Pacific region. \$58,000 Cdn. (6 days).



- 87-0128 Mariculture Training: Micronesia - Over a two year period, a total of twelve trainees from The Republic of Palau, The Federated States of Micronesia and the Republic of the Marshall Islands will attend a one-month training course in giant clam cultivation methods. Giant clams are a highly valued food source. The course will be conducted by the Micronesian Mariculture Demonstration Centre in Palau. The project will promote the production of clams for the purposes of resource enhancement and food production. \$65,000 Cdn. (2 years).
- 87-0131 University of Papua New Guinea, Law Faculty Assistance - The Law Faculty of the University of Papua New Guinea is being assisted in the development of its capacity in the field of Law of the Sea. A Canadian specialist has been posted to teach the 1989 Law of the Sea course at UPNG. A second posting is expected for 1990. In order to ensure future capacity in this field, post graduate training in Canada is being provided for a Papua New Guinean Law Graduate. \$136,000 Cdn. (20 months).
- 87-0157 SPC Workshop on Inshore Fisheries Resources; Expert and Participant Sponsorship - The South Pacific Commission, under its Inshore Fisheries Research Project, conducted a workshop for regional scientists in March 1988. The workshop was intended to facilitate the exchange of research information in the region and featured key note speakers who are recognized experts in their field. Two experts from Canada contributed to the workshop under ICOD sponsorship. Additionally, ICOD sponsored three South Pacific scientists selected to attend the workshops. Ref. Project #87-0170. \$21,000 Cdn. (2 weeks).



- 88-0188 Fisheries Extension Training Courses; Pacific Island Countries - To enhance the effectiveness of fisheries extension services, Fisheries Extension courses will be conducted for Fisheries Department personnel in up to six Pacific Island countries. These national level courses were developed and prepared by fisheries officers who attended the regional Fisheries Extension Skills and Communication Techniques course conducted this year by the South Pacific Commission (SPC). The in-country courses are being delivered by national fisheries officers with the assistance of a tutor from the regional level course. The draft "Fisheries Extension Manual for Trainers and Extension Workers for the South Pacific", developed during the Fiji course, is being utilized by instructors conducting in country courses. The Manual will be finalized for publication. See also Projects #860026, 870111.
\$130,000 Cdn. (1 year).
- 88-0201 Papua Region Women's Training Course on Fish Processing and Marketing - The Provincial Councils of Women, with support from the Department of Home Affairs and Youth, Division of Women's Affairs, Papua New Guinea are trying to involve women in viable enterprises which will generate income. This project will provide training in fish processing and marketing to selected women leaders. At the end of the course, participants will be able to prepare an action plan for small scale fish processing and marketing for their home area.
\$22,400 Cdn. (2 weeks).
- 88-0204 Regional Women's Conference, Participant Sponsorship-Resource women from the Cook Islands, Niue, Papua New Guinea, Solomon Islands, and Vanuatu were sponsored by ICOD to attend the Regional Women's Conference September 19-23, 1988 and to prepare a report on the conference. Their report is to include recommendations on how the role of women in fisheries could be developed in their respective countries.
\$6,500 Cdn. (1 week).



- 88-0206 Training Program in Computerized Geological Data Management Systems - CCOP/SOPAC has requested ICOD funding to support a regional project to train island member nationals in the operation of computerized geological data and information management system presently being developed at Techsec and the subsystems utilizing personal computers (PC's) in each member country. The training will commence immediately upon the installation of the PC's provided to Techsec by the EEC. \$135,000 Cdn. (3 years).
- 88-0211 Micro Computer Training and Systems Development; Pacific Island Fisheries Departments - This project consists of two computer training courses, one introductory and one intermediate; and a Fisheries System Workshop to be conducted at the University of the South Pacific Computer Training Centre in 1989. These courses will provide specialized computer training for Pacific Island Fisheries Department personnel and will develop the databases necessary to manage fisheries resources. \$135,000 Cdn. (6 months).

Scholarships

- 86-0026 Fishing Skills Course (SPC) - Two participants (Solomon Islands and Vanuatu) were awarded scholarships for a course in fishing skills extension methods. This was offered by the South Pacific Commission (SPC) in 1986. \$7,800 Cdn. (2 months).
- 86-0062 Tropical Fisheries Diploma Scholarships (University of the South Pacific); Federated States of Micronesia - Seven scholarships were granted to students from the South Pacific Region to pursue the three-year Tropical Fisheries Diploma Program offered by the University of the South Pacific. Students from the Federated States of Micronesia are completing their second year of study. \$232,300 Cdn. (3 years).



- 87-0112 CCOP/SOPAC Fellowship Scheme - Given the shortage of national technical expertise, the Committee for Coordination of Joint Prospecting for Mineral Resources in South Pacific Offshore Areas (CCOP/SOPAC) and ICOD have established a fellowship scheme to permit the secondment of member country nationals to the CCOP/SOPAC Technical Secretariat. Seconded personnel will work with the Secretariat's professional staff on projects related to their own country. The fellowship scheme assists member countries by training a group of technically qualified personnel capable of conducting simple offshore surveys, gathering environmental baseline data and preparing project reports. \$58,000 Cdn. (3 years).
- 87-0117 FFA Surveillance Fellowship - A fellowship was granted to the Chief Surveillance Officer of Papua New Guinea which enabled the officer to work with the Forum Fisheries Agency (FFA) during its review of the PNG surveillance program. The officer gained exposure to regional surveillance activities and contributed to the development of a network of regional surveillance advisors. \$15,000 Cdn. (4 months).
- 87-0160 Tropical Fisheries Diploma Scholarships (University of the South Pacific); Republic of Palau - Four Palauans will be selected to attend the three-year Tropical Fisheries Diploma program offered by the University of the South Pacific. The requirement for specialized fisheries training is one component of the Marine Resource Division's human resource development program which is designed to improve the technical capacity of the Division to develop and manage Palau's marine resources. \$120,000 Cdn. (3 years).

**CARIBBEAN BASIN****Technical Assistance**

- 85-0010 OECS Fisheries Unit - A Fisheries Support Unit has been established within the Organisation of Eastern Caribbean States (OECS). This unit provides the countries of the region with a permanent regional fisheries capability and promotes, coordinates, and facilitates regional fisheries cooperation. \$660,000 Cdn. (3 years).
- 86-0033 Fish Marketing (Costa Rica) - Expert advisors were provided to work with the Instituto de Fomento Cooperativo (INFOCOOP) in Costa Rica to assist the Federation of Fishing Cooperatives (FEDEPESCA) in identifying marketing potentials and an appropriate marketing strategy. \$18,000 Cdn. (1 year).
- 86-0034 Fishermen's Assistance Program (Dominican Republic) - Technical and advisory assistance is being provided to enable La Isabela Fishermen's Cooperative to improve their fishing capabilities. This project will form the basis of an artisanal fisheries extension program along the North coast of the Dominican Republic. \$71,000 Cdn. (1 year).
- 86-0035 Fisheries Training (Pictou, N.S.) - A training program in outboard motor and diesel engine maintenance was held for 15 fishermen from St. Lucia and Barbados at Pictou College, Nova Scotia in August 1986. \$63,900 Cdn. (2 months).
- 86-0036 Sea Moss Cultivation Program (Eastern Caribbean) - In cooperation with the Organisation of Eastern Caribbean States, the St. Lucia and Grenada Governments, and the Eastern Caribbean Natural Areas Management Program, support is being provided for the inter-island transfer of small-scale seamoss mariculture techniques, and for a survey of existing and potential markets of seamoss and seamoss products. \$125,000 Cdn. (1 year).
- 86-0048 Dominica Licensing System - A draft set of fisheries regulations was refined in order to enable Dominica to establish a fisheries licensing scheme. \$8,500 Cdn. (1 month).



- 86-0072 Economic Analysis and Economic Policy Development (Costa Rica) - Economic policy recommendations for promoting the development of Costa Rican fisheries based on an economic analysis of existing and potential fisheries are being prepared for the Fisheries Division of the Ministry of Agriculture and Livestock, Costa Rica. \$160,000 Cdn. (1½ years).
- 86-0089 Statistical Sampling Methods Workshop - A five-day training workshop was held in Barbados for fisheries officers from OECS Member States, Barbados, and Trinidad and Tobago. Using the information from a preliminary survey of the region, data collection programs using random sampling methods were designed for the individual Member States. \$16,000 Cdn. (1 week).
- 86-0091 Maritime Boundary Workshop - OECS - A three-day workshop on maritime boundary delimitation was held by the Organisation of Eastern Caribbean States. This workshop assisted Member States in formulating proposals for regional action respecting maritime boundaries. \$25,000 Cdn. (1 week).
- 86-0098 Consultancy in Fisheries Management Operation (Dominica) - An expert consultant in fisheries management and development was provided to the Division of Fisheries, Ministry of Agriculture, Dominica. This consultant was responsible for coordinating and monitoring ongoing fisheries development activities and identifying fisheries development and management needs in Dominica. \$30,000 Cdn. (6 months).
- 87-0122 OECS Participant - SEAPOL Ocean Boundary Course - Funds were made available to the Organisation of Eastern Caribbean States (OECS) to allow a representative from the Eastern Caribbean to participate in the ICOD-funded SEAPOL Ocean Boundary-Making Course in Singapore June 1-12, 1987. \$4,141 Cdn. (2 weeks).
- 87-0124 OECS - Workshop on Regional Fisheries Access - In order to promote further regional cooperation in fisheries management and development, the OECS Fisheries Unit held a four day workshop on Foreign Access to Fisheries. During this workshop representatives from OECS member states discussed and drafted a harmonized Foreign Fisheries Access Policy. \$28,600 Cdn. (1 week).



- 87-0132 Fisheries Data Management: Institutional Enhancement Program - In order to enhance the fisheries management capabilities of OECS member states, ICOD and the OECS Fisheries Unit are providing technical and advisory assistance to national Fisheries Divisions in the implementation of appropriate data collection systems which were designed during the ICOD/OECS Statistical Sampling Methods Workshop (86-0089). Under the terms of this project ICOD will also provide computer hardware and software necessary for the analysis of relevant fisheries data. \$195,000 Cdn. (1 year).
- 87-0138 Reef Fisheries Management Planning - Jamaica/Belize - In cooperation with the University of the West Indies, this project assists the Fisheries Division of Jamaica and Belize in establishing reef fisheries management plans. During the initial phase of this project, ICOD consultants will carry out a socio-economic survey of the fisheries in Jamaica and Belize and compile the data collected into reports which will be used for the management planning phase of the project. \$278,500 Cdn. (3 years).
- 87-0139 Caribbean Marine Parks and Protected Area Management Program - With the assistance of the Caribbean Conservation Association, this project will provide support for a program to encourage cooperation, assistance and the exchange of ideas among those responsible for developing and managing of the regions' marine parks and protected areas. CCA, with assistance from Canadian consultants, will organize and host a workshop on Marine Park Development and Management for the OECS Member States, Barbados and Belize. The proposed small projects that will result from this workshop will be further developed during phase II of the project. \$39,300 Cdn. (Phase I - 6 months).
- 87-0153 Technical Support for Nicaragua's Industrial Fisheries - In support of Nicaragua's efforts to rejuvenate its industrial fisheries, ICOD will be providing the advisory services of a refrigeration engineer, refrigeration technician, marine engineer and diesel mechanic. Working with Nicaraguan counterparts the advisors will assist in overseeing the repair of vessels and plant facilities, assist in establishing proper maintenance and repair procedures and provide on-the-job training for local plant and fleet personnel. \$305,000 Cdn. (2 years).



- 87-0158 Advisory Support for Fisheries Development: Dominica/OECS - ICOD is providing the services of an expert fisheries advisor to the Ministry of Agriculture of Dominica to assist Fisheries Division staff in implementation of fisheries management and development plans prepared in Project 86-0098. This advisor is providing on-the-job training to new recruits to Dominica's Fisheries division and, under the auspices of the OECS, will provide similar, but limited, assistance to other OECS member states. \$50,000 Cdn. (14 months).
- 87-0175 Fisheries Surveillance - Eastern Caribbean - In support of regional efforts to control illegal foreign fishing in the OECS region, ICOD is providing financial and advisory assistance to the OECS for a comprehensive regional fisheries surveillance program. \$49,800 Cdn. (4 months).
- 87-0189 Eastern Caribbean Fisheries Marketing Strategy - ICOD will be providing advisory support to the member states of the OECS in order to develop a market strategy to improve the efficiency of marketing fish at the national, regional, and international levels. As part of this project the OECS Fisheries Unit will undertake surveys of the market requirements and potentials of the national, regional and selected export markets.
- 88-0199 OECS Workshop on Fisheries Access, Monitoring, Control and Surveillance - Caribbean - This project assists the OECS in establishing a regional policy on foreign fishing access and surveillance. During a six-day regional workshop in Dominica, representatives from the OECS Member States will investigate elements of fisheries access, monitoring, control and surveillance and make recommendations to be presented to the Secretariat during the November meeting of the OECS Authority. \$33,810 Cdn. (1 week).
- 88-0207 OECS Participant - ICOD/FFA Boundary Delimitation Workshop - The OECS member states plan to establish a regional advisory committee to assist them in negotiating the maritime boundaries with non-member states. In order to assist the development of this committee ICOD will provide support to send a representative of the OECS to the upcoming ICOD/FFA Boundary Delimitation Workshop in Western Samoa. \$8,000 Cdn. (10 days).



- 88-0212 Lobster Assessment Program - Jamaica - ICOD will be providing financial support and advisory support to The Fisheries Division of the Ministry of Agriculture, Jamaica, to undertake a comprehensive survey of the lobster stocks of Pedro Bank. Information on the lobster will be collected, analysed and used in preparation of management plans for the fishery. \$227,000 Cdn. (2 years).
- 88-0214 Eastern Caribbean - Fisheries Monitoring, Control and Surveillance - ICOD will be providing financial and advisory support for a regional MCS (Monitoring, Control and Surveillance) program. During the one-year project the OECS will prepare detailed MCS plans and establish a regional fisheries observer program for implementation during 1988, under the direction of a regional Surveillance Coordinator. \$155,200 Cdn. (1 year).

Information

- 87-0125 Seamoss Bibliography - As a contribution to efforts now underway in the Eastern Caribbean to cultivate and market seamoss, this project will support preparation, printing, and distribution of an annotated bibliography on the extant literature on seamoss in the Caribbean. \$13,800 Cdn. (6 months).
- 87-0142 Technical Publication Support - This project will assist the OECS Fisheries Unit to meet its mandate of coordinating fishery advice and information by analysing the need for publications and documentation, recommending a scientific publishing program, and supporting publication of the proceedings from two major workshops on fisheries data collection, management, and development in the Eastern Caribbean. \$20,000 Cdn. (6 months).
- 88-0202 OECS Fisheries Newsletter - This project will assist the Fisheries Unit of the OECS to launch a newsletter dealing with issues facing the fishing industry in the region and the efforts that are being made to deal with them on a regional basis. \$23,000 Cdn. (15 months).

Training

- 86-0049 Caribbean Fisherman's Training - Phase II - Two elements of artisanal fisheries training were supported under this project. First, a six week fisherman's training course was held at the Nova Scotia School of Fisheries for St. Lucia and Grenada nationals. The second part was a follow-on course in Barbados and St. Lucia for local fishermen using local facilities and the previous year's graduates as resource persons and instructors/assistants. \$95,877 Cdn. (3 months).
- 87-0121 CFTDI Institutional Enhancement - Trinidad & Tobago - In order to increase the capacity of the Caribbean Fisheries Training and Development Institute (CFTDI) to respond to the fisheries training needs in the Caribbean, CFTDI have sent a staff member to the N.S. School of Fisheries, Pictou, N.S. for technical upgrading. \$13,500 Cdn. (8 months).
- 87-0126 Course in Navigation and Seamanship - Barbados - In order to promote greater proficiency and safety at sea of Barbadian fishermen, the Barbados Fisheries Division and Coast-Guard designed and delivered a short course for fishermen on coastal navigation and seamanship. \$4,000 Cdn. (3 weeks).
- 88-0191 OECS Fisherman's Training Program - The three-year program is intended to train fishermen and to develop a training capacity within the OECS region. Training for fishermen, to be conducted at the Pictou Fisheries School in Nova Scotia, at the Caribbean Fisheries Training and Development Institute in Trinidad and at the community level in OECS countries, will focus on safety, navigation, engine maintenance and repair, fishing gear and business management skills. Individual fishermen who have completed the Fishermen's Training Course will be selected for further training as fisheries instructors. One Fisheries Instructor Course will be conducted in Nova Scotia and a second in Trinidad. These instructors will participate in the delivery of the community level workshops. See also Projects #860035, 860049, 870121. \$271,000 Cdn. (3 years).



88-0195 Graduate Program in (Marine) Resource and Environmental Management, Phase I - University of the West Indies-
In order to assist the region in combatting the continuous effects of environmental deterioration and the irreversible destruction of renewable resources, ICOD will provide support to strengthen a regional training centre in marine resource management at the Cave Hill Campus, University of the West Indies. This phase of the project comprises an initial two year period intended to strengthen the existing graduate diploma program including the provision of scholarships for the Diploma Program. \$699,000 Cdn. (2 years).

Scholarships

85-0024 Short Term Academic Exchange - Awards were granted to four graduate students registered in marine-related programs at the University of the West Indies. The awards permitted up to six months of study at Canadian institutions. \$50,000 Cdn. (1 year).

SOUTH AND WEST INDIAN OCEANTechnical Assistance

- 86-0032 Study for a Regional Surveillance System for South and West Indian Ocean Maritime Resources - An assessment of the regional requirements for a system of monitoring, surveillance, and control is being carried out for the Indian Ocean Commission. Pertinent economic and technical data, along with national and regional governmental policies is also being collected for the Comoros, Seychelles, Madagascar and Mauritius which comprise the regional grouping. Project consultants have begun the investigation and have undertaken regional visits. \$119,900 Cdn. (8 months).
- 86-0051 Economically Important Reef Fish (Maldives) - On behalf of the Ministry of Fisheries, the wide variety of economically important reef fish in the Maldives will be identified and catalogued with the help of taxonomic experts and underwater photography. The resulting species identification sheets will be used by marine scientists, fishermen and government officials. \$92,200 Cdn. (6 months).
- 86-0092 Indian Ocean - South Pacific Exchange - The participation of a representative of the Seychelles Government to the Surveillance Workshop in Honiara in November 1986 was funded as part of a program to enhance the cross-regional exchange of information and experience. \$4,800 Cdn. (1 month).
- 86-0094 Marine Surveillance - Maldives - The Ministry of Defence and National Security has requested an assessment of the requirements, costs and national capacity for surveillance of the Exclusive Economic Zone and for a Search and Rescue Patrols program suitable to Maldivian conditions. Detailed recommendations and a plan-of-action for the development and implementation of programs have been provided to the Government of Maldives. \$79,500 Cdn. (6 months).



- 86-0100 Coastal Sand and Coral Removal - Effects on Lagoon Environment and Marine Life - Substantial amounts of sand and coral deposits are removed from Mauritian lagoons and beaches each year for use in the local construction industry. In cooperation with the Government of Mauritius, ICOD consultants are assessing the environmental damage and likelihood of resource replenishment, and will recommend alternative construction material sources. \$70,000 Cdn. (9 months).
- 86-0101 Feasibility Study: National Marine Resource Management Study - The Government of Mauritius is considering producing a National Marine Resource Management and Planning Policy. A consulting team will assist the Government in developing relevant study guidelines and considerations as groundwork for the eventual drafting of this Policy. \$48,400 Cdn. (3 months).
- 86-0107 Establishment of a Fish Quality Control and Inspection System - Seychelles - The Seychelles currently exports demersal fish and plans to increase those exports. They have also established a tuna cannery in Victoria. Consequently, the Seychelles has urgent need for trained inspectors. This project includes an in-Canada training program which began in January 1988 for four Seychellois who will form part of the national inspection service. Classroom and lab training and government and private sector facility experience will constitute the training to be followed by additional on-site training in Seychelles. Canadian experts have visited the tuna cannery and have submitted suggestions for altering handling and processing procedures. \$85,250 Cdn. (6 months).
- 87-0135 Lagoonal Health Characteristics - Mauritius - This project will investigate land-based and other pollution or destructive mechanisms which threaten the lagoonal and coastal environments. A multidisciplinary team will examine biological, chemical, physical, and public health elements of the project and deliver follow-up recommendations to appropriate Mauritanian Government ministries. \$159,000 Cdn. (18 months).



- 87-0146 Technical Training of Fishery Instructors - Maldives-
The Maldives' Ministry of Fisheries note significant benefits in a program to provide technical training to leading fishermen and selected Ministry staff. They, in turn, will undertake to train fishermen throughout the country. The training program, conducted in Maldives, will incorporate such aspects of onboard gear use and maintenance, onboard handling and preservation of catch, and recent equipment advances as they apply to Maldivian fishing activities. A Canadian technical training team will be sent to the Maldives for approximately four months to execute the work. Manuals and other training equipment will be provided as appropriate. \$126,050 Cdn. (6 months).
- 87-0180 Production Workshop for Artemia salina - Mauritius-
ICOD is supporting the participation in a workshop for Artemia salina production by an officer of the Mauritian Ministry of Agriculture, Fisheries and Natural Resources. The Artemia salina brine shrimp is a feedstock for cultivated prawns. Mauritius hope to implement a program of domestic production of Artemia salina instead of the costly importation currently in effect. (\$9,000 Cdn. (1 month)).
- 87-0182 Production Assistance for Artemia salina - Mauritius-
As a follow-up to 870180, a consultant will manage the establishment and early operation of a brine shrimp production facility. The shrimp, Artemia salina, is a feedstock for prawns and other aquaculture products. The Artemia salina is expensive and supply is inconsistent and of highly variable quality. An indigenous production capability will ensure adequate supply, high quality, and a significant foreign exchange savings. \$56,500 Cdn. (9 months).
- 87-0183 Fishing Vessel Evaluation - Seychelles - A Master Fisherman and a Naval Architect will be supplied by ICOD to evaluate performance of four prototype artisanal vessels. The consultants will also deliver expert advice vis-a-vis modifications to the vessels, gear, or catch methods. Recommendations, when implemented, will facilitate Seychelles access to African Development Loan funds to modernize the artisanal fleet. \$121,000 Cdn. (12 months).

Information

- 86-0037 Marine Information (Sri Lanka) - The establishment of a Marine Affairs and Aquatic Resources Information System (MAARIS) at the National Aquatic Resources Agency in Sri Lanka is being co-funded by the International Development Research Centre and ICOD. ICOD funding is focussed on the establishment of an Extension Unit as part of MAARIS. \$88,000 Cdn. (2 years).
- 86-0064 Indian Ocean Newsletter - Support was provided for the production and distribution of a newsletter updating the status of marine affairs in the Indian Ocean region by the Indian Ocean Marine Affairs Cooperation (IOMAC) Secretariat in advance of the IOMAC Conference held in January 1987. \$8,100 Cdn. (1 month).
- 86-0077 Regional Compendium (Indian Ocean) - In collaboration with the Food and Agriculture Association of the United Nations, a compendium on fisheries legislation in the Indian Ocean region has been prepared for distribution to fisheries officers, government officials, planners and researchers in the region. \$36,400 Cdn. (3 months).
- 87-0174 Seychelles Fish Poster - This project will enable the production of a wall poster of 50 to 60 of the most commonly utilized and commercially important fish species in Seychelles waters. Each species will be identified with its Latin and Creole, English and French common names. These posters will be used as part of a national program to improve the general knowledge and awareness of the importance of the fishery. \$47,000 Cdn. (6 months).

Training

- 87-0140 Observers to the CECAF Stock Assessment Training Course - In cooperation with the Commission for the Eastern Central Atlantic Fisheries (CECAF), ICOD is preparing a course for tropical fish stock assessment (project #86-0060). This course, to be held in Senegal in February 1988, is for participants from West Africa Francophone countries. This project will provide assistance for observers from Mauritius and Seychelles to attend the course. \$24,100 Cdn. (1 month).



Scholarships

- 86-0081 IOI Scholarships (Indian Ocean) ('87) - A limited number of awards are being granted to participants from the Indian ocean region to attend the International Ocean Institute's Training Program in the Management and Conservation of Marine Resources: The Exclusive Economic Zone, held in the Indian Ocean region. (Ref. Project #86-0018). \$50,000 Cdn. (1 year).
- 88-0218 International Ocean Institute (IOI) Scholarships: Indian Ocean 1988 - IOMAC/IOI have requested scholarship support for four individuals from the Indian Ocean region to participate in the 1988 IOMAC/IOI Training Program in Marine Affairs. The 1988 program will be held October 10 to December 16, 1988 in Kuala Lumpur, Malaysia. This course is being co-sponsored by the IOMAC Secretariat and the Government of Malaysia, through its official training institute, INTA. \$50,000 Cdn. (2 months).

**WEST AFRICA****Technical Assistance**

- 86-0053 Morocco Marine Science Advisory Mission - In collaboration with the Intergovernmental Oceanographic Commission of the United Nations, an advisor was sent to Morocco to prepare detailed recommendations for the establishment of a post-graduate marine science program at the University of Mohammed V and for the development of a research program to study upwelling phenomena in Northwest Africa at the Institut scientifique des pêches maritimes. \$11,700 Cdn. (1 month).
- 86-0054 Morocco Fisheries Investigation - In response to a request from the Institut scientifique des pêches maritimes, a study was undertaken on fisheries management and development in Morocco. ICOD assistance was requested in the field of fisheries data management. \$9,400 Cdn. (1 month).
- 86-0055 Management of Inshore Fisheries Statistics, Morocco- This activity will enable the Office national des pêches (ONP) to conduct a critical review of the present system for collecting statistics on the inshore fishery and an evaluation of the procedures and methods being used to process these data. A Canadian expert is assigned for this purpose to the Institut scientifique des pêches maritimes, which is under the jurisdiction of the ONP. As a result of changes and improvements that have been agreed upon by the Moroccan authorities, he will have to participate with the assistance of a computer programmer in their implementation, particularly by training the Moroccan personnel responsible for gathering and processing statistical data. \$150,000 Cdn. (18 months).

Information

- 87-0145 Information Brochure (CRODT) - The Centre de Recherche Océanographique de Dakar-Thiaroye (CRODT) already conducts several oceanographic research projects in West African countries and maintains a well-supplied resource centre that could offer more services to the region. In order to expand the scope of its services in the region, CRODT has requested support for the preparation and publication of a brochure promoting its activities and services to the region. \$10,000 Cdn. (2 months).



88-0198 Mauritania Documentation and Information Services Assistance (CNROP) - The Centre national de recherches océanographiques et des pêches (CNROP) was established to conduct the biological, physical, chemical, socio-economical and technical research necessary for the development of the marine fisheries and the protection of the marine environment in Mauritania. The CNROP library lacks the resources and capacity to meet the growing need for documentation required to carry out CNROP's research programs. This project will enable the CNROP to develop library and information services in support of its research programs. \$138,600 Cdn. (18 months).

Training

86-0060 Stock Assessment Training (CECAF) - In response to a request from the Fishery Committee for the Eastern Central Atlantic (CECAF), a French language training course in tropical stock assessment was designed and delivered in February 1988 in Senegal for participants from francophone countries in West Africa. In collaboration with international experts, a team of Canadian experts developed and delivered this course, and produced a French Language stock assessment manual. \$373,000 Cdn. (2 years).

87-0133 West Africa Offshore Non-Fuel Mineral Course - As a follow-up to the Non-Fuel Mineral Course held in Halifax in March 1987 (860028) a bilingual regional training program is being designed for geologists from coastal states in West and Central Africa. This two week course will be held in November 1989 in Accra, Ghana in cooperation with the Ghana Minerals Commission. Simultaneous translation will be provided and technical course materials will be prepared in both English and French. \$170,000 Cdn. (18 months).

88-0192 Computer and Data Analysis Training - Fisheries Research Station - Cameroon - The Minister of Higher Learning and Scientific Research (MESRES) has requested specialized on-the-job training for fisheries scientists in the use of computerized scientific data related to fisheries management. A Senegalese consultant will train the Fisheries Research Station (SRHL) scientists to use existing software in fisheries biology and stock assessment; will develop and implement a statistics data base and assist in the analysis of the data. \$12,000 Cdn. (1 month).

GLOBALTechnical Assistance

- 86-0030 Research Vessel Operation - In cooperation with FAO and IOC, a multi-authored manual, associated training materials and regional workshops are being prepared on research vessel operation and management in order to maximize the use and benefit of research vessels in developing countries. ICOD is providing direct coordination for this program. \$434,100 Cdn. (3 years).
- 86-0093 Boundary Delimitation (Computer Program) - Under the technical supervision of the Canadian Hydrographic Service (CHS), an improved method for the computer generation of maritime boundary delimitation using microcomputers has been developed. The resulting program and user's manual will be distributed internationally. \$15,000 Cdn. (5 months).
- 87-0141 Boundary Delimitation (Computer Program): Phase II - During Phase I of this project, a set of programs was developed for the generation of national maritime boundaries using personal computers. Under Phase II of the project, an interface to enable graphic representation of results on screen will be developed and small revisions will be made to the manual. The software (manual and on line tutorial) will also be translated into French and Spanish and methods of projecting the graphic output on an overhead screen will be investigated and evaluated. \$26,000 Cdn. (6 months).

Information

- 85-0020 Marine Affairs Bibliography - Two hundred one-year subscriptions to the Marine Affairs Bibliography published quarterly by the Dalhousie Law School were distributed to selected developing country institutions for reference and evaluation. This publication collects references to private and public elements of marine law, and other disciplines in the social and natural sciences relevant to marine affairs. \$19,100 Cdn. (1 year).



85-0021 Ocean Training Directory - The first phase of
86-0063 producing a directory database identifying marine-
related training and education available in Canadian
universities, colleges, government departments and the
private sector was implemented.
\$45,000 Cdn. (6 months).

- The information gathered in Phase I was verified,
updated, and prepared for printing. The Directory
of Marine Training in Canada has now been
published and is being distributed.
\$40,610. (8 months).

86-0023 World Fisheries Map - In cooperation with the World
Food Day Association and with World Food Day 1986, a
map of world fisheries resources was prepared in French
and English to demonstrate the role of fisheries in the
world economy. \$69,800 Cdn. (1 year).

Training

85-0014 Marine Affairs Diploma Course - A multi-disciplinary,
one-year diploma program in Marine Affairs established
at the Université du Québec à Rimouski and at Dalhousie
University commenced in the 1987-88 academic year. The
programs focus on the various uses of the oceans and
the interrelationships among sectors. Funding has been
provided for the development of this program and to
supplement university financing for six years. (Ref.
Project #86-0074). \$1,700,000 Cdn. (6 years).

85-0015 WMU Marine Affairs Course - Assistance was provided
85-0069 to the World Maritime University (WMU), Sweden, in May
1986 and August 1987 for the design and delivery of a
short, interdisciplinary training course in marine
affairs accompanied by teaching materials, aimed at
senior marine experts and administrators of developing
countries. This course is now compulsory for all
incoming students. \$52,000 Cdn. (2 courses).

- The marine affairs course was modified and
delivered in November 1986 at the request of the
71 graduating students of the World Maritime
University who did not participate in the May 1986
delivery of the course. \$16,400 Cdn. (1 course).



- 85-0016 WMU Maritime Law Course - A short course in Maritime law at the World Maritime University was developed and delivered (with course materials) in July 1986 and June 1987. This is now a compulsory course for the first year class. \$25,000 Cdn. (2 years).
- 85-0022 Marine Affairs Materials - Key background materials are being developed for reference use by students from developing countries. They are being developed in conjunction with the Marine Affairs Training Advisory Group (Project #86-0071) and with the ICOD sponsored Marine Affairs Courses in Canada (Project #85-0014). \$140,000 Cdn. (3 years).
- 86-0027 Sea-Use Planning and Management Training Module - This course, designed for second year students at WMU, provided training in the methods required to carry out functional tasks involved in formulating an EEZ management plan. A simulation exercise was developed in conjunction with the UN-OETB (Ocean Economics & Technology Branch). \$49,000 Cdn. (1 year).
- 86-0028 Non-Fuel Mineral Course (Halifax) - A two-week course in offshore non-fuel mineral resource assessment and planning was developed and delivered in cooperation with experts from Canada's Department of Energy, Mines and Resources in March 1987. Senior-level geologists selected from eleven developing countries, eight of whom were sponsored by ICOD and three by the Canadian International Development Agency, participated in this program. Follow-up regional programs are in the offing. \$30,000 Cdn. (1 year).
- 86-0059 Ocean Boundary Making (SEAPOL) - A pilot training course in ocean boundary making from a legal and policy perspective was developed by the South East Asia Project on Ocean Law, Policy and Management (SEAPOL) and the International Institute for Transportation and Ocean Policy Studies (IITOPS). Participants from Thailand, Philippines, Malaysia and Indonesia attended the course. A team of Canadian and Southeast Asian experts, including an ICOD staff member, delivered the course in June 1987. \$92,200 Cdn. (1 year).
- 86-0070 Marine Affairs Diploma Materials - Assistance is being provided to the Université du Québec à Rimouski and to Dalhousie University for the preparation and publication of curriculum materials required for effective delivery of the Marine Affairs Diploma Program (Project #85-0014). \$475,000 Cdn. (4 years).



- 86-0071 Marine Affairs Training Advisory Group - An international body of experts was convened in March 1987 to advise on the development of the materials in marine affairs (Project #85-0022) and to assist the Université du Québec à Rimouski and Dalhousie University (Project #86-0070) in the identification of teaching materials in marine affairs. A small "core group" of international advisors was convened in May 1988 to further advise the two universities on their teaching materials. \$50,000 Cdn. (4 years).
- 86-0078 Maritime Boundary Delimitation (Erindale College) -
86-0102 In cooperation with Erindale College of the University of Toronto, a six-week technical course on maritime boundary delimitation was developed. This course was delivered as a pilot for participants from three Caribbean nations in early 1987. \$30,700 Cdn. (6 weeks).
- Subsequently, this course was repeated with the addition of a seventh week providing hands-on technical training in the hydrographic aspects of ocean boundary delimitation. Funds were provided for six participants to the course - 4 from Caribbean and 2 from the South Pacific. \$38,510 Cdn. (7 weeks).
- 87-0123 Erindale Maritime Boundary Delimitation Course - In order to create a nucleus of trained personnel in the technical aspects of Maritime Boundary Delimitation, a seven-week course has been designed in cooperation with the Survey Science Department, Erindale Campus, University of Toronto. Seven hydrographic surveyors from coastal and island states will be sponsored to attend this course each year. A course manual is being prepared and will be published in 1990. \$197,500 Cdn. (3 years).



87-0127 Phase II: World Maritime University (WMU) Training Modules - Since May 1986, ICOD has supported the design, development and delivery of three training modules at WMU (Marine Affairs 85-0015, 86-0069, Maritime Law 85-0016 and Sea-Use Planning and Management 86-0027) together with accompanying course materials (85-0022). These modules are now a vital component in the M.Sc. curriculum. The three ICOD courses have been integrated into the two-year teaching program and will be supplemented by in-house lectures and other short courses, providing the students with a comprehensive overview of the maritime system within which they will work and ultimately administer. ICOD will sponsor these modules until 1990. \$190,000 Cdn. (3 years).

Scholarships

- 85-0017 ICOD Scholarships Program ('85-'87) - Forty-four scholarships and twenty-seven renewals were granted to students from developing countries for post-graduate study in marine-related fields at Canadian universities. This program was replaced by project #860076. \$499,700 Cdn. (2 years)
- 85-0018 IOI Scholarships (Halifax Course) - Up to four awards are granted annually to participants from eligible countries to attend the International Ocean Institute's (IOI) Summer Training Program in the Management and Conservation of Marine Resources: The Exclusive Economic Zone. (Ref. Project #86-0081). \$208,000 Cdn. (5 years).
- 85-0019 ICOD World Maritime University Scholarship - Two scholarships are granted annually to candidates from developing countries for study leading to a Master's degree at the World Maritime University. \$403,200 Cdn. (5 years).
- 86-0025 Regional University Scholarships - Up to six scholarships are granted annually to students from eligible countries for study at the Master's level in marine-related fields. Three scholarships are granted for study at the University of the West Indies and three are granted for study at either the University of Papua New Guinea or the University of the South Pacific. \$576,000 Cdn. (5 years).



- 86-0074 Marine Affairs Diploma Scholarships - Up to twenty scholarships are granted annually to government nominated candidates from developing countries to pursue the one-year Marine Affairs post graduate diploma program. Ten scholarships are available for study at Dalhousie University and ten are available for study at the Université du Québec à Rimouski. These scholarships support the Marine Affairs Diploma Course (project #85-0014). \$2,080,000 Cdn. (5 years).
- 86-0076 ICOD Scholarships Program - Up to twenty scholarships are granted annually to nominated candidates from eligible countries for study at the Master's level in marine-related fields. Scholarships are tenable at Canadian universities. \$2,984,700 Cdn. (4 years).
- 86-0097 CIDA World Maritime University Scholarships - On behalf of the Canadian International Development Agency (CIDA), ICOD administers scholarships granted to eight African students for study leading to a Master's degree at the World Maritime University (WMU). Four scholarships were awarded to students from English speaking African countries and four scholarships to students from French speaking African countries. \$466,000 Cdn. (3 years).
- 86-0103 Séminaire sur l'organisation de la gestion des coopératives de pêche - Nine scholarships were provided for the "Séminaire sur l'organisation de la gestion des coopératives de pêche" held at the Centre Universitaire de Shippagan of the Université de Moncton in New Brunswick. Participants were selected from French speaking countries in West and East Africa. The course was intended for middle level managers and fishermen of fishing cooperatives. \$46,890 Cdn. (1 month).
- 87-0167 CIDA World Maritime University Scholarships - On behalf of the Canadian International Development Agency (CIDA), ICOD administers scholarships granted to eight African students for study leading to a Master's degree at the World Maritime University (WMU). Four scholarships were awarded to students from English speaking African countries and four scholarships to students from francophone Africa. \$300,000 Cdn. (3 years).



- 87-0172 IOI (International Ocean Institute) Scholarships: Caribbean 1988 - This project provided scholarship support for course participants from Sri Lanka and Comoros to attend the Technology Development and Management training course in Cartagena, Colombia and Kingston Jamaica in February/March 1988. \$16,170 Cdn. (1 month).
- 87-0184 Short Term Attachments Program - To permit students, researchers and others associated with developing country institutions/agencies to undertake short study periods or practical attachments in Canada or in other developing countries, this project will provide umbrella approval for a number of candidates. This arrangement will allow ICOD to respond in a flexible and timely manner to specific requests for short term attachments. \$290,000 Cdn. 3 years.

PROPOSAL SUBMITTED TO:

INTERNATIONAL CENTRE FOR OCEAN DEVELOPMENT
HALIFAX, NOVA SCOTIA

ORIGINATOR:

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ON BEHALF OF:

K. N. I. BELL and

DEPARTMENT OF ZOOLOGY
UNIVERSITY OF THE WEST INDIES
MONA, KINGSTON 7
JAMAICA, WEST INDIES
(ATTN. MR. K. A. AIKEN, LECTURER)

STUDY TITLE:

LIFE CYCLE ANALYSIS FOR ENHANCEMENT AND
MANAGEMENT OF ANADROMOUS GOBY FISHERIES, A
WORLDWIDE RESOURCE

DESCRIPTION:

A GOAL-ORIENTED COLLABORATIVE PROGRAMME OF
RESEARCH FOR A SMALL NUMBER OF GRADUATE
STUDENTS. FOCUS IS MANAGEMENT-CRITICAL
ECOLOGICAL ASPECTS OF AN IMPORTANT THIRD-
WORLD FISHERY

DURATION,:

2 YEARS

PERSON-YEARS OVER 24 MONTHS:

15.7 TOTAL, comprised of
11.0 STUDENT
2.0 DIRECTOR
0.5 ADVISOR
2.0 ASSISTANT
0.2 ACCOUNTANT

BUDGET:

APPROXIMATELY \$200,000 CANADIAN

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SUMMARY

OBJECTIVE

First objective: to provide information leading to improved management and enhancement of the fisheries for anadromous gobies in Jamaica and elsewhere.

Second objective: to provide experience and training, within framework of an integrated research project focusing on Jamaican anadromous goby fisheries and ecology, for 7 Jamaican graduate students, one U. W. I. lecturer (as advisor), and 1 Canadian marine ecologist (director).

INTRODUCTION

Fisheries based on the Anadromous Gobiidae are widely distributed in the tropics. They are found throughout the Caribbean, the Pacific, Indo-Pacific and Indian Oceans, and nourish many thousands of people in third world countries.

The commercial fishery potential is impressive, evidenced by the 1930's annual catch in Luzon, the Philippines, of 20,000 metric tonnes (over five times the current Canadian catch of Atlantic Salmon). An extensive noncommercial fishery by which families supply or supplement their dietary protein is traditional and usually coexists with commercial fishing.

Yields have declined in both the Philippines and in Puerto Rico. Causes, including overfishing and land-use changes leading to environmental deterioration, have been suggested but not clearly established. Fishery management information is sparse and inadequate. Anadromous gobies constitute a resource of demonstrated value but unknown status.

This study addresses the potential of the fishery in Jamaica and will generate information of direct relevance to environmental and fisheries management. Major features of structure, life history and fishery are similar among the anadromous gobies. Because of this the work in Jamaica will have general applicability, and will thus help fisheries managers elsewhere.

My work and that of Manacop (1953) and Erdman (1986) suggests which factors are most important in recruitment. These are the density of the adult population, the extent and condition of potential adult habitat, and sources of mortality in the first four to eight weeks of life of the fish. These areas will be researched in this study.

SIGNIFICANCE

The anadromous goby fishery nourishes many thousands of people in third world countries. Jamaica has domestic fishery production (all species) of 8653 tonnes/yr for 2.28 million people, and is a net importer of US\$22.3 million worth of fish per year. The present and potential goby fishery in Jamaica will be assessed and documented. This study will identify management and enhancement strategies for the Jamaican anadromous Gobiidae fishery and determine directions for further research.

TASKS (= 'topics')

1. to survey the current status of the Jamaican anadromous goby fishery.
2. to determine the relationship of fishery recruitment to the adult population size and density, and to seasonal variation in physical and biological factors affecting survival and growth.
3. to integrate objectives 1 & 2, and estimate the potential of the Jamaican fishery.
4. to identify management and enhancement strategies for the Jamaican fishery.
5. to examine alternative fishing methods which could increase efficiency in Jamaica.
6. to design in cooperation with Jamaican fisheries personnel demonstration projects for optimal methods.

LOCATIONS & INSTITUTIONS

The work for this study will be done in Jamaica and in Nova Scotia, through Dalhousie University and the University of the West Indies at Mona (Jamaica). Linkages between Dalhousie and U. W. I. are well-developed, with Jamaican students studying in Dalhousie's oceanography and Biology departments.

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Notes to Reader

1. A Glossary to certain terms is provided.
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3. Please read Section 1.3, **Current State of the Literature**

PERSPECTIVE (NEW & OTHERWISE UNAVAILABLE BACKGROUND INFORMATION)**1.0 ANADROMOUS GOBY FISHERIES****1.1 Fisheries**Fisheries and Nutrition. General overview

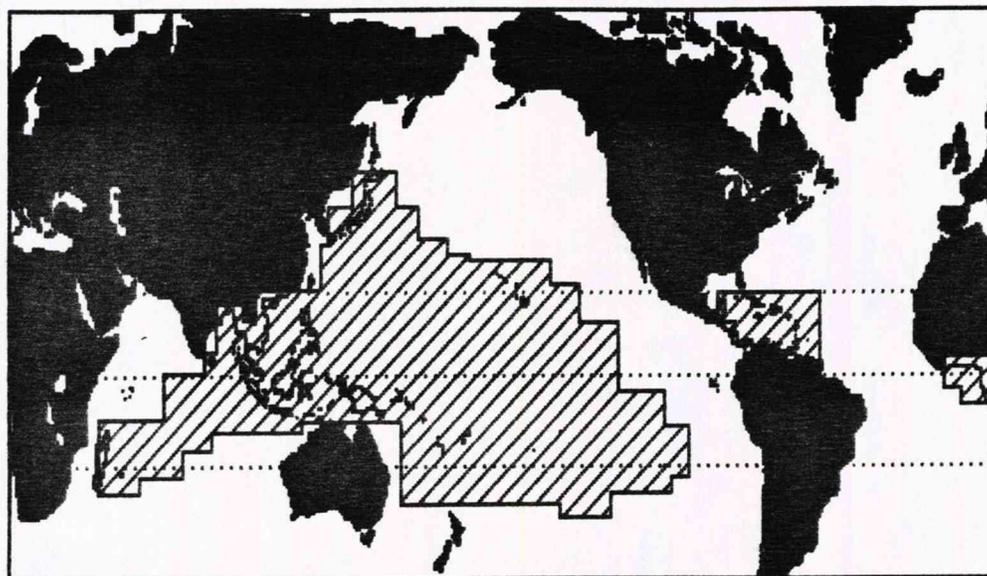
Fisheries based on the Anadromous Gobiidae are widespread, traditional and large in many third-world areas where food of high protein quality is insufficient to meet the need. The fishery, relying on young fish 4-6 weeks of age and 1-2 cm in length, is very efficient (in terms of yield from primary phytoplankton production) and productive.

The Canadian annual catch of Atlantic Salmon (3 million Kg) is dwarfed by the fishery in northern Luzon, the Philippines, which was at the level of 20 million Kg. per year in the 1930's, and was the major source of protein for lower-income families (Manacop, 1953).

Declining catches and fish populations have been reported in the southern Philippines by Manacop (1953), in the northern Philippines by Blanco (1956) and in Puerto Rico by Erdman (1961, 1986). Management and enhancement are needed to counter the reported declines in fisheries.

Fisheries in the Caribbean

In Jamaica (K. A. Aiken, pers. comm.), *Sicydium plumieri* is fished and used on the north coast, which contains the most mountainous coastal topography on the island. Occurrence of anadromous gobies is strongly associated with topography of this kind. The fishery is traditional and unmanaged.



 Anadromous Goby distribution.

Figure 1. Distribution of Anadromous Gobies. Includes areas where gobies or their fisheries are reported. Some fisheries may exist but be unreported for various reasons including the difficulty in identifying fry taken in the fishery.

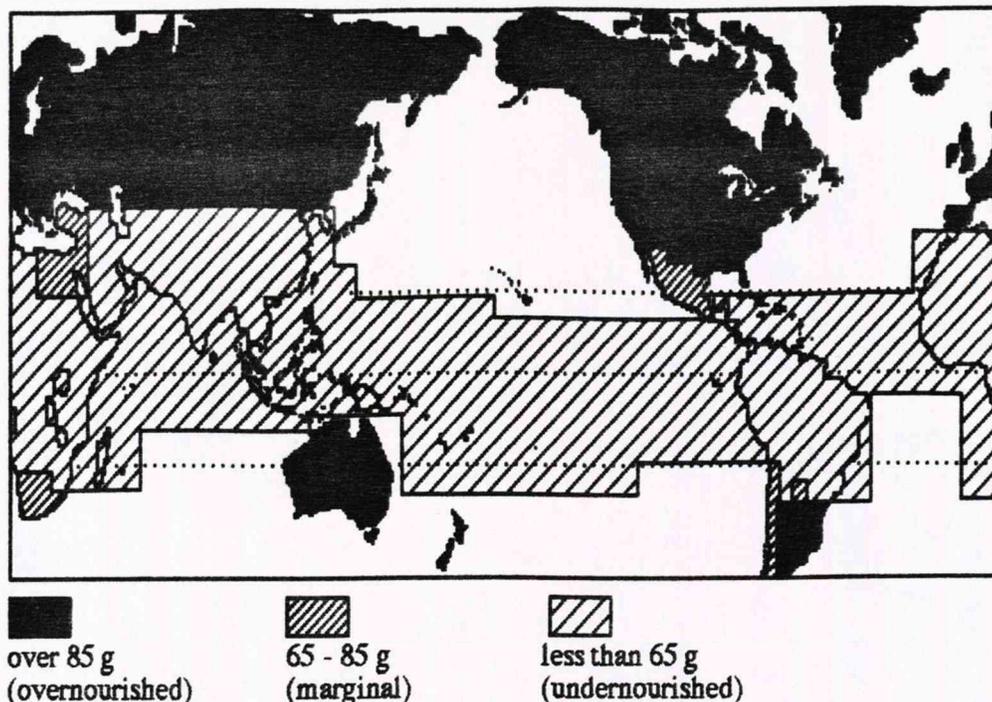


Figure.2. Human nutrition: daily dietary protein, amount per person. Note the providential coincidence of anadromous goby fisheries and the need for augmented protein supplies.

In Dominica the principal species is *Sicydium plumieri*; there are at least two more species (Bell, unpublished). The *tetini* (pelagic goby fry migrating from sea to river) of Dominica have been harvested on their upriver migration since the first record we have of them, the observations of Thomas Atwood (Atwood, 1791). The *tetini* are regarded as a delicacy (W. Herington, pers. comm.). Collections (K. Bell, pers. obs.) in 1969 and 1974 in Dominica showed three species of riverine Gobiids, two of which are well represented in the *tetini*.

In Haiti, *Sicydium plumieri* is present (Erdman, 1961). The fry are harvested in at least the region of Gonaives; the local name for the fry is *pisket* (R. Toussaint, pers. comm.).

In Puerto Rico there is a fishery for the fry of *Sicydium plumieri*. Erdman (1984) reports the catch, from the largest migration in 1983, of 1360 kg of *seti* (goby fry, local name) at the Manatiriver mouth in Puerto Rico. The retail value of this fish varies with demand between \$4.40 and \$15.40/kg. Erdman also reports a migration of fry numbering an estimated 90,000,000 (90 million) fish passing a point seven miles upstream from the mouth of the Añasco river in December 1955. He states that in the average migration 50 hours elapses between the first larvae and the last passing a given point on a river.

Erdman (1961) suggests that the fishery has declined, the yields being less than formerly. The Puerto Rico fishery is somewhat different from the Philippine one, the latter including commercial fisheries for the adults even though the fry are the more abundant and valuable product. In Puerto Rico and other Caribbean islands the fry, not the adults, are fished. From what is presently known about these fish it is expected that the population as a whole would be much more sensitive to overexploitation at the adult than any other stage.

Fisheries elsewhere in the Atlantic

Two species of *Sicydium* are reported from the Gulf of Guinea, West Africa (Risch and Thys van den Audenaerde, 1979). Information on their fisheries is not available.

Fisheries in the Philippines

The Philippine islands have for generations had a fishery based on the fry of anadromous Gobies. The important species are Sicyopterus extraneus, S. lacrymosa, S. fuliag, Glossogobius giurus, G. celebius, Ophiocara aporos, Chonophorus melanocephalus and Eleotris melanosoma. The genus Sicyopterus has a very wide distribution, occurring in Burma, Japan, Samoa, Hawaii, the Society Islands and the Isles of Reunion.

In Mindanao, a southern island of the Philippines, the ipom (anadromous goby fry) fishery on the Cagayan River was investigated in the 1930's (Manacop, 1953). Sicyopterus extraneus is the principal species. The fishery relies on the use of baling (beach seines with ca. 3mm mesh) deployed from small boats usually within one mile from shore. The fishery is year-round although the bulk of the catch is during the first four months of the year. By preparing and preserving much of the catch as a stable fermented product, the use of the fish which appear as a pulse is extended over much of the year. Manacop reports that "among the majority of the laboring class, this bagoong supplies the necessary protein".

The annual catch, by commercial and non-commercial effort together, for the Cagayan river in Oriental Misamis was estimated as approximately 750,000 kg annually, and the value of the commercial fishery for this river was then P20,000 (Philippine pesos). When compared to the commercial fishery value in northern Luzon of P500,000 (Manacop, 1953) this suggests, assuming the commercial catch to be in similar proportion to the total, a total yield of 18,750 tonnes for northern Luzon. Comparison with a familiar anadromous fish is particularly appropriate: the total annual Canadian catch of Atlantic Salmon is about 2,500 tonnes.

Manacop (1953) states that the fishery, which had been unregulated, had been declining in the late 1930's. At that time a fishery existed for the fry and adults. During the study some restrictions were applied to the catching of adults (closed season) and fry (closed zone). In 1939 it was found necessary to regulate the ipom fisheries in northern Luzon, and Fisheries Act 4003 was amended under the authority of Benigno S. Aquino, providing a closed season for certain types of gear. Later, Blanco (1956) reports the "impending depletion of the ipom fisheries in Ilocos Norte", and recommends stiffening of the provisions of Act 4003 to limit the catching of tartarac juvenile gobies, several km. upstream from the ocean. This measure is however more appropriate to the management of a fishery for adults than of one for fry. Both stages were commercially fished in the Philippines, but the adult fishery landings were insignificant compared to fry landings. It is more likely that a complete ban on adult fishing, together with conservation of adult habitat, would have resulted in improvements in the yield of the fry fishery.

Fisheries in Hawaii

In Hawaii (as in the Philippines) the genera Sicyopterus and Chonophorus are represented, where the larvae are called himama and regarded as a delicacy. The adult gobies are also a choice food. The many goby species are recognised as different but related, and each is referred to by a Hawaiian binomial name roughly equivalent to family and species in the conventional system of biological nomenclature, for example 'o'opu nopolii, which is Sicyopterus stimpsoni. Radtke and Kinzie (1987) report that most populations of Hawaiian anadromous gobies appear to be in decline.

Fisheries elsewhere in the Indo-Pacific

Gobies of the genera Sicyopterus and Chonophorus have a wide distribution in the Indo-Pacific, occurring in Burma, Japan, Samoa, Hawaii, the Society Islands and the Isles of Reunion. Traditional fisheries are expected to be similarly widespread.

1.2 **Anadromous Gobiid life-history and ecology**

The fish family Gobiidae (the gobies) includes very many species with different behaviours, strategies, ecologies and life-histories. Within this family is a group of genera and species which are anadromous (live part of their lives in seawater, part in fresh, with egg-laying taking place in freshwater) and have ventral fins (the lower paired fins of a fish) united so as to form a very effective sucker. The gobies' sucker is used for holding fast in currents, providing the necessary stability for their rasping mode of feeding and for climbing waterfalls. The existence of this sucker is the single most important factor enabling the anadromous gobies to be successful, because it allows them access to an otherwise empty ecological niche in habitats (fig. 3) which because of their high disturbance (by volcanism, seismicity and hurricane) rate, isolation and small age have no exclusively freshwater species. These conditions are widely found in the Pacific and in the Caribbean.

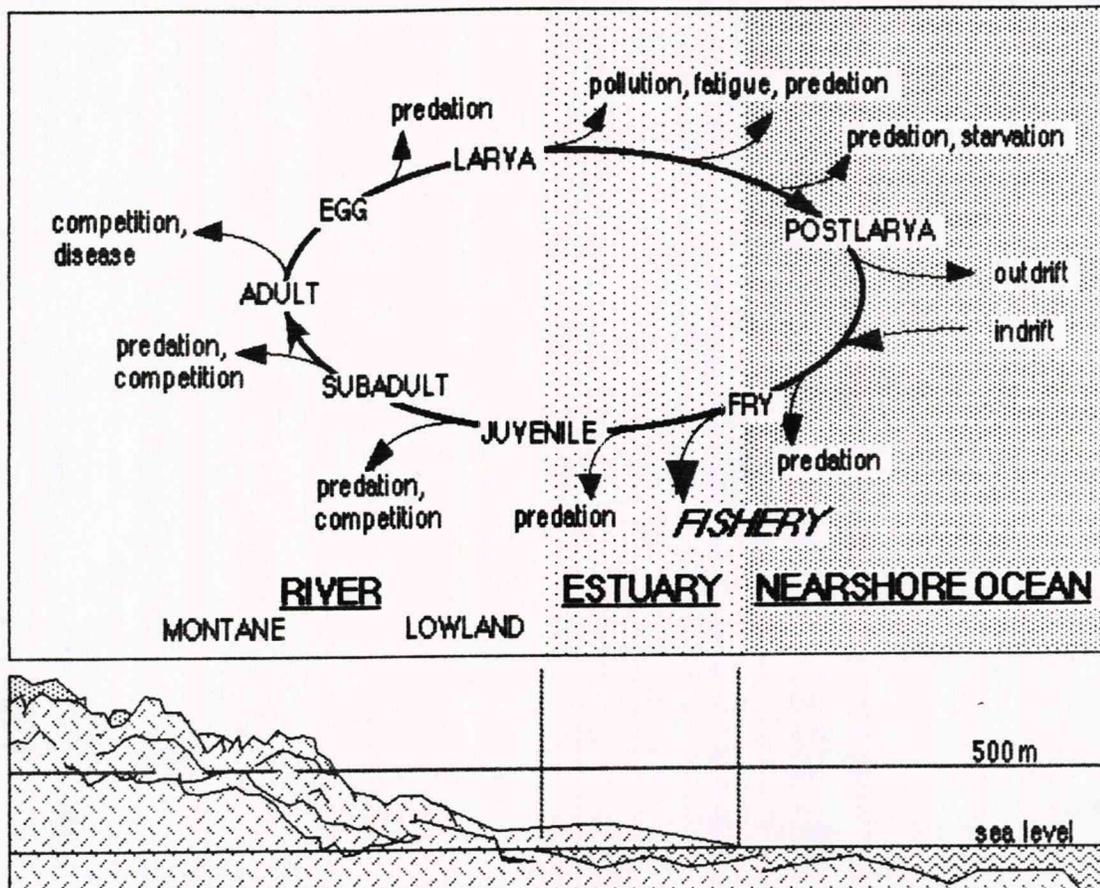


Figure 3. Life cycle and habitat of typical anadromous goby.

Age of adults may be four to ten years, time of travel of larva from high streams to estuary or ocean is probably not more than 36 hours (Bell, 1988), reported durations of marine postlarval stage vary from 28 (Manacop, 1953) to >120 days (Radtke and Kinzie, 1987). Upper portion of figure shows fishery and major sources of mortality. Lower portion of figure shows life cycle projected on landform (high relief, frequent disturbance) typical of anadromous goby habitat.

Anadromous gobies support important fry fisheries in many parts of the world (see Fig. 1). The annual catch is large, as in the case of the Philippines where on the island of Luzon the annual catch during the 1930's (data in Manacop, 1953) was approximately 20,000 metric tonnes (5 to 10 times the total annual Canadian catch of Atlantic Salmon). This is a very large catch for a single fishery occupying a small area; it is the result of two principal features, the small (1.5cm) size of the fish at recruitment to the fishery, and its small age (approx. 4

weeks). Up to the time of fishing, the fish have been feeding at a low trophic level (probably at the level of herbivore) and have invested very little of their total energy intake in maintenance. These are the characteristics of a very efficient convertor of primary productivity.

The world catch may be over a million tonnes, on the basis of extrapolating known fisheries on a per-area basis to the known range of the anadromous gobies.

This important protein source occurs where it is most needed: the anadromous gobies' geographic distribution is well-matched with the distribution of maritime areas characterised by chronic human undernutrition (see maps, Figs. 1, 2).

Gobies are fished at the fry stage, when they are about 1.5 cm in length, transparent, pelagic and schooling. Fishing is conducted near river mouths, where the fish are intercepted on their migration from the sea (where they have spent approximately four weeks) to the rivers. The product is either used fresh, or as a salted and fermented product with good storage properties (this method is traditional in the Philippines). Fisheries for the adults are less common because the adults are less abundant, more dispersed, and difficult to catch.

Adhesive eggs are deposited cryptically on the underside of stones (Manacop, 1953; Bell, unpublished) in fresh water. Initially both parents give care but subsequently the male alone guards and fans the eggs; after 24 to 48 hours the eggs begin hatching and tiny, barely visible larvae are carried downriver in the current to the sea. The larvae feed and grow in salt water, becoming postlarvae; virtually nothing is known of the marine stage. From four weeks (Manacop, 1953) to four months (Radtke and Kinzie, 1987) later, the postlarvae, transparent small fish, gather near river mouths preparing to re-enter freshwater. They then enter estuaries (fry stage, object of fry fishery) and rivers and undergo a remarkable number of changes: within two or three days they change from being saltwater fish which are transparent, schooling and pelagic to freshwater fish which are pigmented and patterned, solitary and benthic (juveniles). At this stage the ventral sucker is well developed, so they are capable of ascending rapids and waterfalls. They are capable of climbing wet surfaces up to vertical, such as at waterfalls.

The diet of the fish from this time on is mainly the periphyton community which grows on underwater surfaces. This contains algae and associated microorganisms; the fish harvest this material with a remarkably mobile upper lip, armed with numerous setiform labial teeth, which efficiently scrapes the surface to which the fish adheres by its ventral sucker.

The fish mature as early as 4 cm in length, and rarely exceed 10 cm. The number of eggs produced is large; the number produced in a single spawning by a 3.5 cm female was estimated to be over 10,000 (Bell, unpublished).

1.3 **Current State of the Anadromous Gobiidae Literature**

The anadromous Gobiidae are little known. The primary literature on the group is very scarce and is to be found mainly in obscure journals. Much information in the primary literature has therefore not made its way into the secondary (texts, reviews) literature. The most valuable contributions to the primary literature are those by Manacop (1953) and Erdman (1961, 1986). Manacop in the Philippines worked on Sicyopterus extraneus, and Erdman in Puerto Rico worked with Sicydium plumieri. Most secondary sources do not cite Manacop (1953), Erdman (1961), or other primary sources, and consequently cannot assist managers who attempt to improve their local fisheries.

This lack of basic information and recognition is a serious limitation to management which could be remedied by amalgamation of existing information and acquisition of new.

In this proposal I cite primary sources and results of my own work. The information herein is the most reliable and up-to-date available.

PROJECT DESCRIPTION

2.0 OBJECTIVE

1. The objective of this study is to improve management of the anadromous goby fisheries and thereby to improve the nutrition of people depending on them in the developing world. Anadromous goby fisheries exist in many places; some are extremely productive, for example the fishery in northern Luzon, the Philippines, which in the 1930's (only estimates available; yields since then believed to have declined) produced 20 million Kg annually.

Development of such alternatives to augment fishery production is especially important in Jamaica (a net importer of fish products valued at US\$22.3 million/yr) and in neighbouring Haiti and the Dominican Republic (ICOD, 1987).

2. To provide an opportunity for students to participate in an integrated research project, focusing on the anadromous goby fishery ecology of Jamaica, under the direction and coordination of K. Bell and their supervisors. Collaborative research, involving resource and opportunity sharing, will reduce the cost of each student's program, as well as improving its quality. Availability of contemporaneous data on various aspects of the system dramatically increases the power to make conclusions. Students involved with the study will be particularly well prepared to continue with research and management in fisheries.

3.0 OUTLINE

The study will take place through Dalhousie University, Halifax, Canada, and the University of the West Indies at Mona, Jamaica. Linkages between Dalhousie and U.W.I. are well-developed in a number of departments and are expected to increase under the new Centres of Excellence program as it encourages cooperation between the Biology Department and fisheries ecology researchers (e.g. Dr. Steve Kerr, Dr. Robin Mahon and others) at Bedford Institute of Oceanography. Further funding (not budgeted in this project) will be sought from various agencies in order to support expenses in bringing fisheries ecologists to Jamaica for seminars and workshops.

Students (maximum of 8) will be selected and topics (Table 1) assigned. Field research will be carried out in Jamaica, W.I. on sources of mortality to the larvae, postlarvae, fry and adults. Ideally, the students would represent several West Indian countries in which Sicydium occurs.

The species to be researched in Jamaica is Sicydium plumieri, a West Indian anadromous goby species which is representative of the group. The author is familiar with and has already conducted research on this species. Because of similarity of many features of anadromous goby fisheries around the intertropical world, the research on Sicydium in Jamaica will be useful to managers elsewhere in the Caribbean, Indian Ocean, and the Indo-Pacific where anadromous goby fisheries are widespread.

The study will begin by assembling available primary literature on the subject of the anadromous Gobiidae, stressing the fisheries based on them (this task is now 95% complete). An annotated bibliography will be produced.

Topics which relate to the life cycle and ecology study of Sicydium plumieri, the Caribbean anadromous goby, are listed in Table 1. Topic 1 will be done by the Director (K. Bell) whose responsibility will also include project direction, coordination, and editing of manuscripts into a final report. Topics 2-8 are to be assigned to Caribbean students at U.W.I. who would cooperate on research. Topics 4, 5, 6 & 7 are a description in time and space of the marine environment of the northeast nearshore oceanic environment of Jamaica; they can each be adjusted in scope and depth to accommodate the smaller or larger number of student researchers available.

A temporary field station will be set up northeast of the Blue Mountains in Jamaica. This is the area where Sicydium is most abundant and therefore the appropriate study area. The field station will provide laboratory space and accommodation for those on the project, eliminating the need for the 2+hr return drive from Kingston. The station would ideally be located near the north watersheds of the mountains and the coast to facilitate the freshwater and marine sampling programs.

The field station will be equipped with simple laboratory equipment, a small journal and reference library and a microcomputer with software for data management and analysis (Systat, Statview, Excel), word processing (Microsoft Word) and graphics enhancement software. (For an outline of the anticipated equipment, see Budget).

Much equipment (e.g. aquaria, river sampling devices, sorting devices) will be designed and manufactured to meet the particular sampling and experimental needs of the project. K. Bell is highly skilled in these areas (details in curriculum vitae). Independence in terms of design, manufacture, repair and maintenance of equipment will contribute to the future ability of these students to continue productive research in adverse economic surroundings.

TOPIC	LEVEL	FIELD
K. Bell: 1. * Early life history (egg to subadult) ecology of <u>Sicydium</u> : maximum duration of post-hatching seaward drift; first foods and early diets; growth rates; predators; competing ichthyoplankton; marine postlarval phase duration; homing success; dispersal capabilities; sources of mortality, recruitment variation. Comparison with other anadromous gobies. Discussion of study results in the context of fisheries management.	PhD 2yr	MarineEcology, Fisheries
Students to be identified:		
2. * History of the <u>Sicydium</u> fry fishery in Jamaica	B.A./M.A. 1yr	Social Sciences, Econ.
3. * Census (all Jamaica) of adult goby population, size/age structure, egg production and geographic distribution, analysis of distribution in terms of habitat descriptors	BSc./MSc 2yr	Biology, Ecology
4. * Physical oceanography of the nearshore: current structures in nearshore: diurnal & changes, storm effects	BSc./MSc 2yr	Oceanography
5. Biological oceanography of the nearshore 1: nutrient dynamics	BSc./MSc 2yr	Chem. -Oceanography
6. * Biological oceanography of the nearshore 2: phytoplankton and productivity	BSc./MSc 2yr	Biology-Oceanography
7. * Biological oceanography of the nearshore 3: zooplankton cycles	BSc./MSc 2yr	Biology-Oceanography
8. Embryology & early morphology of <u>Sicydium</u>	BSc./MSc 2yr	Biology

TABLE 1. Listing of possible topics within the Anadromous Goby study.

Asterisk (*) indicates 6 topics essential to the study; any not taken up will be included, in its minimal form, with topic 1. Study area unless otherwise stated is the northern watershed and nearshore ocean of the Blue Mountains area. Level of degree depends on extent of research and resources available.

An atmosphere of cooperation will be fostered at the North Shore Lab. The live-in nature of field stations usually makes this a fairly easy task, and creates a high degree of personal identification with group goals. This in turn can vastly amplify the power of the learning process.

Students will be encouraged to publish their own work in science journals for both their benefit and for the dissemination of useful information and ideas. Development of science communication skills will be encouraged through frequent discussions and seminars by participants in the study, and use of U.W.I. journals (campus news, science intra-departmental series) for publication of developing ideas and results.

Continuing contact with Jamaican fisheries personnel will ensure that the study retains relevance to management goals. Continuing supervision by a committee of professors at Dalhousie University (Halifax) and University of the West Indies at Mona (Jamaica) will ensure that appropriate scientific standards are maintained.

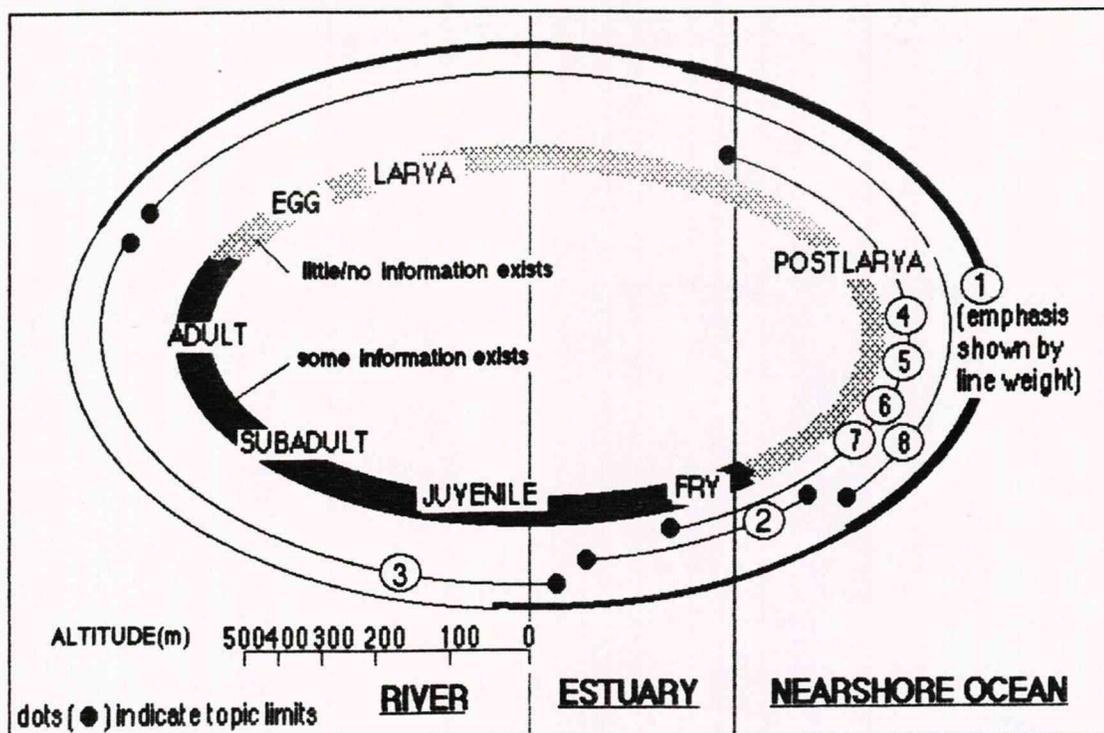


Figure 4. Scope of study topics and their sampling environments. Scope of study topics in terms of the *Sicydium* life cycle. Topic numbers correspond to those in Table 1, and are mounted on arcs indicating the portion of the life cycle to which they are relevant.

In cooperation with Jamaican fisheries personnel, strategies for management and improvement of the Jamaican anadromous goby fishery will be developed, based on results of this study. These strategies will address stages which are biologically critical, and will incorporate the fishing techniques identified as optimal following a review of available and established techniques (which vary widely between the Philippines and the West Indies). A demonstration and training project will be designed in collaboration with fisheries authorities to introduce optimal fishing and harvesting techniques to Jamaican fishermen.

The final stage of the study will be the assembly and dissemination of research results and reference material to anadromous goby fishery management authorities through our own mailing lists and through the Network of Tropical Fisheries Scientists (of ICLARM, the International Center for Living Aquatic Resource Management, Manila, Philippines).

4.0 SIGNIFICANCE OF PROPOSED STUDY

Many West Indian countries and islands are net importers of fish. Jamaica is a net importer of US\$22.3 million worth; Haiti and the Dominican Republic are also net importers of US\$3.7 million and 10.1 million. Allotments of fish products per person-year in these areas are low: 17 Kg in Jamaica, 3.0 Kg in Haiti and 7.5 in the Dominican Republic. Compare this to 21.5 Kg/person in Canada (where fish is a minor component of dietary protein) and 83 Kg in Japan (ICOD, 1987).

Anadromous gobies are fished in the West Indies but are to date fisheries are unmanaged and little understood. Jamaica, Haiti (the poorest of all american countries) and the Dominican Republic include large areas of typical anadromous goby adult habitat and their fisheries for goby fry should have great potential beyond the present levels.

At its level of 20,000 metric tonnes, the fishery in northern Philippines was an important domestic, and potentially exportable, source of high-quality protein. Declines, reported in the Philippines and the Caribbean by various authors, point to the need for improved management. Its importance and potential in the Caribbean need to be documented and explored, and the fisheries ecology needs to be investigated in the context of management and enhancement.

This study will attempt to provide information which will help to explain variations in fishery yields, help environmental and fisheries managers make decisions, and increase the socioeconomic benefits of this resource. The consistency of features in the Philippines and the Caribbean indicates that findings at any location will have generality and be welcomed by managers in all.

5.0 PROJECT COMPONENTS**5.1 Objective (recap of 2.0)**

The first objective of this study is to provide information leading to improved management and enhancement of the fisheries for anadromous gobies in Jamaica and elsewhere.

The second objective is to provide an opportunity for economical and useful student research in a collaborative environment, on an important subject.

5.2 Tasks (leading to Objective)

The tasks in this study will be:

1. to survey the current status of this resource in Jamaica
2. to explain by reference to annual variations in river volume, temperature, ocean currents, food availability and predation pressure, the yearly mode(s) in spawning activity and characterise ecological relationships of the anadromous gobies, emphasising the early life history
3. to integrate objectives 1 & 2, and estimate the potential sustainable yield of the fishery; compare to present level
4. to identify management and enhancement strategies for the Jamaican fishery
5. to survey existing and available fishing/harvesting methods, and identify optimal methods for the Jamaican situation
6. to design, in collaboration with Jamaican fisheries personnel, a demonstration, training and implementation program for alternative fishing/harvesting methods
7. to communicate findings to managers of anadromous goby fisheries in the Philippines and elsewhere, and identify future research priorities.

Fisheries management elsewhere will benefit from the findings of this work because although the anadromous gobies are widely distributed, known major features are similar. Findings will thus have general applicability and utility.

5.2.1 Subtasks (leading to completion of Tasks)

Numberings correspond to Tasks, above.

- (1-7.) develop and maintain contact with Jamaican fisheries dept. personnel.
1. examine official fisheries records, and conducting interviews with officials and fishermen. Identify habitat-use conflicts (anthropogenic disruption of goby habitat) and describe benefit/direct-cost/indirect-cost structure of these situations.
 - 2,3. a. sample adults regularly to determine annual distribution of egg production;
b. sample river plankton for larvae to determine diurnal periodicity of hatch and rate of travel of larvae;
c. record river temperatures and flows, obtain rainfall data from official sources if possible;
d. sample for postlarval gobies in nearshore (marine) areas, take gut content samples;
e. sample for plankton in the appropriate prey size range, as determined from gut contents;
f. estimate ocean currents in nearshore, using drift cards or homemade flag drogues;
 - 2,3. primary analysis of data using frequency distributions, spatial-, temporal- and bivariate plots, and other graphic presentations of data. Further analysis will use regression, correlation, nonlinear curve fitting, autocorrelation plotting. ANOVA and t-tests may be used where data is discrete or not amenable to regression or other analysis. Data will be transformed as necessary to avoid violations of assumptions of normality.
 - 3,4. continue analysis, referring to fisheries modelling and secondary production modelling literature. Identify critical points in the system and examine potential results of possible

- management strategies. Consider (for conservation) conventional quota, closed season, closed area, gear control measures; consider (for enhancement) modifications/improvements to watershed areas, elaboration of foothill watercourses.
- 5,6. consult literature and correspond with other managers of anadromous goby fisheries, and evaluate fishing methods for their applicability to Jamaica; consider (for exploitation) incentives for introduction of new gear and methods of preservation.
 7. identify important questions which remain unanswered. Communicate findings to other managers by mail, by publication and through Network of Tropical Fisheries Scientists (ICLARM).

5.3 Methods/techniques (used in Tasks/Subtasks)

Methods and techniques are discussed by location (freshwater, estuarine and marine) and purpose. The topics assigned for student research will usually include several of the methods below, and each method may appear in several topics.

a. Freshwater sampling: in rivers (ca. 15 representative rivers) at altitudes of 0-50 feet above sea level, 50-1000 ft., and above 1000 ft, sampling will be conducted for juveniles, subadults and adults. These stages are benthic, very agile and well camouflaged; they are consequently difficult to catch. The methods to be used initially will be seining, trapping and electrofishing. One method among these will then be adopted, electrofishing being the most likely because of its success in rocky and difficult situations.

Samples will consist of individuals whose species, size, condition, stomach contents, and fecundity can be measured and recorded. This will yield a spatial and temporal distribution of stage, density, condition, diet and egg production. Tag-and-return methods may be employed to shed light on the mortality, population size and movements of adults.

The adult population is numerically the smallest size group; the population is therefore most sensitive to mortality in that group. Therefore most upriver samples will be taken nondestructively. Fish will be taken and anaesthetised, measured, marked, returned. A minority of samples will be preserved to obtain fecundity and gut contents data. This approach will reduce the effect of sampling on the data.

The delineation of habitat types in freshwater will involve the characterisation in terms of water quality (pH, turbidity, temperature, etc.), environmental variables (light intensity, exposure, current velocity, pool size and depth, waterfalls, substrate types) and ecological variables (species occurrences and abundances).

b. Estuarine sampling: larvae, upmigrating fry and juveniles will be sampled. Several methods will be necessary, since the sampling of each stage presents particular practical problems. Larvae will be sampled with plankton nets (ring type, 50 μ m, 80 μ m or 200 μ m mesh) set in the current. Pelagic upmigrating fry (late postlarvae) will be sampled with similar gear and also seines and traps with leaders; in surface water of low salinity electrofishing may be of use. Juveniles will be sampled by seining, and electrofishing since they settle where salinity is close to zero.

Available diet samples will be taken along with a number of collections of each stage. Methods will be chosen after preliminary identification of diet items in gut contents.

Estuarine habitats will be profiled using the procedures similar to those used in freshwater. Estuary characteristics are expected to have large effects on the attraction and survival of migrating postlarvae.

c. **Marine Sampling:** sampling for postlarvae and their available diet will be conducted from a boat, using plankton nets (ring type, 50 μ m, 80 μ m or 200 μ m mesh), Niskin-type samplers and similar devices.

To evaluate marine microflora and microfauna which are likely food sources for larvae and postlarvae, Niskin bottle water samples will be preserved and Millepore®-filtered or sedimented, to be cell-counted in the laboratory. Although labour-intensive, this method has advantages over alternatives (Secchi disk measurements or chlorophyll-a measurements) because the resulting data, in the form of numbers per species or group, has much more information.

Currents, important to measure for reasons discussed above, are generally considered difficult. Current vector recorders are extremely expensive and difficult to maintain. My choice is to measure currents by the drift of particles or drogues which, although a very time- and labour-intensive method, requires little capital expenditure. Moreover, because the data is Lagrangian (points on a real trajectory), it avoids the potentially serious vector-addition errors of Eulerian data (an imaginary trajectory is constructed by vector addition) obtained from current meters. Current data will be therefore obtained by measuring the drift of a released particle. Particles and drogues for current measurements will likely be manufactured onsite.

d. **Water quality measurement:** water quality will be measured conventionally: pH (measured by pH meter) and temperature (by thermometer) in freshwater; salinity and temperature over depth in salt or brackish water (by RS-5 temperature/salinity/conductivity meter).

6.0 BUDGET \$Canadian

Key: †: may be borrowed at small cost

j: may be available from other sources (e.g.), little/no cost to project

THIS BUDGET GIVES COSTS FOR 2 YEARS, WITH 7 FULL TIME PERSONS INVOLVED IN THE FIRST YEAR AND 6 IN THE SECOND YEAR. PART-TIME POSITIONS ARE NOTED. TOTAL PERSON-YEARS = 15.7.

Item	Year 1	Year 2	Total
SALARY			
Project Director (K.N.I. Bell)	28000	28000	56000
Jamaican Advisor (K.A. Aiken) 1/4 time	5000	5000	10000
Accountant (1/10 time)	2000	2000	4000
Assistant/handyman/driver	5000	5000	10000
Jamaican student stipends (topics 2-8)	30000(6 stud.)	25000(5)	55000j
heading total	70000	65000	135000
heading sum of j and †	30000	25000	55000
EQUIPMENT 1 (capital)			
stereoscope, 1 @ 2500 †	2500	-	2500†
inverted microscope, 1 @ 4000 †	4000	-	4000†
thermometers, 12 @ 10	120	-	120
Electrofisher †	800	-	800†
RS-5 †	2000	-	2000†
oxygen meter †	800	-	800†
pH meter †	800	-	800†
Secchi disk (homebuilt)	20	-	20
plankton nets 4 mesh sizes @ 400 †	1600	-	1600†
Niskin bottle or equiv.	300	-	300
vacuum pump, flask, filter holder	300	-	300
Utermohl chambers †	400	-	400†
buckets	150	100	250
forceps etc.	100	30	130
glassware: flasks, beakers, graduated cylinders, graduated pipettes, petri dishes †	400	200	600
heading total	14290	330	14620
heading sum of j and †	12900	-	12900
EQUIPMENT MANUFACTURE & MAINTENANCE			
Workshop tools			
voltage reducer (for Canadian tools)	30		
hot melt glue gun	20		
hacksaw & blades	20		
drill	100		
thread taps	20		
handsaw	20		
skilsaw	50		
sabre saw	20		
replacements	-	200	
Materials			
sheet glass 150 sq. ft. @ 6.00	900		
silicone glue	30		
hot melt glue	25		
Nitex nylon woven mesh (plankton net repair & fab.)	150		
plexiglass (for eqpt. fabrication) 5 sq. ft. @ 10	50		

plexiglass solvent glue	10		
bolts, nails	100		
replenishments	-	400	
heading total	1945	600	2545
heading sum of i and †	-	-	-

EQUIPMENT 2 (expendables)

rope, polypropylene			
1/8" for drogues, other light eqpt.	50	30	80
3/8" for anchor, plankton nets, etc	100	80	180
1/2 & 5/8" for heavy gear and mooring	200	100	300
preserving jars	700	900	1600
sample bags 2000/yr	60	60	120
labels	30	30	60
plasticsheet	50	-	50
waterproof paper (50 sheets @1.50)	75	-	75
formaldehyde, 20L; @ 30	60	-	60
isopropyl alcohol, 20L; @ 30	30	30	60
disp. petri dishes, 5cm	40	15	55
disp. petri dishes, 10 cm	50	25	75
microscopeslides	35	-	35
coverslips	20	-	20
mountant(s)	15	-	15
solvents: ethanol, xylene	20	-	20
stains	40	-	40
scalpels, blades etc.	20	20	40
pasteurpipettes	30	-	30
pipettebulbs	10	-	10
headingtotal	1635	1290	2925
heading sum of i and †	-	-	-

OFFICE. STATIONERY. ANALYSIS (Capital)

microcomputer, †	2500†	-	2500†
printer †	400†	-	400†
software (MSoft Word, Excel, Statview, Systat, etc) †	900†	-	900†
manual typewriter	100	100	
calculator, scientific, solar2@30	60	-	60
stapler	20	-	20
3-hole punch	30	-	30
looseleaf binders (@\$5)	100	50	150
heading total	4110	50	4160
heading sum of i and †	3800	-	3800

OFFICE. STATIONERY. ANALYSIS (Expendable)

paper, plain + paper, printer	300	200	500
ribbons	150	100	250
pens & pencils	100	100	200
staples, tape, paperclips, file folders	200	150	350
heading total	750	550	1300
heading sum of i and †	-	-	-

LIBRARY

Journals and reference books i(Can. High Commission)

(Canadian Journal of Fisheries & Aquatic Sciences, Canadian Journal of Zoology, Strickland and Parsons - Seawater analysis, Sokal and Rohlf - biometry, plankton identification manuals, standard texts, etc.)

	700	500	1200
Computer searches, e.g. CANOLE; est. 2 searches for each student (CHC)			
	<u>300</u>	<u>300</u>	<u>600</u>
heading total	1000	800	1800
heading sum of i and \dagger	1000	800	1800
<u>SPACE (North Shore Lab)</u>			
Rent	4000	4000	8000
Utilities	480	480	960
Refurbishing (shelving, benches etc.) \dagger	500	-	500
Basic furnishing (stove, fridge, bunks) \dagger	800	-	800
Settlement on lease expiry (repairs)	-	<u>300</u>	<u>300</u>
heading total	<u>5780</u>	<u>4780</u>	<u>10560</u>
heading sum of i and \dagger	1300	-	1300
<u>GROUND TRANSPORTATION</u>			
vehicle (4-seat truck) lease @ 400/mo. i (CHC)	4800 i	4800 i	9600 i
boat, 14-20ft, motor; \dagger or lease	1500 \dagger	1500 \dagger	3000 \dagger
fuel (assume 20000km/yr., 1L/km, \$0.50/L)	<u>1000</u>	<u>1000</u>	<u>2000</u>
heading total	7300	7300	14600
heading sum of i and \dagger	6300	6300	12600
<u>TRAVEL</u>			
Dir: return Canada-Jamaica/yr, 3 @ 1500	4500	4500	9000
J. Advsr: return Canada-Jamaica/yr, 1 @ 1500	1500	1500	3000
Accommodations offsite est. 20 days/yr @ 1000	<u>1000</u>	<u>1000</u>	<u>2000</u>
heading total	7000	7000	14000
heading sum of i and \dagger	-	-	-
<u>INSURANCE</u>			
vehicle	500	500	1000
boat	100	100	200
North Shore lab	<u>400</u>	<u>400</u>	<u>800</u>
heading total	1000	1000	2000
heading sum of i and \dagger	-	-	-
<u>A. TOTAL ALL ITEMS, max. est. primary funding</u>	<u>116310</u>	<u>87200</u>	<u>203510</u>
<u>B. i and \dagger TOTAL, or max. est. other funding</u>	<u>54500</u>	<u>32100</u>	<u>86600</u>
<u>C. A minus B, or min. est. primary funding</u>	<u>61810</u>	<u>55100</u>	<u>120910</u>

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8.0 GLOSSARY

- advection** a process: movement of plankton, larval fish, or other particles, in or by currents from one area to another. Transport in this mode is generally considered to be passive though some organisms are acknowledged to have control of their position in the water column: by adjusting depth they can ride in any of a number of different currents which overlies each other. Because of these complications, advection should not be seen as a purely random, or a purely passive process.
- anadromous** adjective describing species which spawn in freshwater and spend some of its life in the sea. Alternative habit, seawater spawning by species living partly in freshwater, is catadromous.
- bagoong** Philippine word for a preparation of salted and fermented fish. The fish are small, and bagoong is a pasty-textured product with good keeping qualities.
- baling** Philippine word for a type of fishing gear like a beach seine.
- benthic** living on or near the bottom of a body of water (opp. of pelagic).
- drogue** oceanographic device for observing currents, usually consisting of a float connected by a length of line to a parachute-like device which is moved by the current at that depth.
- fecundity** production of eggs per female; an indication of the capacity of a population to increase.
- fry** here used to mean the transparent, pelagic, schooling stage of goby which has completed its early growth in the sea and is migrating to freshwater; found near or in estuaries. This stage is fished and eaten. See also 'larva'.
- ipon** Philippine word for the marine postlarvae or fry of gobies; equivalent to 'hinana' in Hawaii, 'tetiri' in Dominica, 'seti' in Puerto Rico.
- juvenile** here used to mean the stage of goby following the 'fry' stage; juveniles are benthic, solitary in habit, and are pigmented. See also 'larva'.
- larva** here used to mean the newly hatched goby which is migrating passively in river currents toward the sea; almost microscopic, ~2mm for the Dominican gobies (later stages are postlarva, fry, juvenile, subadult and adult).
- migration** a movement of a number of animals from one place to another; here used often to mean the movement of a single identifiable school of gobies. There are usually several migrations per river per month, with an annual mode in the numbers of fish per month.
- pelagic** occupying water well above the bottom.
- periphyton** a growth of algae on solid surfaces. Its associated community includes protozoa, nematodes, rotifers, etc., and is therefore a rich food for animals which graze on it (snails and many fish, including anadromous gobies).
- postlarva** here used to mean the goby stage living in the sea; this stage lasts about a month and at the end of this time they will be fry and may be sought by fishermen. See also 'larva'.

- schooling** showing a tendency to aggregate into groups, usually movement or travel is implied.
- seti** Puerto Rican name for the fry of gobies migrating from the sea; equivalent to 'ipon' and 'tetiri'.
- setiform** needlelike; rows of setiform teeth enable some anadromous gobies to efficiently harvest the algal community growing on stones and other surfaces.

stock-recruitment relationship

a relationship of the number of **Stock** to the number of **Recruits** (fish reaching some arbitrary age or size, commonly young becoming available to the fishery) at a subsequent time. For example, Ricker's $R = aSe^{-bS}$; **a** and **b** are constants which relate to the maximum rate of, and degree of density-dependent regulation of, population growth.

- sucker** in many gobies, a sucker is formed by the partial union of the ventral fins (underneath, near the head). The sucker enables climbing of sheer steep surfaces and remaining stationary against a strong current.
- subadult** here used to mean a goby resembling adult, but smaller and immature. Usually above first waterfalls. See also 'larva'.
- tetiri** Dominican word for the fry of gobies migrating from the sea; equivalent to 'ipon'.
- trophic** having to do with the process of nutrition

trophic position or trophic level

indicating how far removed the organism is from the original source of production. Plants are trophic level 1, herbivores are trophic level 2, carnivores are trophic level 3 or higher. Omnivores occupy different trophic levels at different times. For most organisms, respiration exceeds production by ten times. Production at trophic level **n** is therefore approximately $1/10^n$ of the original (plant) production.



International Centre for Ocean Development
Centre international d'exploitation des océans

Our File/Notre référence

Your File/Votre référence 1008-12/880259

February 6, 1989

Mrs. Elisabeth Mann Borgese
Pearson Institute
Dalhousie University
1321 Edward Street
Halifax, Nova Scotia
B3H 3J5

Dear Elisabeth:

Re: Special request for approval of a project summary

The attached project summary entitled "Small Fisheries Projects Funding Program - Forum Fisheries Agency" is hereby submitted for your consideration. At the time of the preparations for the Executive Committee, we were aware of this proposal, but the document itself was not finalized in time for your consideration on Monday January 30. You can see from the date of the document that it was available the day after the Executive Committee meeting.

The reason I am submitting it to the Executive Committee at the present time is that it is the type of project which we have encouraged from our partner regional organizations as programs of this nature will save ICOD a considerable amount of internal administrative work by avoiding the preparation and approval of small individual project summaries which are very time consuming in relation to the amount of money involved. It also provides to our key partner organizations in the developing regions the ability to respond quickly to requests from their Member States.

You will recall that we submitted a similar proposal to the November Board meeting on behalf of the OECS, but for a much greater amount (\$675,000).

... 2

We will contact Executive Committee Members to determine whether or not they would be available for a conference call on February 13. If Members feel that no substantive discussion is required, they may be prepared to provide approval on a no objection basis. In addition to the reasons given above for this special request for approval, I should point out to the Executive Committee that the project is expected to disburse \$70,000 in the current fiscal year.

I regret that the documentation was not ready last Monday and trust you will agree to this special request for project approval.

Sincerely,



for
Gary C. Vernon
President

GAC:GCV/amd

enclosure

Elisabeth
Gary V. asked me to sign this for him as
he read a draft.

Gary C.



International Centre for Ocean Development
Centre international d'exploitation des océans

CONFIDENTIAL

EC88/D47
Project #880259
January 31, 1989

PROJECT SUMMARY

(Approval)

Project Title: Small Fisheries Projects Funding Program
- Forum Fisheries Agency (FFA)

Division: Technical Assistance

Recipient/
Implementing Agency: Forum Fisheries Agency

Duration: Three years, commencing upon final
approval

Financial:

ICOD Contribution: \$ 240,000

Recipient Contribution: \$ 18,000

Project total: \$ 258,000

(This portion for details of approval)

Conditions of Approval or Comments

Record of Approval



Summary:

Background:

Marine resources are the major resource of Pacific Island nations. Their management and rational harvest are essential to the well-being and long-term survival of islanders.

There may be significant opportunities to achieve sustainable fisheries development at the small-scale artisanal level. The issue of small-scale fisheries development and management is often overlooked where commercial fisheries development is being undertaken. Large schemes are more visible and are thus often more attractive to donor agencies.

Small-scale fisheries development projects, on the other hand, are often not high profile. They can, however, have a real effect on the quality of life of island fishermen. In addition, the funding required for many small-scale schemes is relatively minimal, but the long-term benefits can be substantial.

This proposed program is aimed at establishing a project in FFA that identifies opportunities in small-scale fisheries in the region and responds to island country requests for support of such projects.

Project Description:

A) General Objective

To support small-scale fisheries development initiatives in the Pacific Islands region.

B) Specific Objective

To respond to village level fisheries development initiatives of Forum-member countries.

C) Project Components

This program will consist of a small projects fund to be administered by the Director, with assistance from senior professional staff of FFA. While funds will be administered by the Agency, project criteria will be determined by agreement between the Centre and the



Agency.

The overall program will be managed and implemented by the Agency, while individual approved projects will be implemented by the requesting island nation.

D) Project Beneficiaries

The beneficiaries of this program will be the fishermen and women of Pacific Island nations.

Project Appraisal/Constraints:

Appraisal

- a) This program will enable Pacific Island nations to implement small-scale fisheries development projects, specifically in the area of artisanal fisheries.
- b) the program allows the Agency to respond rapidly to Pacific Island nation requests on the issue of small-scale fisheries development, fisheries management and conservation issues.
- c) By reducing the number of small projects submitted directly to ICOD, this program reduces ICOD's administrative load for small projects from the Pacific Islands region.

Constraints

ICOD will need to establish criteria for projects so that they can be properly evaluated. ICOD will need to monitor the program, particularly in the early stages of implementation.

Relationship to Other Projects (ICOD and Other Donors):

- a) This program supports the on-going efforts of ICOD to assist in fisheries development, management and conservation in the Pacific Islands region.
- b) This program is similar in concept to ICOD Projects #870176 "Small Projects Fund - FFA and #880227 "OECS Small Projects Funding Program.

Financial Information:

A) Projected ICOD Disbursements by Fiscal Year.

FY 1989	\$ 70,000
FY 1990	\$100,000
FY 1991	\$ 70,000

B) ICOD Budget Components

Project Implementation Fund	<u>\$240,000</u>
Total ICOD Contribution	\$240,000

C) FFA Budget Components

Program Management (staff, office support, communication) (Cdn \$6,000 X 3 years)	<u>18,000</u>
Total FFA Contribution	\$ 18,000

D) Recipient Budget Components

This will be determined on a project by project basis.

Recommendation:

It is recommended that final approval be given to Project #890259 -- Small Fisheries Projects Funding Program - Forum Fisheries Agency -- to a maximum ICOD contribution of \$240,000 Canadian.



Elisabeth M. Borgese

Memorandum

To: Members of the Executive Committee Our File: 880231
1003.12

From: Gary C. Vernon

Date: April 7, 1989

Re: REQUEST FOR FINAL APPROVAL OF THE PROJECT ENTITLED
"COOPERATIVE DEVELOPMENT PROGRAM BETWEEN ISSTH (MAURITANIA)
AND THE UNIVERSITY OF MONCTON (SHIPPAGAN CAMPUS)

You will recall that when the Executive Committee last met on January 30, it was decided that a meeting of the Executive Committee would not be scheduled for April but would be held at the call of the Chair if sufficient work justified such a meeting. In reviewing the current activities of ICOD and the requests from program divisions for the approval of projects, it was felt that an Executive Committee meeting was not warranted at the present time.

There is only one ICOD project which requires immediate approval in view of its projected commencement in May 1989. Since this project had already been reviewed by the Board at its last meeting and was given approval-in-principle as requested, it was felt that the Executive Committee may be willing to provide final approval on a no objection basis.

The reason that the project is scheduled to commence in May 1989 relates to the school year of the University of Moncton, Shippagan Campus. The professors from the Shippagan Campus would be available for four weeks in May/June to pursue the first exchange program. If we miss this window, the professors, who have other activities scheduled for the balance of the summer would not be available to travel until May 1990. This would have a detrimental effect both upon the early implementation of the program, and upon the current budgetary estimates.

In reviewing the project, I would like to point out that the proposed budget has been increased from \$151,300 to \$171,700. This is based on the detailed planning that has been carried out since the Board Meeting which led to the conclusion that it would be more appropriate to send three faculty members from Shippagan



for a period of four weeks each rather than the original estimate of two faculty member for three weeks each. ICOD has supported this change which has been requested both by Shippagan and by ISSTH. This change has also increased the contribution of the University of Shippagan to the project as they are responsible for the salary costs of their professors while on this exchange program. I have reviewed the detailed workplan prepared for this project and I am satisfied that the objectives and schedules for the visits have been elaborated and represent a worthwhile series of activities.

In my absence I would ask you to contact either Jeanne-Mance Côté or Garry Comber to either discuss the matter or provide comments. In view of the nature of the approval, I would also ask that you forward a telex, fax, or letter by courier confirming your views by April 21.

Thank you for your consideration in this matter.

A handwritten signature in black ink, appearing to be "G. Vernon", with a long horizontal line extending to the right.

Gary C. Vernon
President

GCV:GAC/ad
Attach.



International Centre for Ocean Development
Centre international d'exploitation des océans

CONFIDENTIAL
EC89/D48
Project #880231
April 3, 1989

PROJECT SUMMARY

(Approval)

Project Title: Cooperative Development Program between ISSTH (Mauritania) and the University of Moncton (Shippagan Campus)

Division: Training

Recipient: Institut Supérieur des Sciences et Techniques Halieutiques (ISSTH) (Advanced Institute for Fisheries Sciences and Technology) Nouadhibou, Mauritania

Duration: 3 years, commencing May 1989

Components: Three (3) faculty members from Shippagan to work at ISSTH as visiting professors for 4 weeks each year, for 3 years. Professional Development for 3 ISSTH professors at Shippagan Campus for 4 weeks, once a year for 3 years. Curriculum Development. Teaching and Course Materials. Library needs. Evaluation.

Financial:

ICOD Contribution:	\$ 171,700
ISSTH Contribution:	\$ 41,895
Shippagan Contribution:	\$ <u>39,600</u>
Total Project	\$ 253,195

(This portion for details of approval)

Conditions of Approval or Comments

Record of Approval



Summary:

Background:

The West African Economic Community (WAEC) (Communauté Economique de l'Afrique de l'Ouest) composed of Benin, Burkina Faso, Ivory Coast, Mali, Mauritania, Nigeria and Senegal, decided on October 20, 1979 to create the Institut Supérieur des Sciences et Techniques Halieutiques (ISSTH), (the Advanced Institute for Fisheries Sciences and Technology). Nouadhibou, in the Islamic Republic of Mauritania, was designated as the site for the new regional institution. ISSTH was constructed, and is a modern, well-equipped institution. In 1987 the first class of 30 students began its studies in Nouadhibou. In 1988, 42 additional students entered ISSTH.

The primary goals of the Institute are as follows:

- to provide university training in fisheries sciences and technology for personnel from the West African Economic Community (WAEC);
- to provide continuing education for personnel currently employed in the fisheries sector; and
- to conduct research projects which will enable ISSTH to achieve an international standard enjoyed by similar institutions.

ISSTH's primary goal is to provide WAEC states with a pool of well-trained engineers and senior technicians capable of working in the various facets of fisheries both in the public service and in the private sector. This comprehensive, multidisciplinary training will enable future fisheries officers and officials to adopt an integrated approach to managing the fisheries in their respective countries.

The ISSTH curriculum concentrates on four areas: 1) Biology/Ecology; 2) Technology; 3) Management; and 4) Fisheries Planning. The Institute offers two separate streams of training: a two year program for "Senior Technicians" and a three year program for "Fisheries Engineers". Both programs include theoretical courses, practical work, directed studies, factory visits, field trips at sea, independent studies and practicums.



Upon completing their studies all students are required to submit and defend a major research project.

In order to attain and maintain the desired academic standing and technical expertise, it is imperative for ISSTH to develop international contacts. For this reason the Institute has endeavoured to establish links with the outside world through inter-university agreements.

In November 1988 this project was approved in principle by the ICOD Board of Directors. Dr. Diouf, Director-General of ISSTH visited the Shippagan campus in January 1989 to pursue the objectives of this project. In February 1989, Jean Guy Rioux, Vice Rector Shippagan campus, visited ISSTH in Nouadhibou together with ICOD program officer to finalize the action plan, individual responsibilities and budgetary requirements for this cooperative development program. Precise, measurable objectives and activities based on the needs identified by ISSTH were established. A plan of action was developed clearly defining the goal of each mission and the terms of reference and responsibilities of each professor (see Annex II). To ensure that the action plan is properly implemented and objectives realized the responsible Program Officer and Director will assess the activities on a biannual basis.

Project Description:

The proposed project establishes a cooperative development program between ISSTH and the University of Moncton (Shippagan Campus) for a period of three years. The program is designed to upgrade and support the professional development of the Institute's faculty and the ISSTH curriculum through regular exchanges, independent and joint publications and independent research over a designated time period. Having an established and recognized academic program, the Shippagan campus is well placed to assist ISSTH and its faculty in their efforts to build a regional fisheries school of an international standard.

For their part the Canadian professors will have a unique opportunity to participate in the debut of a regional African institute and to study, on site, the realities of the West African fisheries.



A) Objectives

The general objectives of the project are:

1. to strengthen and assist in the early development of ISSTH, located in a region where fisheries plays an important economic and nutritional role;
2. to support the development of the human resource base at ISSTH;
3. to promote the development of a quality training program at a recently established regional institution, thereby enhancing the indigenous fisheries capacity of West Africa; and
4. to establish an academic link between a Canadian university and a West African regional institution.

B) Project Components

The project will provide the necessary funds to establish a cooperative development program between ISSTH in Nouadhibou, and Shippagan Campus of the University of Moncton. Such a program will create a viable academic link and framework for inter-regional cooperation in fishery sciences and a structured plan for the attainment of an international standard by ISSTH.

1. Three (3) faculty members from Shippagan to be Visiting Professors at ISSTH for 4 weeks each year for 3 years:

Each professor from Shippagan will work with a counterpart at ISSTH. During these visits the professors will augment the curriculum and institutional development of ISSTH through a pre-determined schedule and action plan based on defined needs. The goal of each mission and the terms of reference for individual professors will be examined and defined. Activities will include:

- training modules and seminars for ISSTH faculty and students;
- advisory services pertaining to curriculum, specific course content, student research projects, etc;
- joint research and pedagogical projects.



2. Professional development for three (3) ISSTH professors in Shippagan for four (4) weeks each year for three (3) years:

These attachments will provide the ISSTH faculty with an opportunity for professional development through a variety of programs - joint research projects, supervised independent study/library access, familiarization with techniques and facilities in particular areas of specialization, as well as specially designed seminars. By observing and participating in the teaching program of a similar institution, the ISSTH professors will be exposed to Canadian fisheries management systems, science and technology, thereby reinforcing the professional and pedagogical standard of ISSTH.

3. Funds for the development and provision of teaching and course materials to ISSTH:

The Shippagan faculty together with the ISSTH staff will identify the necessary teaching and course materials required to deliver the academic program proposed for the institute. These materials will remain at ISSTH.

4. Funds for the provision of books, periodicals, as well as scientific and technical reviews to ISSTH:

Being a young institution, ISSTH's documentation centre contains only one hundred titles. However, the Institute's aspirations include the ability to store and disseminate data and information to the various fisheries centres located within the West African sub-region. In order to accommodate the basic requirements for ISSTH students, professors and visiting scholars, it is estimated that 400 to 500 titles are necessary. The Shippagan faculty together with ISSTH personnel will identify the required literature.

C) Beneficiaries:

The beneficiaries of the ISSTH - Shippagan cooperative development program will be primarily ISSTH - as the institution will be assured of having the technical support required to be a credible regional fisheries



institute; secondly, the students attending ISSTH; thirdly, the ISSTH professors will be afforded the opportunity to broaden their horizons and professional qualifications, and become familiar with modern teaching methods and programs in fisheries sciences; fourthly, the member states of the West African Economic Community will have a pool of well-trained and capable Fisheries Engineers and Senior Technicians in their countries; fifthly, the University of Moncton, Shippagan Campus will have an opportunity to conduct research pertaining to West African fisheries and the visiting African lecturers/researchers will add an international dimension to the Shippagan curriculum; and sixthly, other institutions in the sub-region who will benefit from the input of the Canadian professors and the resources available at ISSTH.

D) Project Management:

Given the importance of this project, the Director-General of ISSTH will oversee the management of the cooperative development program with the assistance of the Deputy Director of Studies. A project coordinator will be appointed at the Shippagan campus to liaise with ISSTH and oversee the Canadian input. The project will be managed by ICOD in close collaboration with Shippagan and ISSTH.

E) Evaluation:

Every year the project coordinators will define the terms of reference and outline the plan of action for the individual professors as well as the objectives to be achieved. Following each visit (to Mauritania and to Canada) the faculty of both institutions will submit to their respective coordinators a report, detailing scheduled activities, meetings, projects, the results obtained, and necessary follow-up measures.

The course coordinators will summarize these reports and will submit to ICOD an annual report including financial and administrative matters. Following the proposed three year term a comprehensive final report will be submitted to ICOD evaluating the project.



Advantages and Constraints:

- a) The proposed cooperative development program will consolidate and reinforce the establishment of this regional fisheries institute while providing ISSTH long term exposure to current trends in scientific research, technology and fisheries management.
- b) This new institution will play a very important role in the training and education of a much needed human resource base in the fisheries sector in West Africa.
- c) The ISSTH - Shippagan cooperative development program will facilitate the successful embarkment of this regional venture and will provide ISSTH with a global perspective, notably from Canada.
- d) The cooperative development program between these two institutions will promote francophone relations and will create an important link with Canada.
- e) In order to ensure a high degree of professionalism, the project will be closely managed with precise terms of reference and a well-defined action plan formulated prior to each mission and approved by ICOD.
- f) This inter-institutional cooperative program represents an important new initiative in training, which, if successful, can be implemented in all ICOD regions.

Financial Information:

Budget (Cdn \$)

a) Project Disbursements:

FY 1989-1990	\$ 47,900
FY 1990-1991	\$ 51,900
FY 1991-1992	<u>\$ 71,900</u>
Total	\$ 171,700



b)	<u>ICOD Budget Components:</u>	
1.	Three (3) visiting Canadian Professors to ISSTH over a 3 year period:	\$ 54,000
2.	Three (3) ISSTH visiting professors to Canada over 3 years:	\$ 58,200
3.	Teaching and Course Materials: For three years (3 x 1000)	\$ 3,000
4.	ISSTH Documentation Centre (Books, Reviews, Journals) for 3 years (3 x 5000)	\$ 15,000
5.	Visit of Directors-General to Respective Institutes	\$ 8,000
6.	Administration Costs of Shippagan Campus: \$ 4,500 per year for 3 years	\$ <u>13,500</u>
	Subtotal	\$ 151,700
	Contingency	\$ 10,000
	Inflation	\$ <u>10,000</u>
	Total ICOD Contribution	\$ <u>171,700</u>
c)	<u>ISSTH Contribution:</u>	\$ 41,895
d)	<u>Shippagan Campus Contribution:</u>	\$ 39,600
e)	<u>Project Total</u>	<u>\$ 253,195</u>

Recommendation;

It is recommended that approval be given to project #880231-Cooperative Development Program between ISSTH (Mauritania) and the University of Moncton (Shippagan Campus) - up to a maximum ICOD contribution of \$ 171,700 (Cdn).



ANNEX I

Detailed Financial Information:

Budget (Cdn \$)

a) Project Disbursements:

FY 1989-1990	\$ 47,900
FY 1990-1991	\$ 51,900
FY 1991-1992	<u>\$ 71,900</u>
Total	\$ 171,700

b) ICOD Budget Components:

1. Three (3) visiting Canadian Professors to ISSTH:

Travel (3000 x 3)	\$ 9,000
Local transportation and misc. costs (200 x 3)	\$ 600
Living expenses (28 x 100 x 3)	<u>\$ 8,400</u>
3 people per year	\$ 18,000

3 people over a 3 year period \$ 54,000

2. Three (3) ISSTH visiting professors to Canada:

Travel (3000 x 3)	\$ 9,000
Living expenses and accommodation (100 x 28 x 3)	\$ 8,400
Local transportation and misc. costs (500 x 3)	\$ 1,500
Book Allowance	<u>\$ 500</u>
3 persons per year	\$ 19,400

3 persons over 3 years \$ 58,200

3. Teaching and Course Materials:

For three years (3 x 1000) \$ 3,000



4.	ISSTH Documentation Centre (Books, Reviews, Journals) for 3 years (3 x 5000)	\$ 15,000
5.	Visit of Directors-General to Respective Institutes	\$ 8,000
6.	Administration Costs of Shippagan Campus:	
	\$ 4,500 per year for 3 years	<u>\$ 13,500</u>
	Subtotal	\$ 151,700
	Contingency	\$ 10,000
	Inflation	<u>\$ 10,000</u>
	Total	<u>\$ 171,700</u>

c) ISSTH Contribution:

1.	Three (3) Canadian visiting professors to ISSTH:	
	- Living Accommodation	\$ 750
	- Hospitality	\$ 600
	- Field trips	\$ 435
	- Administration	<u>\$ 570</u>
		\$ 2,355
	3 people (3 x 2355)	\$ 7,065
	3 people for 3 years	\$ 21,195
2.	Three (3) ISSTH visiting professors to Canada:	
	Salary for 1 professor for 1 month	\$ 1,900
	Three professors for 3 years (3 x 1900 x 3)	\$ 17,100
	Secretarial Support	<u>\$ 3,600</u>
	Total	<u>\$ 41,895</u>



d) Shippagan Campus Contribution:

1. Visiting Canadian professors
to ISSTH:

Salary for 1 professor	\$	3,300	
3 professors for 3 years			
(3 x 3300 x 3)			\$ 29,700

2. Three (3) visiting ISSTH
professors to Shippagan:

Hospitality (400 x 3)	\$	1,200	
Field Trips (300 x 3)	\$	900	
Administration (400 x 3)	\$	<u>1,200</u>	
3 people per year	\$	3,300	
3 people over 3 years			<u>\$ 9,900</u>

Total			<u>\$ 39,600</u>
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ANNEX II

The following information was provided in detail for each professor participating in the program:

I. Visit of 3 Professors from Shippagan to ISSTH
May 25 - June 25, 1989

1. Objectives of each professor's visit
2. Detailed Work Plan and Preliminary Agenda
 - a) outline of lectures to be given, topics and hours
 - b) topics for independent research
 - c) topics for joint research
 - d) review of ISSTH curriculum
 - e) review of course materials
 - f) consultations with students

II. Visit of 3 ISSTH Professors to Shippagan Campus
October 1 - 31, 1989

1. Objectives of each professor's visit
2. Detailed Work Plan
 - a) courses to be taken
 - b) lectures to be given
 - c) independent research project
 - d) joint research project
 - e) field trips
 - f) review of ISSTH curriculum and course materials
 - g) teaching materials

III. Attached please find an example of one workplan prepared for Mr. Ouattara and his counterpart Mr. Gibbs.

ANNEX II(A)

PROJET DE COOPERATION CUS - ISSTH

PROPOSITION DE PROGRAMME DE TRAVAIL 1989

De : Monsieur Bassaraly OUATTARA (homologue ISSTH) *counterpart ISSTH*
A : Monsieur André GIBBS (homologue CUS). *counterpart Shippagan*

Ce programme comporte deux grands volets :
PROGRAM FOR MR. SIBBS (SHIPPAGAN) AT ISSTH. MAY 25 - JUNE 25, 1989.
1. PROGRAMME DE TRAVAIL DE M. GIBBS A L'ISSTH WORK PLAN

1.1. Objectifs : OBJECTIVES.

. Etudier le curriculum des cours enseignés à l'ISSTH afin de leur conférer des normes internationales ;

. Aider à élaborer les syllabus des cours de gestion des entreprises et coopératives de pêche ;

. Aider à identifier les sources bibliographiques et didactiques et acquérir les matériels pédagogiques nécessaires à mes cours ;

. Effectuer des cours, exposés et conférences aux étudiants de l'ISSTH ;

. Identifier et réaliser des projets de recherche individuelle et conjointe ;

. Encadrer et évaluer des travaux des étudiants de l'ISSTH ;

. Effectuer des visites d'infrastructures de pêche à Nouadhibou.

1.2. Plan d'action : ACTION PLAN. COURSES + LECTURES.

1.2.1. Cours et exposés à réaliser par M. GIBBS à l'ISSTH :

Je vous propose les thèmes suivants :

. Organisation et gestion des entreprises de pêche au Canada : 8 heures ;

. Organisation et gestion des coopératives de pêche au Canada : 8 heures ;

. Organisation et développement de la pêche dans la péninsule acadienne : 4 heures ;

Je suis ouvert à toutes vos propositions et suggestions.

1.2.2. Sujets de recherche que je souhaite réaliser avec M. GIBBS RESEARCH TOPIC

a). Recherche individuelle :

. organisation et gestion des coopératives de pêche au Canada.

b). Recherche conjointe :

. étude comparative des coopératives de pêches en Afrique de l'Ouest et au Canada.

1.2.3. Calendrier de travail proposé à M. GIBBS

- a). Période entre 25 Mai et 25 juin 1989
- b). Durée : 4 semaines
- c). Agenda :

Sur la base des objectifs ci-dessus et la durée du séjour, je vous propose le programme de travail suivant :

- Etude de curriculum de cours : 20 heures
- Cours, exposés, conférences : 20 heures
- Elaboration Syllabus : 30 heures
- Consultations - discussions avec les étudiants, encadrement et évaluation : 10 heures
- appui en recherche documentaire et bibliographique : 10 heures

REVIEW COURSE CURRICULUM
COURSES, LECTURES, SEMINARS.
REVIEW COURSE MATERIALS
CONSULTATIONS WITH STUDENTS &
RESEARCH ASSISTANCE.

Ce programme de travail se traduit par l'agenda suivant que je soumetts à votre appréciation.

PRELIMINARY AGENDA

Semaine 1

Matin :

Après-midi :

Jour 1 :

. Visite ISSTH.

. Prise de contact

Jour 2 :

. Curriculum de cours ISSTH

. Curriculum de cours ISSTH

Jour 3 :

. Cours ou exposé aux étudiants

. Elaboration syllabus

Jour 4 :

. Consultations étudiants

. Cours ou exposé

Jour 5 :

. Visite du Port

. Recherche conjointe

Jour 6 :

. Visite Cap Blanc

Jour 7 :

. Visite Tiarca
(village de pêcheurs).

Semaine 2 :

Jour 8 :

. Visite CNROP

. Recherche bibliographique

Jour 9 :

. Cours et Syllabus

. Conférence

Jour 10 :

. Etude curriculum de cours

. Etude curriculum de cours
. Rapport curriculum cours

Jour 11 :

. Visite SMCP

. Recherche individuelle

Jour 12 :	. Recherche individuelle	. Cours ou exposé
Jour 13 :		
Jour 14 :		. Visite Guera
Semaine 3 :		
Jour 15 :	. Consultations étudiants	. Encadrement étudiants
Jour 16 :	. Recherche conjointe	. Recherche conjointe
Jour 17 :	. Encadrement étudiants	. Evaluation des étudiants
Jour 18 :	. Recherche individuelle . Syllabus	. Recherche individuelle . Syllabus
Jour 19 :	. Recherche individuelle . Syllabus	. Recherche individuelle . Rapport recherche individuelle
Jour 20 :		. Visite Cabanon
Jour 21 :		
Semaine 4 :		
Jour 22 :	. Evaluation des étudiants	. Recherche conjointe
Jour 23 :	. Recherche conjointe	. Recherche conjointe
Jour 24 :	. Recherche individuelle	. Recherche individuelle
Jour 25 :	. Recherche bibliographique	. Recherche bibliographique
Jour 26 :	. Recherche conjointe	. Rapport recherche conjointe
Jour 27 :		
Jour 28 :		

1.3. Matériels pédagogiques et didactiques :

A toute fin utile, je vous informe que :

- Le Centre de Documentation de l'ISSTH ne dispose que de 200 titres ;
- Les matériels didactiques disponibles à l'ISSTH sont :
 - . des micro-ordinateurs "Zenith" à disquettes 5 1/4 portables et de bureau ;
 - . des logiciels : JAVELIN, SYMPHONY, DBASE III PLUS, WORD 3 ;
 - . des magnétoscopes ;
 - . des rétroprojecteurs ;
 - . des projecteurs de films 8 et 16 mm.

WORK PROGRAM FOR MR. OUARTARA AT SHIPPAGAN. OCT 1-31, 1989.

2. PROGRAMME DE TRAVAIL DE M. OUARTARA AU CUS

2.1. Objectifs : OBJECTIVES,

- . Dispenser des cours ou effectuer des conférences et exposés ;
- . Se documenter à partir des ouvrages et revues disponibles au CUS avec l'appui des professeurs du CUS ;
- . Rencontrer et discuter avec des professionnels et experts du secteur de la pêche ;
- . Réaliser et publier des recherches individuelle et conjointe ;
- . Effectuer des visites d'infrastructures de pêche de la région de Shippagan : coopératives et entreprises de pêche, port, Pêche Océan Canada, Aquarium Centre Marin, etc. ;
- . Finaliser les syllabus de mes cours.

2.2. Plan d'action : ACTION PLAN.

2.2.1. Cours, exposés ou conférences à réaliser au CUS :

^{COURSES, LECTURES}
Je me propose d'animer des cours sur les thèmes correspondants à vos modules suivants :

- . CO 1001 - Comptabilité financière I : 3 heures ;
- . CO 1002 - Comptabilité financière II: 3 heures

Etude des méthodes et techniques comptables appliquées dans les pays africains francophones (Plan comptable OCAM).

- . AD 3368 - Réseaux de distribution : 3 heures
Etude de cas africains ;
- . AD 3212 - Gérance internationale : 3 heures
Contribution à la connaissance de l'environnement économique, politique et socio-culturel des pays de la CEA0.
- . FI 4503 - Gestion financière III : 3 heures
Problèmes de financement de la filière pêche en Afrique de l'Ouest.

2.2.2. Recherche à réaliser au CUS : COOPÉRATIVES DE PÊCHE

Je souhaite réaliser une recherche individuelle sur le sujet suivant:

TOPIC:

"Les fondements du succès des coopératives de pêche au Canada et essai d'un schéma d'implantation des coopératives de pêche en Afrique de l'Ouest"

2.2.3 Calendrier de travail :

- a). Période du 1er au 31 octobre 1989 OCT 1 - 31.
- b). Durée : 4 semaines
- c). Agenda (à élaborer par vous).

En dehors des cours et exposés que je me propose d'animer, je souhaite :

- effectuer une recherche bibliographique et me documenter
- réaliser une recherche individuelle ;
- effectuer des visites d'entreprises et de coopératives de pêche ;
- discuter avec des experts et professionnels du secteur de la pêche;
- finaliser mes syllabus de cours.

Dans tous les cas, je reste ouvert à toutes vos suggestions et propositions.

2.3. Matériels pédagogiques :

Afin de réaliser le programme de cours que je vous propose, je souhaite avoir à ma disposition les ouvrages suivants :

1. Serge LAUNOIS : Comptabilité financière. Paris, PUF (Collection Gestion).
2. Jean Claude USUNIER : Environnement international et Gestion de l'exportation. Paris, PUF (Collection Gestion).
3. Jean Claude USUNIER : Management international. Paris, PUF, Collection Gestion.
4. B. CAMUS : Audit Marketing. Paris, les Editions d'organisation.
5. A. TORDMAN : Le commerce de détail américain : Des idées nouvelles pour l'Europe. Paris, les Editions d'Organisation.
6. B. GRANDGUILLOT, F. GRANDGUILLOT et A. PICUIRA : Turbocères. Comptabilité générale informatisée avec Turbocères. Paris, CLET (Coll. Fiches express).
7. G. GENDROT : Les états financiers anglo-saxons et leur interprétation. Paris, Dunod (Coll. Dunod Entreprise).
8. P. KOTLER et B. DUBOIS : Marketing Management. Paris, Publi-Union.
9. S.G. FRANKLIN et R. TERRY : Les principes du Management. Paris, Economica.

ANNEXE

LISTE DES COURS ENSEIGNES PAR Bassaraly OUATTARA à l'I.S.S.T.H.

- 1 - Comptabilité financière
- 2 - Comptabilité analytique
- 3 - Gestion financière
- 4 - Marketing
- 5 - Gestion du personnel
- 6 - Gestion de la production et recherche opérationnelle
- 7 - Organisation et gestion des Entreprises de pêche
- 8 - Gestion internationale des Entreprises
- 9 - Droit international des pêches et droit de la mer *
- 10 - Droit et administration des pêches *

* Ces cours sont enseignés par des vacataires, mais sous ma responsabilité.

NOUADHIBOU Le 27/02/89



Bassaraly OUATTARA



International Centre for Ocean Development
 Centre international d'exploitation des océans

TAB #9

CONFIDENTIAL

EC89/D52
 Project #890305
 January 18, 1990

PROJECT SUMMARY
 (Approval)

Project Title: Coordination of Albacore Data

Division: South Pacific and Caribbean Basin Division

Recipient/Implementing Agency: South Pacific Commission (SPC) Tuna and Billfish Assessment Programme (TBAP)

Duration: Duration: Three years
 Commencement: March 1990

Components: Senior Fisheries Scientist
 Duty Travel
 Computer Support
 Publications
 Regional Meetings
 Evaluation

Financial:

ICOD Contribution:	\$405,000
SPC Contribution:	<u>466,640</u>
Project Total:	\$871,640

Conditions of Approval or Comments

Record of Approval

Project #890305

ABSTRACT

Driftnet catches of albacore in the South Pacific consume about 60% of the sustainable yield. This has raised much concern throughout the South Pacific region particularly in those countries involved in troll and longline fishing. This project at the South Pacific Commission (SPC) will provide a Senior Fisheries Scientist for three years to conduct and coordinate stock-assessment-oriented research on South Pacific albacore. The data collected and outputs from the project will assist the independent developing countries of the region to make rational fishery management decisions.

3 years: \$405,000

Theme: Fisheries Management and Development

Financial Sector Codes: Fishery Management (EA)
Fishery Research (XG)

IPIS Descriptors: Fishery Data
Tuna Fisheries
Statistical Analysis
Stock Assessment
Driftnets
Research

Project #890305

SUMMARY

1) Background

Albacore have been exploited in the South Pacific by Asian longliners since 1952, first by the Japanese and subsequently by Koreans and Taiwanese. Longline catches have fluctuated between 25,000 t and 40,000 t since 1960, with production model estimates indicating a maximum sustainable yield for the longline fishery of 35,000 t.

Exploratory troll fishing in 1985-86 and 1986-87 suggested that a viable surface fishery could be developed in the offshore waters of the Subtropical Convergence Zone (STCZ) (35-40°S, 170-130°W) from December to April. Preliminary opinions were that this fishery could support a catch of about 10,000-15,000 t without substantially reducing longline catches.

Driftnet fishing in the South Pacific expanded dramatically in 1988-89 taking about 60% of the sustainable yield of albacore, thus the longline and troll fishing coupled with driftnet fishery greatly exceed the total sustainable yield. The driftnet fishery is intruding on traditional fishing methods and threatening the long term health of the stock. The exact number of driftnetters that fished in the South Pacific in 1988-89 is not known with certainty. However, unconfirmed reports suggest that at least 60 Taiwanese and a total of 64 Japanese and South Korean vessels operated driftnet fishing in the region.

This rapid increase in catch, particularly by the driftnet fishery, has caused much concern throughout the region, particularly by Pacific Island countries involved in troll and longline fishing, in the processing/transhipping of albacore catches, or with plans for future involvement. These countries rightly feel that the uncontrolled expansion of high seas surface fishing could seriously affect their chances of long-term participation in the fishery. Subsequently, there have been several initiatives to ban the practice of driftnet fishing in the South Pacific.

Some research work has been carried out by national agencies, such as the U.S. National Marine Fisheries Service, New Zealand's Ministry of Agriculture and Fisheries, Japan's Far Seas Fisheries Research Laboratory and the National Taiwan University. The major research

Project #890305

activities have been:

- i) Collection and collation of longline fisheries statistics;
- ii) Estimation of the maximum sustainable yield from the longline fishery;
- iii) Investigations of albacore distribution and vulnerability to trolling in relation to environmental features; and
- iv) Investigations of albacore stock structure and growth by tagging experiments and analysis of otolith microstructure.

These research activities have been coordinated to some extent by an informal gathering of researchers, the South Pacific Albacore Research (SPAR) group. SPC, through its Tuna and Billfish Assessment Programme (TBAP), has played the lead role in facilitating two SPAR workshops (SPC 1986; 1989), and it is anticipated that this role will continue as more regular workshops become necessary.

The changes that have occurred in the fishery in the last two years, particularly the rapid development of the surface fishery, have created an urgent need for additional and coordinated research on the status of the stock and interaction among gear types to support the "ban the driftnet" initiative.

2) Description - Goal and Purpose

- a) The goal of this project is better management of the albacore fishery.
- b) The purpose of this project is to provide an overall framework for coordinated research on South Pacific albacore and specifically to coordinate stock-assessment - oriented research on South Pacific albacore over a three-year period.

3) Components

a) Senior Fisheries Scientist (\$253,400)

- i) Background: SPC is well placed to coordinate research on South Pacific albacore, both through

Project #890305

its role as coordinator of SPAR activities and its pre-eminent position as a tuna research organization in the South Pacific. The TBAP is staffed by thirteen professionals, nine of which are fisheries scientists or research officers and the remainder computer professionals.

The Senior Fisheries Scientist will be responsible for the coordination of albacore research at SPC, the organization of SPAR workshops and liaison with member countries and other agencies where required. The appointee therefore needs to be a high calibre fisheries scientist with good analytical, negotiation and inter-personal skills.

- ii) Plan of Action: A Senior Canadian Fisheries Scientist will be engaged on a three-year contract and posted to SPC Headquarters in Noumea.

It is intended that the Senior Fisheries Scientist would be responsible, in collaboration with other SPC staff, for the day-to-day direction of the following projects:

- i) A tagging project (500,000 ECU funding committed by the European Community);
- ii) A port sampling program for troll vessels (size composition sampling) and longline vessels (size composition and gonad sampling) unloading to Pacific Fishing Company, Levuka, Fiji (funded in association with the above tagging project);
- iii) The collection of fresh gonad samples on board the Tongan longliner Alofa (funded in association with the above tagging project) for studies of spawning seasonality;
- iv) The continuation of the observer program that was successfully carried out during the 1988-89 season (US\$22,000 funding by the British Development Division in the Pacific);
- v) The compilation and distribution of a computer database of South Pacific albacore fisheries statistics that are to be supplied to SPC by countries participating in the fishery (the co-operative albacore database agreed to at the 1989 SPAR workshop);
- vi) A review of available information regarding

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stock structure of South Pacific albacore;
vii) The estimation of catch age composition from length composition, and subsequently the development and application of an age-structured population model.

The Senior Fisheries Scientist will also coordinate other SPAR co-operative projects that arise and act as SPAR workshop conveyor.

iii) Outputs: A Senior Fisheries Scientist to conduct and coordinate stock-assessment oriented research on South Pacific albacore over a three-year period.

b) Duty Travel (\$40,000)

- i) Background: It is anticipated that substantial duty travel will be required to effectively discharge the responsibilities of the position. In particular, travel will be required for the participation in field activities, initiation and direction of various field projects, participation in regional meetings and liaison with SPC member countries concerned with South Pacific albacore, other members of SPAR and the Forum Fisheries Agency (FFA).
- ii) Plan of Action: The budgeted duty travel allocation is based on those of other senior SPC officers with similar travel commitments.
- iii) Outputs: Regional consultations, field work and coordination of three annual SPAR meetings.

c) Computer Support (\$21,500)

- i) Background: The overall objective of the project is to undertake research that would lead to a detailed assessment of the South Pacific albacore fishery at the end of the third year. The nature of the work will require substantial computer support. In particular, a personal computer, with associated software and printing capability, will be required as a dedicated

Project #890305

graphics/simulation/word processing work station. A laptop computer will be necessary for the presentation of results, processing of data, etc. outside of headquarters.

ii) Plan of Action: Much of the modelling work to be undertaken by the project will require computer power not currently available using microcomputers. Also, the volume of data generated will require storage capacity beyond that normally provided by microcomputers. For this reason, it is intended to utilize SPC's HP9000 minicomputer for intensive numerical work and data storage. ORACLE database management software currently available on the HP9000 will be used. All HP9000 computer support will be provided to the project as an SPC contribution.

iii) Outputs: Purchase of the following computer equipment for the use of the Senior Fisheries Scientist: personal computer, laptop computer, laserjet printer, software and computer supplies.

d) Publications (\$6,000)

i) Background: Constructive discussions on a cooperative management regime for South Pacific albacore will require that all parties have accurate information regarding the resource status. This information should reflect the concerns of scientists about recent fishery developments, and indicate the steps being taken to improve understanding of the fisheries.

ii) Plan of action: The detailed stock assessment would include estimates of past and current exploitation levels, an evaluation of the effects of fishing on the population, an assessment of alternative harvesting strategies and a description of the interaction among the various gear types used in the fishery. Preliminary assessments will be prepared annually for presentation at SPAR workshops, other regional meetings or on request from member countries. Preliminary and final assessments will be based on data generated by the specific research activities

Project #890305

of this project and other SPAR cooperative projects, and those submitted to SPC by albacore fishing nations. The results of the stock assessments and of the specific biological aspects of the project will be published in various forms and distributed to member countries in a timely fashion.

- iii) Outputs: Communication of results of the various research activities will be an important component of the project. The budget for publications is intended to cover the cost of publishing results in various forms, including scientific journals, TBAP Technical Reports, SPAR Workshop Reports and others as required.

e) Regional Meetings (45,000)

- i) Background: The Tarawa Declaration and 29th South Pacific Conference resolution recognized the necessity of international management of South Pacific albacore. Discussions regarding a management regime were held recently in Wellington, NZ (First Consultation on a Regime for South Pacific Albacore Fisheries Management). This consultation stressed the urgency of carrying out the research and data collection necessary to provide detailed stock assessment and nominated the SPAR group as the appropriate body to do this. They also endorsed SPC's role as scientific coordinator.

Participation by Pacific Island nationals in the SPAR workshops has, to date, been aimed at those countries with a direct interest in the albacore fishery or with a scientific expertise of value to the workshop. Initially this number is set at six but wider participation (up to approximately ten participants) may be warranted as the level of expertise in the countries increases with time.

- ii) Plan of action: Meetings of the SPAR group are likely to take place annually over the next three years. In order to maintain Pacific Island involvement in SPAR workshops, funding to cover travel expenses for an initial six Pacific Island

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participants to each SPAR workshop over the next three years is provided in the budget. Full participation by Pacific Island scientists at all stages is an important aspect of the project.

iii) Outputs: One SPAR workshop per year.

f) Evaluation (\$20,000)

i) Background: It is intended to undertake an independent review of the project results and accomplishments at the conclusion of the project to assess viability of this type of project for future program planning.

ii) Plan of action: An independent consultant engaged and administered by ICOD to carry out an evaluation at the conclusion of the project.

iii) Outputs: An evaluation report.

4) Beneficiaries

The project outputs will provide detailed advice to governments and regional organizations in the South Pacific to assist in formulating rational fishery management decisions - specifically related to the albacore fishery.

5) Project Management

Administrative and secretarial support will be provided to the project as an SPC contribution (\$21,950 CAD), and will cover costs such as postage, telephone, fax, telex, electricity and additional administrative and secretarial hours required in support of the project.

Scientific and technical support will also be provided as a Commission contribution (\$444,690 CAD) to the project. General direction and support will be given by the Chief Fisheries Scientist, with other senior scientific staff of the TBAP having substantial input to the project. Specialist support will also be provided by the TBAP's statistics and computer staff.

Project #890305

The TBAP Program can therefore provide ample scientific direction and peer group support. Access to reliable fisheries statistics, a prerequisite for undertaking research of this nature, can be provided by the TBAP's Regional Oceanic Fisheries Database. Additional scientific input will be provided by SPC's Standing Committee on Tuna and Billfish, whose membership included all nations involved in the South Pacific albacore fishery.

APPRAISAL/CONSTRAINTS

- 1) The recent rapid development of the surface fishery, particularly the driftnet fishery, has created an urgent need for better information on the albacore resource. SPC member Countries have therefore directed that high priority be given to albacore research.
- 2) The urgent need for the work that is proposed, and SPC's role in this regard, was confirmed at the First Consultation on a Regime for South Pacific Albacore Fisheries Management (Wellington, NZ, 24-29 November 1989).
- 3) SPC is well-placed to coordinate research on South Pacific albacore, both through its role as coordinator of SPAR activities and its pre-eminent position as a tuna research organization in the South Pacific.
- 4) The FFA was fully represented at the November 1989 meeting in Wellington and the Director of FFA is in agreement with this proposed activity based at SPC.
- 5) This proposal is presented as a distinct three-year project. However, once the infrastructure is in place for research it may be difficult to dismantle after three years. The question will then arise concerning the ability of SPC to absorb the position of the senior fisheries scientist into its core budget.
- 6) The initial stance of Canada in this exercise was to support the "ban the driftnets" philosophy as does the USA. Canada has recently adopted a lower profile pending the receipt of data that clearly indicates whether the use of driftnets has a detrimental effect on the tuna fishery and on the interception of salmon and marine mammals as originally suspected.

Project #890305

RELATIONSHIP TO OTHER PROJECTS (ICOD AND OTHER DONORS)

- 1) Better understanding of the albacore fishery and the impact of the driftnet fishery will lead to better licencing and access agreements, and surveillance strategies. Therefore, this project could be stated as relating to the ICOD-supported projects FFA Surveillance (#850011) and Regional Fisheries Observer Program (#880215).
- 2) There is an indirect relationship to several other ICOD projects with the FFA such as, Research Coordination Unit (#870116), Enhancement of Fisheries Information Handling Capabilities at FFA (#880193), Computer Training and Upgrading - FFA and Member States (#880269) and Provisional Treaty Lines (#890279).

Project #890305

FINANCIAL INFORMATION

1) Projected Disbursements by Fiscal Year

FY 1989/90	\$ 60,000
FY 1990/91	\$100,000
FY 1991/92	\$115,000
FY 1992/93	\$130,000

2) ICOD Budget Components (See Annex I for details)

Senior Fisheries Scientist	\$253,400
Duty Travel	\$ 40,000
Computer Support	\$ 21,500
Publications	\$ 6,000
Regional Meetings	\$ 45,000
Evaluation	<u>\$ 20,000</u>
Sub-Total:	\$385,900
Contingency:	<u>\$ 19,100</u>
TOTAL ICOD CONTRIBUTION (up to):	\$405,000

3) Recipient Budget Components

Administrative and Secretarial Support	\$ 21,950
Scientific and Technical Support	<u>\$444,690</u>
TOTAL RECIPIENT CONTRIBUTION	\$466,640

RECOMMENDATION

It is recommended that final approval be given to Project #890305 -- "Coordination of Albacore Data" -- to a maximum ICOD contribution of CAD \$405,000.

ANNEX I

ICOD Components - Budget Details
(All Figures in CAD\$)

<u>Item</u>	<u>Year I</u>	<u>Year II</u>	<u>Year III</u>
I. <u>SENIOR FISHERIES SCIENTIST</u> ¹			
Salary	52,380	52,380	52,380
Benefits	<u>32,175</u>	<u>27,220</u>	<u>36,865</u>
Sub-total	84,555	79,600	89,245
II. <u>DUTY TRAVEL</u>			
Regular Consultations, Field Work, International Meetings	<u>12,000</u>	<u>13,000</u>	<u>15,000</u>
III. <u>COMPUTER SUPPORT</u>			
Personal Computer (80386)	5,500		
Laptop Computer	3,540		
Laserjet Printer	4,730		
Software	2,360		
Computer Supplies, Support	<u>1,770</u>	<u>1,800</u>	<u>1,800</u>
Sub-total	17,900	1,800	1,800
IV. <u>PUBLICATIONS</u>	<u>2,000</u>	<u>2,000</u>	<u>2,000</u>
V. <u>REGIONAL MEETINGS</u>			
Fares, per diems for Pacific Island participants(6)	<u>14,000</u>	<u>15,000</u>	<u>16,000</u>
VI. <u>EVALUATION</u> (ICOD-administered)	<u>-</u>	<u>-</u>	<u>20,000</u>
YEARLY TOTALS	130,455	111,400	144,045
		Sub-total:	\$385,900
		Contingency:	<u>19,100</u>
TOTAL ICOD CONTRIBUTION (UP TO):			\$405,000

1. Senior Fisheries Scientist costing assumes recruitment of Canadian with spouse and two children.

ANNEX II

Recipient Components - Budget details
(All figures in \$CAD)

<u>Item</u>	<u>Year I</u>	<u>Year II</u>	<u>Year III</u>
<u>STAFFING</u>			
I. Administrative and Secretarial Support	<u>7,830</u>	<u>6,680</u>	<u>7,440</u>
II. Scientific and Technical Support	<u>137,600</u>	<u>149,800</u>	<u>157,290</u>
<hr/> <hr/>			
YEARLY TOTALS	145,430	156,480	164,730
TOTAL SPC CONTRIBUTION (UP TO):			\$466,640



International Centre for Ocean Development
Centre international d'exploitation des océans

EC90/D85

CONFIDENTIAL

PA90/D93
Project #890279
14 August, 1990

COST INCREASE/CHANGE OF SCOPE
(Approval)

Project Title: Provisional Treaty Lines
Division: South Pacific and Caribbean Basin Division
Recipient/Implementing Agency: Forum Fisheries Agency

<u>Financial:</u>	<u>Original</u>	<u>Increase</u>	<u>Revised Budget</u>
ICOD Contribution:	\$ 48,500	\$ 10,900	\$59,400
Recipient Contribution:	<u>5,000</u>	-	<u>5,000</u>
PROJECT TOTAL:	\$ 53,500	\$ 10,900	\$ 64,400

Conditions of Approval or Comments

Recommended

Recommended

Recommended

Approved

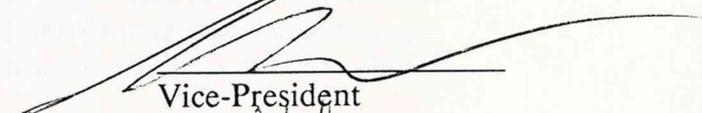
Record of Approval



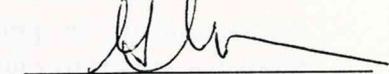
Program Officer



Director



Vice-President



President

August 15/90
Date

Cost Increase
Project # 890279

SUMMARY

Background and Description of Cost Increase

1. In May, 1989 ICOD approved the Provisional Treaty Lines (PTL) project with FFA. The objectives of this project were to:
 - i) identify and recommend, where available data permit, basepoints and baselines for member states of FFA to utilize in the definition of areas affected by the Multilateral Tuna Treaty ("the Treaty") between the member states and the USA;
 - ii) develop a detailed workplan, based on the quality of data obtained in the course of this project, for a further proposal to prepare and recommend upon Provisional Treaty Lines.
2. The statement in objective (ii) clearly foresaw a further project proposal to undertake the actual drawing of the PTLs once the initial assessment of data availability was complete.
3. In the course of project implementation, FFA came under substantial pressure to finalize PTLs in order, as early as possible, to allow the expeditious division of treaty revenues. At the same time, it proved possible within the existing work program to go beyond initial data assessment and actually proceed to the provision of PTLs for a number of the countries.
4. FFA is now in a position to complete, in a relatively short time, a sufficient number of the PTLs to allow division of revenues in the areas of highest fishing effort under the Treaty. This will require a cost increase to provide for additional consulting services (approximately 38 days) by the primary technical consultant. Funds are still set aside for use of a review committee to evaluate results.
5. At the end of the period covered by the cost increase, FFA will have PTLs in place for seven to eight of its highest priority countries, and will have sufficient information for the drafting of a possible subsequent project to undertake remaining tasks (PTL's and closed areas), including some identified in the course of the current project. The cost increase will build on the accomplishments of the project to date and take it to a more logical and efficient termination point between this project and a possible subsequent proposal (i.e. this termination will allow distribution of the bulk of the revenues, while tasks of lesser urgency are postponed).

Cost Increase
Project # 890279

FINANCIAL INFORMATION

1. Projected Disbursement by Fiscal Year

Original

FY 1989/90 \$ 48,500

Revised

FY 1989/90 \$ 42,000
FY 1990/91 \$ 17,400¹

2. ICOD Budget Components

<u>Item</u>	<u>Original</u>	<u>Variance</u>	<u>Revised Budget</u>
Consultant fees (1)	23,600	12,250	35,850
Living Allowances	5,500	0	5,500
Airfares	13,000	0	13,000
Materials	1,000	0	1,000
Communications	200	0	200
Equipment hire	<u>1,000</u>	<u>0</u>	<u>1,000</u>
Sub-Total:	\$ 44,300	\$ 12,250	\$ 56,550
Contingency:	\$ <u>4,200</u>	\$ <u>(1,350)</u>	\$ <u>2,850</u>
TOTAL:	\$ <u>48,500</u>	\$ <u>10,900</u>	\$ <u>59,400</u>

RECOMMENDATION

It is recommended that approval be given to increase the budget of project #890279 -- "Provisional Treaty Lines" -- up to a maximum increment of \$CAN 10,900 for a total ICOD contribution of \$CAN 59,400.

1

Assumes use of contingency in 1990/91.



International Centre for Ocean Development
Centre international d'exploitation des océans

CONFIDENTIAL

EC90/D75
Project #900364
11 September, 1990

PROJECT SUMMARY
(Approval)

Project Title: Institutional Development - Vanuatu Fisheries Department (Northern District) - Phase II

Division: South Pacific and Caribbean Basin Division

Recipient/Implementing Agency: Government of Vanuatu

Duration: Duration: Three years
Commencement: On hiring of Canadian Co-operant

Components: Professional staff
Training fund
Consultancy fund
Duty travel
Equipment
Evaluation & Assessment

Financial:

ICOD Contribution:	\$ 242,600
Contingency:	<u>22,400</u>
Sub-total:	\$ 265,000
Recipient Contribution:	<u>81,000</u>
PROJECT TOTAL:	\$ 346,000

Conditions of Approval or Comments

Record of Approval

Recommended

R. Bruler for P. Saunders.
Program Officer

Recommended

[Signature] 12/9/90
Director

Recommended

[Signature] 12/9/90
Vice-President

Approved

[Signature] 12/9/90
President

Date

Project #900364

ABSTRACT

This project will continue the development and reorganization of the Vanuatu Fisheries Department District Program. Further, this project will enhance the capability of the Republic of Vanuatu to manage and develop its fishery for economic return and food self-sufficiency. The restructuring of the Fisheries Department will be completed and the responsibilities will be handed over to two ni-Vanuatu officers to become the Senior Fisheries management and extension officers for the Northern District.

3 Years: \$CAN 265,000
Financial Sector Code: EFUB
Theme: Fisheries Management and Development

Project #900364

SUMMARY

1) Background

a) The Northern District of Vanuatu encompasses approximately 35 islands and a population of approximately 75,000-80,000. The region encompasses a major portion of domestic (i.e. non-distant water) fishing activity in the country, as well as providing a base for the South Pacific Fishing Company, which provides ni-Vanuatu crew for foreign vessels. The regional office is responsible for:

- administration of all Fisheries Department management and extension services in the area;
- participation in the management and supervision of the Santo Fish Market;
- management of the boat leasing scheme;
- operation of four centralized fisheries extension centres, each covering a local government council area;
- management assistance and supervision for the Santo Boat building Project;
- supervision and coordination of the activities of the Fisheries Training Centre at Santo (national centre).

b) For two years ICOD has supported the position of Senior Executive and Extension Officer - Northern District (SEEO), which has been filled by a Canadian contract officer (ICOD project #870161 valued at \$110,400). Substantial progress has been made in the development and reorganization of the Northern District's programs to date. In summary:

- i) The staff reporting to the Senior Executive and Extension Officer (SEEO) have increased from 18 to 36;
- ii) the Vanuatu Fisheries Department notes that administrative efficiency in the District has improved significantly over the past two years;

Project #900364

- iii) building construction at the fisheries complex in Santo (administration block, fisheries training centre, workshop and storage, stores warehouse, staff residences) is complete, waterfront development (wharf, jetty and boat ramp) is 90% complete and the new boatyard is in the planning stages;
 - iv) training courses for existing fishermen, new recruits and fisheries extension officers is ongoing;
 - v) two new Extension Centres have been established in the Northern District with canoe modernization and boat lease schemes being two new programs for all 4 centres;
 - vi) the Santo Fish Market through put has increased from 1½ - 2½ tonnes per month valued at \$CAN 3,600 to 5 tonnes per month at \$CAN 15,000;
 - vii) the SEEO has advised on the management of the boatyard, established an advanced workshop to support fishermen and Department vessels, provided training to two fisheries enforcement officers and liaised with the South Pacific Fishing Company regarding conditions for some 418 ni-Vanuatu crew hired to Taiwanese and Korean fishing fleets.
- c) Existing and anticipated local staff appointments will permit the full localization of duties currently held by the contract officer. However, the officers targeted as counterparts are recent graduates who require further on-the-job training and experience before assuming the full duties of the positions. In addition, there are remaining reorganization and policy development tasks which need to be undertaken to place the Northern District Fisheries program on a sound permanent footing.

2) Description - Goal and Purpose

- a) The goal of this project is to enhance the capability of the Republic of Vanuatu to manage and develop its fishery for economic return and food self-sufficiency.

Project #900364

- b) The purpose of this project is to provide technical assistance and training to:
 - i) complete the planning and implementation of a restructuring of the Vanuatu Fisheries Department, Northern District, activities and job responsibilities;
 - ii) train and hand over responsibilities to two ni-Vanuatu officers as the senior fisheries management and extension officers for the Northern District;

3) Component

a) **Professional Staff**

(\$ 184,750)

- i) **Background:** The current organization of the Northern District Fisheries program combines the duties of Senior Executive Officer (management duties) and Senior Extension Officer in the one position of SEEO. The post is currently held by a contract officer funded under ICOD project #870161. A ni-Vanuatu University Graduate has been posted as counterpart for the Executive aspects of the post, but his experience is still limited. It is planned and budgeted to post a second graduate as counterpart for Extension activities in January 1991. Under the planned reorganization of the Northern District, the duties of Senior Executive officer and Senior Extension officer will eventually be assumed by the two officers. Further on-the-job and formal training as counterparts will be required before the officer in place and the anticipated new officer will be prepared to fully assume these roles.
- ii) **Plan of Action:** With assistance from ICOD with respect to recruitment, the Government of Vanuatu will engage the services of a Canadian contract officer for a 3 year term (2 year contract, extendable to 3 years on concurrence of ICOD and Vanuatu that this is required). This officer will act initially in the line position of Senior Executive and Extension Officer Northern. The following will be the Officer's priority tasks:

Project #900364

- a) Supervise the on-the-job training of two counterpart officers with the objective of ensuring their capability to assume duties as Senior Executive Officer (Northern) and Senior Extension Officer (Northern). This will include: regular reporting on progress and performance to the Director of Fisheries; identification and organization of regional training opportunities as appropriate utilizing the training funds provided (see below);
 - b) Complete the implementation of the reorganization of the Northern District fisheries program, including: division of job responsibilities to reflect the split of the current senior position into two; design and implementation of a registration/licensing program for fishermen, to permit control of access to duty-free gear and supply programs and of access to boat loan programs; assist in the design and implementation of training activities at the new training centre; participate in the design and implementation of the next phase of the Boat Leasing Program; plan and implement the establishment of the new facility for Santo Boat building.
 - c) Identify requirements for specialized consulting services under the consultancy fund provided and manage the implementation of these consultancies under the direction of the Director of Fisheries;
 - d) Carry out the general duties of Senior Executive and Fisheries Officer (Northern), as set out at Annex II. These duties to be handed over progressively over the life of the project to the two local officers, in consultation with the Director of Fisheries.
- iii) **Outputs:** Two ni-Vanuatu officers in place as Senior Executive Officer (Northern) and Senior Extension Officer (Northern). Reorganization of the Northern District fisheries program complete. Technical assistance (two years professional services) provided in the operation of the Northern District fisheries program.

Project #900364

b) Training Fund

(\$ 7,000)

- i) **Background:** The counterpart officer currently in place and the anticipated recruit will have had general university training of relevance to their duties. There will, however, be specific aspects of their duties which have not been adequately covered; these include: general administration and personnel management; extension techniques; project planning and management. Some of these additional needs may be met by other short-term training programs (including some ICOD-funded) in the region. However others could be best-served by short-term training in existing regional institutions and attachments to other regional fisheries departments.
- ii) **Plan of Action:** Funds are provided for the delivery of short-term training opportunities for the counterpart officers at regional institutions and other fisheries divisions. The funds will be managed by the contract officer, and will cover travel/living costs and tuition fees where applicable. Between 2 and 4 training schemes of an average cost of \$ 1,750 will be funded.
- iii) **Outputs:** Between 2 and 4 training and/or attachment periods for 2 counterpart officers.

c) Consultancy Fund

(\$ 20,000)

- i) **Background:** Implementation of the fisheries program for the Northern District will require specialist knowledge of certain areas such as licensing scheme development, fish marketing, boat-building facility design and boat marketing. Depending on the qualifications of the officer recruited, not all of the required skills will be available in one contractee.
- ii) **Plan of Action:** Funds are set aside for short-term consultancies to assist in the implementation of identified aspects of the work program of the Northern District. These funds will be managed by the contract officer under the direction of the Director of Fisheries. It is anticipated that a Pacific Island National or Canadian consultants will be utilized, except where prior approval of ICOD is obtained.

Project #900364

- iii) **Outputs:** Depending upon the mix of Canadian and Island national consultants, approximately 4-5 consultancies of 2-4 weeks over the life of the project. Consultancy reports on identified aspects of the work program.

d) Duty Travel (\$ 6,600)

- i) **Background:** The SEEO is required to travel both to the Headquarters in Port Vila and within the region to the 4 extension centres. The Government of Vanuatu provides a travel budget for the position, but it is anticipated that this will be used in part for the two counterpart officers during the period of this posting.
- ii) **Plan of Action:** Funds are included for airfares only for duty travel within Vanuatu as required by the duties of the SEEO contract officer. The Government of Vanuatu will provide travel funds for the counterpart officers and living allowances for the SEEO.
- iii) **Outputs:** Increased contract with extension outstations and participation in policy decisions at Headquarters in Port Vila through provision of adequate travel funds.

e) Equipment (\$ 4,250)

- i) **Background:** The Northern District is in general well-supplied under other programs. However, there is only one computer in the office and it is already heavily utilized with ongoing statistical collection programs and routine office work. This load is expected to increase with the posting of the second counterpart officer.
- ii) **Plan of Action:** Funds are included for purchase of a portable computer, printer and associated material for the use of the SEEO and counterpart officers. Training as required will be provided by Department staff. Ownership of the equipment will rest with the Department at the termination of the project.
- iii) **Outputs:** Increased efficiency of office operations in the Northern District. Improved computer familiarity of counterpart staff through better access to computer facilities.

Project #900364

f) Evaluation and Assessment (\$20,000)

- i) There is a risk in this project with respect to the commitment of the Government of Vanuatu to adequate staffing of the two proposed positions, Senior Executive Officer (Northern) and the Senior Extension Officer (Northern) with ni-Vanuatu persons. This is a concern to ICOD with respect to the sustainability of this initiative.

There is also a need to review the project status near the end of year two to determine whether to extend the Canadian contract officer to year three and a final evaluation of this type of activity is warranted following 4-5 years of effort.

ii) Plan of Action

ICOD will conduct an assessment of the status of the project at the end of the first year. The purpose of the assessment would be to determine:

- a) the level of government commitment with respect to staffing; and,
- b) the further commitment of ICOD to the project or possible reconfiguration dependent upon item (a).

ICOD will conduct an assessment of the project at the end of year two to determine whether there is a need to extend the services of the Canadian contract officer to year three.

ICOD will conduct an evaluation of the success of these projects on the conclusion of this phase or in conjunction with a larger program evaluation.

iii) Outputs

Managerial assessments to determine the level of continued support and final project evaluation.

Project #900364

4) **Beneficiaries**

Fishermen and associated workers (fish marketing, boat building, suppliers) in the Northern District of Vanuatu.

Consumers of fish products in Northern District, Vanuatu.

5) **Project Management**

The project will be managed by the Fisheries Department, Government of Vanuatu, with assistance from ICOD where indicated (recruitment, identification of consultants).

APPRAISAL/CONSTRAINTS

- 1) Project #870161 (Fisheries Extension Officer) made remarkable progress in establishing and reorganizing the programs of the Vanuatu Fisheries Division in the Northern District (see Annex III). The present proposal will allow the Department to consolidate those gains and move forward with other planned improvements. More important, it will provide the basis for long-term viability of these advances through a concentration on the eventual localization of the positions involved.
- 2) The project is in line with SPCBD/s stated policy of encouraging further bilateral activity in the region.
- 3) The project entails a substantially higher budget than the earlier #870161. The reasons for this are twofold: i) 3 years of contract services are allowed, based on an assessment that the ni-Vanuatu staff may not be ready for full assumption of duties after approximately two years in government service; ii) experience in the earlier project showed that many costs were higher than expected or were subject to increases - the current project allows for more realistic figures for salary and associated costs, and a better margin to cover increases in other items. With respect to these points, it should be noted that: i) if the local staff are capable of assuming their positions after two years, ICOD will be able to terminate the expatriate involvement; ii) the higher budget line items for such things as travel are on an accountable basis and it is possible that savings will be experienced.

Project #900364

- 4) If it is deemed necessary to extend the staff involvement to the full 3 years, and the initial officer does not extend, additional recruitment costs could be experienced. It is recommended that either these could be borne from contingency, or a shorter-term involvement by a consultant could be used to provide a further period of supervision, albeit less than a full year.
- 5) The single most critical factor in this project is the availability and suitability of qualified staff in Vanuatu, and the commitment of government to provide them to Fisheries. One of the two officers is now in post. The fact that he is a University graduate is significant, as these are a scarce resource in Vanuatu. The second position has been approved and put in the budget for January 1991. There is a risk that i) the present officer may leave or be re-posted and ii) the posting of the second officer may be delayed or avoided. This is a real risk that must be monitored in project implementation. It is recommended that the risk be taken on the basis of the posting already made and the budgetary approval of the second, but that the requirement for counterpart availability be stressed in any MOA and be carefully monitored in implementation.
- 6) This project involves support for increased fishing effort in the Northern District, even if indirectly rather than through support for boats, etc. The latest available (late 1980's) reports from ORSTOM, the French Scientific advisory body, indicate that any likely expansion of effort in the local sector will be well within a sustainable yield for the fishery. It should be noted, however, that these estimates were not based on detailed resource surveys but on coastline in the area. It will be useful to monitor the extent of development of Vanuatu's management effort during the course of this project (progress is being made in this regard), and to monitor project reports for indications of declining catches in the effected region.
- 7) Experience with bilateral projects in the region has indicated that ICOD must accept a higher degree of management involvement and staff time than on many regional projects.

RELATIONSHIP TO OTHER PROJECTS (ICOD AND OTHER DONORS)

- 1) Fisheries Training and Extension Service Project. EEC Funded, approx. 1.6 million CAD project to develop and operate extension service (including boat-leasing scheme) and construct fisheries training centre in Luganville.
- 2) Fisheries Training Centre Management and course development. British Development Division in the Pacific - funds manager for the training centre.

Project #900364

- 3) Santo Boat building Project - Relocation of Boatyard. FAO/UN.
- 4) Redevelopment of South Pacific Fishing Company, Northern District. FAO/UN.
- 5) Volunteers in fisheries extension and support provided by Japanese Overseas Volunteer Corps and CUSO.
- 6) Project is a direct follow-on from ICOD project #870161 - Fisheries Extension Advisor.

FINANCIAL INFORMATION

1) Projected Disbursements by Fiscal Year

FY 1990/91	\$ 53,150
FY 1991/92	67,000
FY 1992/93	68,100
FY 1993/94 ¹	76,750

2) ICOD Budget Components

Professional staff	\$ 184,750
Training fund	7,000
Consultancy fund	20,000
Duty travel	6,600
Equipment	4,250
Evaluation & Assessment	<u>20,000</u>
Sub Total	\$ 242,600
Contingency	<u>22,400</u>
TOTAL ICOD CONTRIBUTION (UP TO):	\$ <u>265,000</u>

¹ Assumes contingency expended in 1993/94

Project #900364

3) Recipient Budget Components

Counterpart salaries	38,000
Housing (contract officer and counterparts)	19,000
Transport	6,000
Secretarial and Support	12,600
Counterpart Duty Travel	<u>5,400</u>
TOTAL RECIPIENT CONTRIBUTION	<u>81,000</u>

RECOMMENDATION

It is recommended that final approval be given to Project #900364 -- " Institutional Development - Vanuatu Fisheries Department (Norther District) " -- to a maximum ICOD contribution of \$CAN 265,000.

ANNEX IICOD COMPONENTS - BUDGET DETAILS

(All Figures in \$CAN)

ITEM	1990/91	1991/92	1992/93	1993/94	TOTALS
I. STAFF COSTS					
Salary	22,500	45,000	46,000	23,500	
Benefits ²	2,300	2,300	2,400	1,250	
Relocation, etc. ³	12,000	3,500	9,000	13,500	
Recruitment costs	1,500	0	0	0	
Sub-total	38,300	50,800	57,400	38,250	184,750
II. TRAINING FUND					
Training costs (Travel, fees, etc.)		3,500	3,500		
Sub-total	0	3,500	3,500	0	7,000
III. CONSULTANCY FUND					
Consultancy costs (Fees, etc.)	7,500	7,500	5,000		
Sub-total	7,500	7,500	5,000	0	20,000
IV. DUTY TRAVEL					
Duty Travel ⁴	1,100	2,200	2,200	1,100	
Sub-total	1,100	2,200	2,200	1,100	6,600

² Medical insurance for family of four. Allows for cost increases from present quoted costs.

³ Assumes family of four. Shipping costs \$3,000 each at start and finish of project (may be used for shipping or storage). Funds allowed for 1 trip (airfare only) within region in second year, and home leave if extending at end of 2 years.

⁴ Airfares only - other costs to recipient.

ITEM	1990/91	1991/92	1992/93	1993/94	TOTALS
V. EQUIPMENT					
Computer	2,500				
Printer	1,000				
Software, supplies	750				
Sub-total	4,250	0	0	0	4,250
VI. EVALUATION and ASSESSMENT					
Assessment	2,000	3,000	0	15,000	20,000
YEARLY SUB-TOTALS	53,150	67,000	68,100	54,350	242,600
				Sub-total:	\$ 242,600
				Contingency:	<u>22,400</u>
				TOTAL ICOD CONTRIBUTION (UP TO):	\$ 265,000

GENERAL TERMS OF REFERENCE OF SEEO

The following general duty description should be read with the specific tasks required by the project objectives and plan of action. The highest priority task will be the localization of the positions duties in the hands of the counterpart officers.

The Senior Executive and Extension Officer (SEEO) Northern District, will perform the following general duties in addition to those specific tasks assigned under the Project:

1. **To be responsible to the Director of Fisheries and to be the Directors' representative in the Northern District, working towards the furtherance of the Department's Policies and Programs.**
 - 1.1 Liaison with other Government bodies, Local Government Councils and NGOs towards the furtherance of the policies of the Fisheries Department.
 - 1.2 Liaison with the responsible officers on the implementation of the Fisheries Regulations.
 - 1.3 Liaison with other sections of the Fisheries Department, and organisations directly involved with Fisheries development in Vanuatu. This includes: The Training Centre at Luganville; the Santo Boatyard; South Pacific Fishing Company; Port Vila Fisheries Ltd; ORSTOM; Headquarters, Vila.

Liaison will be on a contract basis towards furtherance of the aims of the department.

2. **To supervise and control the Fisheries Department's programs based in the Northern District.**
 - 2.1 Supervision of the Department's administrative and Extension staff in the Northern District.
 - 2.2 Responsibility for the section's accounts and those of the Extension Centres in the Northern District.
 - 2.3 Provision of support facilities for the Extension Centres in the Northern District.
3. **To implement development programs as instructed by the Director.**
 - 3.1 Supervision of the implementation of development plans carried out by Fisheries Department.
 - 3.2 Advice and assistance in the preparation of Development Projects and Project funding documents.
 - 3.3 Innovative project planning to overcome constraints to the development of fisheries in Vanuatu.

4. Reporting

- 4.1 Regular reporting of the Director in the form of a Monthly Report on the Northern Section's activities including catch statistics for the district and Extension Centres.
 - 4.2 Annual Reports produced in liaison with Headquarters Staff on the activities of the Department.
 - 4.3 Any reports that the sponsoring agency may require.
- 5. Any other duties as instructed by the Director.**

IMPORTANT ASSUMPTIONS	NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS (OVI)	MEANS OF VERIFICATION
<p>Fisheries management and development is a sufficient national priority;</p> <p>extent of resources justifies expenditures on management and development.</p>	<p>Goal: The goal of this project is to enhance the capability of the Republic of Vanuatu to manage and develop its fishery for economic return and food self-sufficiency.</p>	<p>(Degree to which goal has been reached)</p> <ul style="list-style-type: none"> -Improved management capabilities in Vanuatu Department of Fisheries -Improved extension services in Department. 	<p>(Means for effectively verifying OVI's)</p> <ul style="list-style-type: none"> -Monitoring of reports and performance of Fisheries Dept (Northern), operations -In-field reviews by ICOD staff -Consultation with donors, regional agencies.
<ul style="list-style-type: none"> -Department committed to restructuring -Qualified local counterparts available -Qualified Canadian staff and consultants available. 	<p>Objective:The purpose of this project is to provide technical assistance and training to:</p> <ul style="list-style-type: none"> i) complete the planning and implementation of a restructuring of the Vanuatu Fisheries Department, Northern District, activities and job responsibilities; ii) train and hand over responsibilities to two ni-Vanuatu officers as the senior fisheries management and extension officers for the Northern District; 	<p>(Objective indicators called EOPS - End of Project status)</p> <ul style="list-style-type: none"> -Restructuring planned, implemented -Ni-Vanuatu officers trained, in posts. 	<ul style="list-style-type: none"> -Narrative reports -In-country monitoring visits -Final Report.
<ul style="list-style-type: none"> -Counterpart period provided is sufficient for need of staff -Consultancy reports deliverable for budgets specified -Training opportunities exist within region -Appropriate equipment available. 	<p>Outputs:</p> <ul style="list-style-type: none"> -Two ni-Vanuatu officers in place as Senior Executive Officer (Northern) and Senior Extension Officer (Northern); -Reorganization of the Northern District fisheries program complete; -2-4 training and /or attachment periods; -Consultancy reports (4-5) on identified aspects of the work program; -Duty Travel as required; -Computer for Santo office. 	<p>(Magnitude of outputs required)</p> <ul style="list-style-type: none"> -Officers assume positions. -Restructuring complete -Attachments, training periods carried out -Consultancy reports provided -Travel as required -Equipment in place. 	<ul style="list-style-type: none"> -Narrative reports -Monitoring visits -Consultant reports.
<ul style="list-style-type: none"> -Vanuatu Government Accountant-General can provide reports as required -Fisheries Department capable of narrative reporting -ICOD funds available. 	<p>Activities:</p> <ul style="list-style-type: none"> -Provision of ICOD funds -Two to three years professional services (depending on ICOD assessment) -Consultancy services (4-5 short term consultancies) 	<p>(Timing and costs)</p> <ul style="list-style-type: none"> - up to CAD 245,000 - commencing Oct. 1990 - 2nd & 3rd years 	<ul style="list-style-type: none"> -Financial reports -Narrative reports -Audit if required -Consultant reports -Field Review of local contribution.
<p>Tombstone Data:</p> <p><u>Request Date:</u></p> <p><u>Planned:</u></p> <p><u>Completion:</u></p> <p><u>Duration:</u></p> <p><u>Geographic Focus:</u> South Pacific</p> <p><u>Implementing Agency:</u> Govt of Vanuatu</p> <p><u>Sector Code:</u></p>	<p>Inputs:</p> <p>Professional staff</p> <p>Training fund</p> <p>Consultancy fund</p> <p>Equipment</p> <p>Duty travel</p> <p>Sub-total</p> <p>Contingency</p> <p>Total</p>	<p>(Type and cost of resource)</p> <p>\$ 184,750</p> <p>7,000</p> <p>20,000</p> <p>4,250</p> <p>6,600</p> <p>\$ 222,600</p> <p>22,400</p> <p>\$ 245,000</p>	<ul style="list-style-type: none"> -Funds disbursed -Professional services provided -Consultant services provided -Local staff, housing and other support provided.



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CONFIDENTIAL

EC90/D78
Project #880195
January 17, 1991

CHANGE OF SCOPE/PROJECT EXTENSION
(Executive Approval)

Project Title: Graduate Program in (Marine) Resource and Environmental Management - Phase I.

Division: South Pacific and Caribbean Basin Division.

Recipient/Implementing Agency: University of the West Indies (UWI) Centre for Resource Management and Environmental Studies (CERMES)

<u>Financial:</u>	<u>Original</u>	<u>New Increment</u>	<u>Revised Budget</u>
ICOD:	\$ 699,000	\$ 221,000	\$ 920,000
UWI:	<u>660,700</u>	<u>89,600</u>	<u>750,300</u>
PROJECT TOTAL:	\$1,359,700	\$ 310,600	\$ 1,670,300

Conditions of Approval or Comments

Record of Approval

Wardie Keffner
Program Officer

[Signature]
Director

[Signature]
Vice-President

[Signature]
President

18/1/91
Date

SUMMARY

Background and Description of Cost Increase and Change of Scope

1. Phase I of this Project was approved by the Board in June 1988 with a maximum contribution of \$CAN 699,000 over two years. The objective was to strengthen the existing post-graduate diploma program in marine resource and environmental management at the University of the West Indies' Centre for Resource Management and Environmental Studies (CERMES). Funding was provided for supporting new faculty appointments and the development of infrastructure for strengthened post-graduate diploma and degree programs. This was to include library contributions, the development of a documentation centre, micro-computer support and curriculum development for the Masters program scheduled to begin in Phase II. Five diploma scholarships were also provided for the second year of Phase I.
2. The second phase, which was to include more scholarships plus support for the establishment of the Masters program, were contingent on the successful completion and evaluation of Phase I. A base-line evaluation study was conducted in January 1989 and the evaluation of Phase I took place in June 1990. It is on the basis of its recommendations that this cost increase and one year extension has been initiated.
3. The evaluation team concluded that while CERMES has developed in the appropriate direction, the level of outputs (in terms of the preparation for the Masters program) had fallen short of those anticipated for Phase I. It noted that the short fall was a result of unrealistic expectations "given the short two-year timeframe" and stated that "[it] is advisable to consolidate the gains made and to ensure the completion of Phase I objectives before CERMES adds new activities and obligations". Hence the evaluation team recommended that UWI postpone the introduction of the Masters program by a year until October, 1991 and that UWI and ICOD "take steps to extend Phase I of the CERMES project to September 30, 1991". This recommendation was accepted by ICOD and UWI and it was agreed that the appropriate approvals would be sought.
4. In addition to extending Phase I by a year, a number of the components were revised. These revisions were largely due to discussions between ICOD and UWI over the last year and were reviewed by the evaluation team. The revisions include:

i) Faculty

The University has found it difficult to fill the position of Resource Economist. Originally the position was at a lecturer level. In order to make it more attractive to potential candidates with the requisite skills and experience, provision is made here for recruitment at the senior lecturer level, should this prove necessary.¹

Given the severe scarcity of resource economists in the region, it may be necessary to recruit and train someone to fill this post even if short term/temporary assistance is obtained through sabbaticals or technical assistance. For that reason the Contingency Fund has been enlarged slightly to cover this should it become essential. This will, if necessary, provide appropriate specialized training for such a person who may possess a good general Masters degree but lacks in this area of specialization.²

ii) Networking and Information Sharing

CERMES has expressed a need, with which the evaluation team concurs, to increase their activities in: (i) information dissemination and networking through, for example, information packages (including newsletters, brochures etc.) and database exchanges; and, (ii) promoting CERMES' abilities to meet the needs of the governments in the region. These increased costs are reflected in the Program Operating Expenses.

CERMES believes that, for Phase II, an Information Officer will be required to undertake these activities. For the remainder of Phase I, funds will be provided under Program Operating Expenses to hire consultants from time to time to assist with the development and to initiate implementation of the above strategy.

¹While the recruitment process is ongoing, unspent salaries from unfilled posts will be made available for short term consultancies/technical assistance to assist with curriculum development and short term teaching related to the particular post.

²CERMES will be required to submit a training program to ICOD prior to the release of funds.

iii) Documentation Centre

Funding has been increased here to allow for the implementation of a CDS-ISIS cataloguing system to enhance the organization of documents and improve linkages with similar centres both in the Caribbean and abroad. Additional Librarian time has also been added as a result of a significant addition to the reference literature since the original proposal was developed.

iv) Consulting Support Fund

While members of CERMES have and are continuing to undertake individual consultancies, this has been without appropriate institutional or technical support. Furthermore, there have been few consulting activities that have taken place on an institutional basis. CERMES plans to significantly expand its institutional consultancy activities which was one of the main objectives of the project. In order to assist CERMES in this, a fund has been set up to provide seed money for acquiring technical support for preparing contract proposals. The fund will be replenished from the proceeds of such consultancies that are successful and will be under the financial control of the Campus Bursar in accordance with the University's Consultancy Rules and Financial Code.

v) Project Management

As a result of the evaluation, there has been a redivision of responsibilities in CERMES. The departmental administration responsibilities for CERMES have now been clearly separated from those of project management. The former duties will continue to fall under those of the Director of CERMES while the latter will be covered by the Senior Assistant Registrar (Planning). In order to ensure that he will be able to devote half of his time to the project, funds are provided to employ a part time administration assistant to cover his other registrar-related duties.

5. While allowing for more time for the preparation of the Masters program, this extension also provides a second set of five scholarships for the diploma program to be awarded for the current year.
6. Whether ICOD proceeds to fund Phase II and III of this project

(approved in principle by the Board) will be determined by a management assessment in March 1991.

FINANCIAL INFORMATION

1. Projected Disbursement by Fiscal Year

Original Budget

FY 1988/89	\$131,200
FY 1989/90	414,500
FY 1990/91	153,300

Revised Budget

FY 1988/89	\$107,044
FY 1989/90	304,002
FY 1990/91	297,802
FY 1991/92	211,152 ³

³Includes contingency.

2. ICOD Budget Components

Item	Original Budget	Variance	Revised Budget
Director	\$ 0	\$ 0	\$ 0
Senior Lecturers	\$ 101,000	\$ <3,900>	\$ 97,100
Lecturers	\$ 209,400	\$ 2,000	\$ 211,400
Technicians	\$ 37,800	\$ 2,200	\$ 40,000
Administrative Assistant	\$ 36,200	\$ 28,800	\$ 65,000
University Secretary	\$ 0	\$ 0	\$ 0
Program Operating Expenses ⁴	\$ 59,900	\$ 42,100	\$ 102,000
Student Stipends ⁵	\$ 44,800	\$ 43,200	\$ 88,000
Student Projects	\$ 12,800	\$ 200	\$ 13,000
Teaching Resources Documentation Centre	\$ 23,300	\$ 5,700	\$ 29,000
Library Contributions	\$ 12,200	\$ 0	\$ 12,200
Micro-computers	\$ 36,600	\$ <1,600>	\$ 35,000
Consulting Support Fund	\$ 0	\$ 15,000	\$ 15,000
Capital Building	\$ 0	\$ 0	\$ 0
Furnishing, Equipment	\$ 0	\$ 0	\$ 0
Vehicle	\$ 0	\$ 0	\$ 0
Project Management	\$ 0	\$ 15,000	\$ 15,000
Financial Administration	\$ 56,000	\$ 16,300	\$ 72,300
Sub-total	\$ 630,000	\$ 165,000	\$ 795,000
Contingency	\$ 63,000	\$ 27,000	\$ 90,000
Evaluation	\$ 6,000	\$ 29,000	\$ 35,000
TOTAL CONTRIBUTION	\$ 699,000	\$ 221,000	\$ 920,000

⁴Utilities, maintenance, communications, travel, transportation, computing and public relations consultancies.

⁵For years two and three.

2. Recipient Budget Components

Item	Original Budget	Variance	Revised Budget
Director	\$ 125,000	\$ 63,000	\$ 188,000
Senior Lecturers	\$ 11,600	\$ 9,400	\$ 21,000
Lecturers	\$ 92,500	\$ <29,500>	\$ 63,000
Technicians	\$ 50,000	\$ <8,000>	\$ 42,000
Administrative Assistant	\$ 1,300	\$ <1,300>	\$ 0
University Secretary	\$ 28,000	\$ 32,000	\$ 60,000
Program Operating Expenses ⁶	\$ 11,000	\$ 9,000	\$ 20,000
Student Stipends ⁷	\$ 0	\$ 0	\$ 0
Student Projects	\$ 0	\$ 0	\$ 0
Teaching Resources Documentation Centre	\$ 1,000	\$ 0	\$ 1,000
Library Contributions	\$ in-kind	\$ in-kind	\$ in-kind
Micro-computers	\$ in-kind	\$ in-kind	\$ in-kind
Consulting Support Fund	\$ 0	\$ 0	\$ 0
Capital Building	\$ 270,800	\$ 10,000	\$ 280,800
Furnishing, Equipment	\$ 45,100	\$ 5,000	\$ 50,100
Vehicle	\$ 24,400	\$ 0	\$ 24,400
Project Management	\$ 0	\$ 0	\$ 0
Financial Administration	\$ in-kind	\$ in-kind	\$ in-kind
Sub-total	\$ 660,700	\$ 89,600	\$ 750,300
Contingency	\$ in-kind	\$ in-kind	\$ in-kind
Evaluation	\$ 0	\$ 0	\$ 0
TOTAL CONTRIBUTION	\$ 660,700	\$ 89,600	\$ 750,300

⁶Utilities, maintenance, communications, travel, transportation, computing and public relations consulting.

⁷For years two and three.

RECOMMENDATION

It is recommended that approval be given to increase the budget of project #880195 -- Graduate Program in (Marine) Resource and Environmental Studies (CERMES) Phase I -- up to a maximum increment of \$CAN 221,000 (over original approved Budget) for a total ICOD contribution of \$CAN 920,000.



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TAB 2.ii.

CONFIDENTIAL
EC 91/4/D13
Project #910420
December 11, 1991

PROJECT SUMMARY
(Executive Committee Approval)

Project Title: OECS Fisheries Monitoring, Control and Surveillance Enhancement Project

Division: South Pacific and Caribbean Basin Division

**Recipient/
Implementing Agency:** Organisation of Eastern Caribbean States (OECS) Fisheries Unit

Commencement Date: On approval

Duration: 3 years

Components: Institutional Enhancement/Project Management
Enforcement & Prosecution Training
Coastal Watch Program
Planning & Evaluation Workshops
Communications/Operations Equipment
Aerial Surveillance
Observer Program

Financial:	ICOD Contribution	\$570,000
	OECS Member States Contribution	<u>390,245</u>
	Total	\$960,245

Conditions of Approval or Comments

Record of Approval

Recommended

Wardie Leppan
Program Officer

Recommended

Raymond S. Allen
Director

Recommended

[Signature]
Vice-President

Recommended

[Signature]
President

Date



Over 50% recycled paper
including 10% post-
consumer fibre
Plus de 50 p. 100 de
papier recyclé dont 10 p.
100 de fibres post-
consommation.

ABSTRACT

In order to enhance the OECS Monitoring, Control and Surveillance Program, support is provided for: observer and enforcement and prosecution training; the development of a Coastal Watch Program; workshops to assess the surveillance program; additional support for aerial surveillance activities; and, long range communication equipment to improve the effectiveness of specific operations.

3 years:

SCAN

Theme:

Fisheries Management and Development

Financial Sector Code:

EJYB

IPIS Description:

Monitoring / Surveillance & Enforcement / Workshops / Training /
Radio / Maps