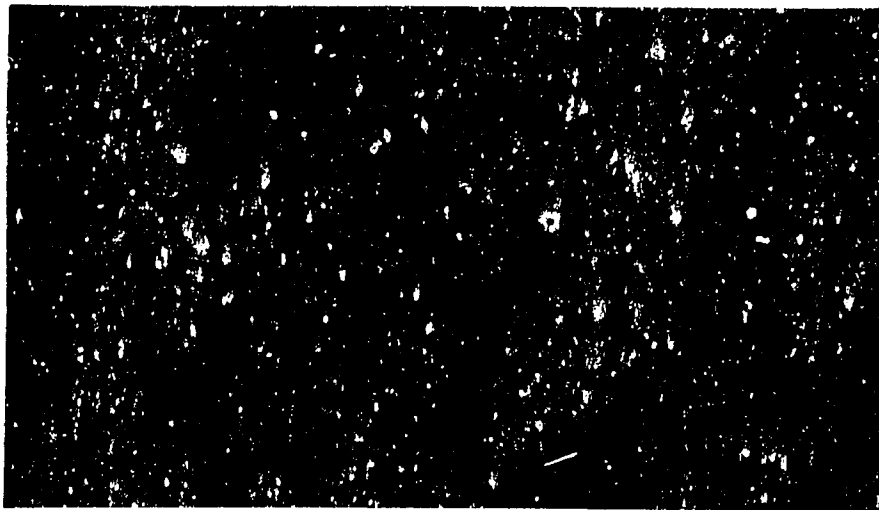
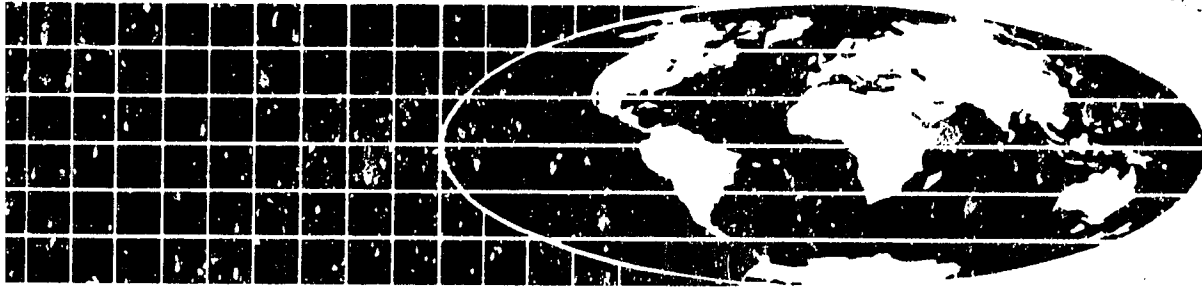


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The University of Rhode Island

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A TRAINING PROGRAM FOR THE
URI/AID COASTAL RESOURCES MANAGEMENT PROGRAM

Prepared by the Training Issue Team

July 1987

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TABLE OF CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY AND RECOMMENDATIONS	1
I. BACKGROUND AND OBJECTIVES	6
1.1 The URI/USAID Coastal Resources Management Project	6
1.2 Training: An Essential Component of the CRMP	6
1.3 Philosophy of the CRMP	7
II. TRAINING ISSUE TEAM: OBJECTIVES, APPROACH FINDINGS	13
2.1 Objectives of the Training Issue Team	13
2.2 Approach of the Training Issue Team	15
2.3 Findings of the Training Issue Team	16
(a) The University of Rhode Island	16
(b) Academic Programs in the United States	17
(c) International Training Programs in Coastal Resources Management	19
(d) Training Initiatives in the Pilot Countries	22
(e) US State Coastal Management Programs	23
2.4 The Approach of the CRMP to Professional Improvement	24
(a) Education or Training	24
2.5 Types of Training	27
(a) Study Tours	27
(b) Workshops, Forums, Intensive Courses	28
(c) Core Course	28
(d) Specialized Training	29
(e) On-the-Job Training	29
(f) Academic Degree Program	30
III. THE TRAINING STRATEGY	31
APPENDIX A: PROPOSED SHORT COURSE IN THE DESIGN AND IMPLEMENTATION OF COASTAL RESOURCES MANAGEMENT PROGRAMS	34
APPENDIX B: LIST OF CONTACTS/MEETINGS	46

EXECUTIVE SUMMARY AND RECOMMENDATIONS

The URI/USAID Coastal Resources Management Program (CRMP) convened a group to consider the opportunities and need for training of existing and potential coastal resource managers in developing countries. The Training Issues Team, composed of eight members, first met in August 1986. The team met regularly through December, first to discuss general principles of training and their specific application to CRM, then to design a training strategy and outline a proposed core course in integrated coastal resource management. In the course of the deliberations, team members produced four background documents. These reports, along with the attached strategy document form the final report from the Team.

The objectives of the Training Issue Team were:

- i. To systematically review CRM training needs for short courses, study tours and academic programs and devise a strategy for the CRMP to meet these needs.
- ii. To design courses and identify faculty for specialized training sessions both in the US and in-country.
- iii. To identify examples from the US and other nations CRM experiences that best illustrate various approaches and aspects of CRM.

The Training Issues Team has made a number of recommendations about possible training initiatives for the CRMP. These were made after considering the philosophy of the URI/AID CRMP, the needs for training of coastal managers in the pilot countries and other

developing countries, and existing resources for CRM training in the United States, in other developed countries and in developing countries.

Two fundamental approaches to professional development--formal education and skills training--were considered. The two are quite different, and the Team recognizes that both are appropriate vehicles for professional development. The question asked was how best to implement a program that combines both in a field in which much of the knowledge is new and not fully tested. In order to answer the question, another was asked: what is the knowledge needed by a good coastal manager? The answers to this question are embodied in the philosophy of education and training of the CRMP that emerged from the deliberations of the Team. They are:

1. There is no formula for doing coastal management. Hence, education and training programs must teach approaches to problem solving, as well as the basic concepts of disciplines upon which coastal management draws.
2. All training must be mindful of the essential connections among planning, research, and implementation.
3. Training must be fully interdisciplinary and practical to prepare participants for integrated approaches to real problems.
4. Experiences from a wide variety of nations can be usefully adapted as training materials.
5. Much can be learned from interactions among individuals at similar levels in government from different countries that are attempting to address similar issues.

6. Opportunities to strengthen local and regional capabilities to provide education and training in CRM should be maximized.
7. Practical, hands-on training experiences are to be favored over lectures and other passive modes of education.

With this philosophy in mind, the Team reviewed existent training and academic programs and the resources available at URI and elsewhere. It was found that there are fairly regular opportunities for specialized training in many of the technical disciplines upon which CRM depends (i.e., remote sensing, environmental impact assessment, tropical ecology, etc.). A number of degree programs in marine affairs in the US (including the Master of Marine Affairs Program at URI) include course work useful to coastal resource managers. Many of the marine affairs programs have a significant proportion of foreign students. However, most of the course material is drawn from the US experience and, therefore, is not as relevant as it might be to foreign students. There are also a number of degree programs in environmental studies and other disciplines which are relevant to the CRM program, both at URI and elsewhere.

In each pilot country there are universities with interest and some capability for offering courses, certificates, and degree programs in environmental and/or coastal management. However, there are no "training" programs (short-term, non-degree) in Coastal Resources Management that are predictably given, despite several excellent "one time" programs which have been offered. The team has not found any training courses on how to put together and implement a coastal management plan with or on alternative planning strategies and

institutional arrangements for the effective incorporation of coastal resource management within the framework of national development planning. Also, there is no mechanism for on-the-job training in coastal management. Such practical experience could be of great benefit within a training program. Finally, training materials (written and audio-visual) useful for courses in CRM are scattered, almost all in English, and are often of little relevance to the circumstances of developing countries.

Recommendations for Implementation of the CRMP Training Strategy

The training strategy outlined in the final section of this paper is a result of the deliberations and joint wisdom of the members of the Training Issue Team. In order to implement that strategy, the Team made the following specific recommendations for action:

I. COURSE DEVELOPMENT

- A. Initiate a core course called "The Design and Implementation of Coastal Resource Management Programs."
- B. Be prepared to respond to needs expressed by the pilot countries for study tours, workshops, specialized training and on-the-job training through referral and, when necessary, presentation of the needed program.
- C. Explore the possibilities of an on-the-job training program for CRM with the Coastal States Organization.
- D. Develop capabilities for CRM education and training at universities in the pilot countries. Host country institution building should play an important role in training programs. Additional work is required to define more clearly how such institution building should occur.

- E. Use the full resources of The University of Rhode Island to develop training and educational opportunities for people from the pilot countries. In particular the CRMP should work with the Marine Affairs program as it develops certificate and Ph.D. programs.

II. ADMINISTRATION

- A. Hire a director of Training Programs. The director's budget should be sufficient to implement the training strategy set forth in this paper.
- B. Form an Advisory Council on Training for the CRMP.
- C. Initiate and participate in an effort by all international CRM institutions to develop a networking system to allow the exchange of information about training and education in CRM.

III. RESOURCES AND SUPPORT SERVICES

- A. Develop, where needed, new materials such as case studies, simulation games and collections of readings for a CRM core course.
- B. In conjunction with the ICMRD Information Services, develop a bibliography and collection of materials useful in CRM training.
- C. Develop a brochure that describes both the CRM training and educational opportunities at URI for coastal managers from developing countries.

I. BACKGROUND AND OBJECTIVES

1.1 The URI/USAID Coastal Resources Management Program

The Coastal Resources Management Project (CRMP) at The University of Rhode Island was implemented by a cooperative agreement between the United States Agency for International Development and The University of Rhode Island signed on May 15, 1985. The project is sponsored by the USAID Bureau of Science and Technology, Office of Forestry, Environment and Natural Resources (AID/S&T/FENR). It is a five-year effort in which the project will work with Ecuador, Sri Lanka and Thailand to formulate integrated programs for coastal resources management that can serve as pilots for other developing nations. More specifically, the CRMP will work with each pilot country to:

- o Develop procedures for the assessment of the impacts of coastal development proposals.
- o Develop institutional and technical solutions for resource use conflicts.
- o Support research to better understand the issues that affect the condition and use of coastal ecosystems.
- o Improve the capabilities of in-country professional staff to plan for and manage coastal development

1.2 Training: An Essential Component of the CRMP

The need for both training and education have been voiced by all three pilot countries. Concurrently, the URI/AID CRMP project paper identified "insufficient and inadequately trained management personnel in pilot countries" as a major impediment to effective CRM program

development. This theme of a priority need for training is carried through the Cooperative Agreement signed by URI and AID which lists training as one of five major project components. Training is an element of each pilot project and is addressed annually in work plan development. This annual iteration of country-specific needs and programs is developed by URI and in-country personnel, in-country advisory committees, and in some cases consultants.

During the CRMP's first year and a half, training efforts have included:

- a. Study tours of the US for key pilot project personnel:
 - Ecuador: November, 1985
 - Sri Lanka: September, 1986
 - Thailand: December, 1986
- b. Financial support for pilot project personnel to attend relevant training programs sponsored by other organizations.
- c. Brief, informal training for selected pilot project participants both in-country and in the US.
- d. Establishing a Training Issues Team to develop a strategy for an enhanced training program.

1.3 Philosophy of the CRMP

The URI/USAID Coastal Resources Management Program bases its philosophy on the diversity and relative youth of the efforts in the United States to manage coastal resources. At its foundation, the philosophy recognizes that there is no set formula for doing coastal management and that there may be several equally valid routes to an effective coastal management policy. Clearly, the art and science of coastal resources management (CRM) is a new, rapidly evolving

discipline. It is a discipline which requires both generalists and specialists to develop and implement programs. CRM is, by definition, multidisciplinary. Because CRM is new, there is no standard for precisely what a coastal manager needs to know to do his or her job. The principles of coastal management have been adapted from relevant scientific, legal and management disciplines and continue to evolve. In Table 1, representative emerging principles and premises for CRM are listed.

From these principles it is clear that an effective coastal manager must have a wide range of skills and a knowledge of a variety of disciplines. Being a good coastal resources manager requires some knowledge of a variety of technical fields related to the natural physical and social sciences, but knowing the proper technical solution to a technical problem is not enough to be an effective coastal resources manager. Coastal management--if it is to be effective--must be viewed as a process which deals with competing and often conflicting uses and values. Social and political issues frequently overshadow technical issues which means the effective coastal manager must not only be conversant with technical topics, but must also have leadership and managerial skills. He must be able to bring people together to work towards a solution to the often times unique problems of the coastal zone. The knowledge and skills required to be a successful coastal resources manager are summarized in Table 2.

Table 1. Emerging Principles and Premises for Coastal Area Management and Planning (C.A.M.P.)

Coastal Specific

1. Water is the major integrating force in coastal resource systems.
Every aspect of CAMP programs relate to water in some way, requiring unusual and complex institutional arrangements.
2. The coastal area is unique and has special needs for management and planning.
Traditional land-based or marine-based forms of management and planning must be modified to be effective for the transition area between land and sea.
3. Coastal area land and water uses must be jointly planned and managed.
The CAMP process recognizes coastal lowlands, water, and intertidal areas are an interacting and indivisible unit lying between the upland and the open sea, whose future must be jointly planned and managed.
4. The focus of CAMP is on common property resources.
While planning and management strategies may of necessity include control on use of private activities and properties, the main purpose of CAMP is usually the caretaking of common property resources.
5. Special forms of economic and social evaluation are required by CAMP.
The complexities of coastal renewable resources development requires that special methods be devised and used in CAMP; this applies to the full range of national economic-political systems from laissez-faire to centrally planned.
6. All levels of government must be involved in the CAMP process.
Coastal areas and coastal resource systems are governmentally complex because of the degree of shared jurisdiction and the amount of common property resources involved; therefore, CAMP activities need to involve all levels from national to village governments.
7. CAMP boundaries are issue based and adaptive.
There is no single description of "coastal area" or coastal zone" for the CAMP process; boundaries are delineated on the basis of the particular problems CAMP attempts to solve and must be adaptive to the evolution of the CAMP process.

8. CAMP emphasizes the nature-synchronous approach to development.
The most cost effective approach to coastal development is to respect the strength of natural forces operating at the coast and to design projects to utilize or adapt to these forces; i.e. to "design with nature."

9. The water's edge is critical to system integrity.
Close attention must be paid to keeping the edge itself--the intertidal front--intact and functional (e.g. mangroves, beaches, fringing reefs).

Prepared by:

John Clark
U.S. Department of Interior
Washington, D.C.
May 3, 1985

Table 2. Knowledge and Skills Needed for Successful Coastal Area Planning and Management.

Technical Knowledge

Principles of CRM

Coastal Science

Economic Analysis

Environmental Assessment

Urban and Regional Planning

Institutional Analysis

Management Skills

Leadership

Mediation and Conflict Resolution

Participate in and Lead Multidisciplinary Teams

Group Processes for Problem Solving

Coordinating Skills

Although CRM is still an evolving discipline, enough has been learned in the US and elsewhere about useful approaches to coastal management to suggest that the experiences of such coastal managers would be useful to counterparts attempting to implement coastal programs in their own countries.

These views of what CRM is and what is required to be an effective coastal manager form the basis of the philosophy of education and training of the CRMP. This philosophy can be summarized as follows:

- a. There is no formula for doing coastal management. Hence education and training programs must teach approaches to problem solving as well as the basic concepts of disciplines upon which coastal management draws.
- b. All training must be mindful of the essential connections among planning, research and implementation.
- c. Training must be fully interdisciplinary and practical to prepare participants fully for integrated approaches to solving real problems.
- d. Experiences from a wide variety of nations can be usefully adapted as training materials for any particular country; if these experiences are used as examples and are, through discussion, adapted to the country's socio-economic, political and environmental circumstances.
- e. Much can be learned from interactions among individuals at similar levels of government from different countries all attempting to address the same issues.
- f. Opportunities to strengthen local and regional capabilities to provide education and training in CRM should be maximized.

- g. Practical, hands-on, participatory and experimental training modes are preferred over lectures and other passive types of training.

II. TRAINING ISSUE TEAM: OBJECTIVES, APPROACH AND FINDINGS

2.1 Objectives of the Training Issue Team

To strengthen the project's training component, in August 1986, a training issue team based in the US was convened to work on developing a CRMP training strategy that would be supportive of in-country efforts and provide a mechanism for extending lessons gained through the project to other developing nations.

The group was composed of faculty and staff at The University of Rhode Island with experience and interest in CRM training program development. The expertise of this group was supplemented by three consultants--one with broad experience with state CZM programs in the US, and two with considerable training experience in coastal and marine management in developing countries.

The objectives of the CRMP training issue team were:

- i. To systematically review CRM training needs for short courses, study tours and academic programs and devise a strategy for the CRMP to meet these needs.
- ii. To design courses, identify faculty and available material for specialized training sessions both in the US and the pilot countries.

- iii. To identify examples from the US and other nations' CRM experiences that best illustrate various approaches or aspects of CRM and can be usefully incorporated in training programs.

2.2 Approach of the Training Issue Team

To meet its objectives the team:

- a. Held meetings to brainstorm ideas on such topics as what a good coastal manager needs to know, what approach should be taken to training, what set of training initiative the CRMP should consider undertaking, the content of proposed training initiatives, and out of that set, what actions should be recommended.
- b. Reviewed existing educational opportunities in the US relevant to CRM. The review of educational opportunities in the US was limited to degree programs in marine affairs and an in-depth look at URI. An excellent guide to academic programs in the US relevant to natural resource management (including coastal resource management) has recently been prepared by the International Institute for Environment and Development and the team did not think it necessary to expand on this comprehensive document.
- c. Reviewed existing training opportunities relevant to CRM sponsored by donor and international agencies. Short courses, seminars and workshops relevant to CRM in the pilot countries that have been offered or are planned were identified. It should be noted that information on such offerings is scattered and difficult to obtain.

- d. Interviews with Agency and University Representatives that had experience developing and delivering training programs in relevant programmatic areas for LDC participants. The purpose of these meetings was to gain ideas on how to design effective programs. A list of people and agencies contacted is included in Appendix B.
- e. Collection and Review of Curriculum/Course Materials for CRM Training. In the course of our work, potentially useful curricula case studies and background papers were collected and reviewed. The collection is not comprehensive but represents an initial step in materials collection.
- f. Review of US State CZM Programs to identify states that can be used as examples for teaching different aspects/techniques of CRM.

The results of this process are summarized in this strategy document. More detailed information is contained in three background documents prepared by issue team members as source material for development and implementation of this strategy. These documents are:

1. Coastal Management in the United States. A Selective Review and Summary (Jack Archer, Sr. Fellow, Marine Policy Center, WHOI)
2. Coastal Zone Management Training Programs Sponsored by International Organizations (Stella Maris Vallejo, Office of Economics and Technology Branch, United Nations)
3. Coastal Zone Training Concepts for Developing Countries (Niels West, Brian Crawford, George Aelion, URI)
4. International Coastal Zone Education (Niels West, URI)

2.3 Findings of the Training Issue Team

The review of existing resources for training and education in CRM shows a variety of opportunities that are offered by national and international organizations and are delivered in both developed and developing countries. They differ greatly in program content and target groups. In this section we address the resources available under five headings: at The University of Rhode Island; at other US Universities; in International CRM Training Programs; in the Pilot Countries; and, through US State Coastal Management Programs.

A. The University of Rhode Island

The approach URI takes to marine programs strikes a balance between programs of pure and applied science, of teaching and research, and of a state university's immediate responsibility to foster the development of new knowledge. The international aspect of the University's marine programs began with the establishment in 1969 of the International Center for Marine Resource Development (ICMRD). The ICMRD was founded specifically to help developing countries to address their marine resource problems through education, research and extension programs. An important resource within the ICMRD is the Information Service which has an extensive collection of marine resource development documents.

URI resources include not only various schools and departments dedicated to marine studies such as the Graduate School of Oceanography, and the Departments of Geography and Marine Affairs, Ocean Engineering and Fisheries and Marine Technology, but also traditional departments that have developed specializations in marine

and coastal matters such as Botany, Food Technology, Geology, Resource Economics, Sociology and Anthropology and Zoology. Additionally, there is a third group of programs devoted to public service and applied research. This group includes the Sea Grant Program, the Coastal Resources Center, the Center for Ocean Management Studies and the International Center for Marine Resource Development.

Available courses for CRM education and training at URI range from introductory oceanography and marine ecology through remote sensing to ocean law. Graduate programs that specifically address marine topics include Masters and/or Doctorate level studies in Oceanography, Marine Affairs, Fisheries and Marine Technology and Ocean Engineering. Additionally, marine topics are found within many other graduate programs including Natural Resources Science, Political Science, Geology and Zoology.

A large proportion of the faculty of The University of Rhode Island have teaching or research interests in the marine field. It is not possible to detail all of them here, but in general they follow the pattern of marine interests indicated for the departments and programs.

B. Academic Programs in the United States

In the United States there are (1986) a relatively small number of academic institutions that offer graduate degrees within the broad area of Marine Affairs or Marine Policy and a multitude that offer degrees in narrower aspects of marine resource management (e.g. fisheries, aquaculture, etc.). Here we address only the marine affairs and policy programs (Table 3).

Table 3. Graduate Programs in Marine Affairs in the U.S.

<u>Institution</u>	<u>Affiliation</u>	<u>Program Name</u>
Nova University	Oceanographic Center	Masters of Ocean Science
Oregon State Univ.	Graduate School of Oceanography	Marine Resource Management
Univ. of Delaware	College of Marine Studies	Master of Arts of Marine Policy
Univ. of Rhode Island	College of Arts/Sciences	Masters of Marine Affairs (1 year) Masters of Arts in Marine Affairs
Univ. of Virginia	College of Arts/Sciences	Masters of Marine Affairs
Univ. of Washington	Inst. for Marine Studies College of Oceanography and Fisheries	Masters of Marine Affairs
Virginia Institute for Marine Sciences	School of Marine Sciences	Masters in Marine Resource Management

The evolution of graduate programs in Marine Affairs has followed two trends. One type was created within Arts and Sciences Colleges; the second evolved in departments of oceanography. The two take quite different approaches, the first being more oriented towards management, geography and public affairs while the second emphasizes science and research for management.

On the master's level, two types of degrees have developed. One, the Masters of Marine Affairs (MMA), is designed for professionals with extensive prior background in the private, public or educational sectors. Many of the students come from jobs in the public sector to which they will return after earning their MMA. The second, Master of Arts in Marine Affairs (MAMA), is designed for recent university graduates without work experience. The objective is to develop a cadre of graduates capable of undertaking a variety of responsibilities ranging from research to management, from planning to policy formulation. The international (non US citizens) students in these programs are sponsored by their national governments or by international developing agencies. At present, international students are only a small proportion of most programs, ranging up to 20 percent in some. The background document by West provides more details and proposes a list of core courses for a program oriented towards international coastal marine management.

C. International Training Programs in Coastal Resources Management

The development and implementation of training programs for CRM is a relatively new endeavor at the international level. The accompanying background document by Vallejo reviews the international experience on

CRM training, identifies major trends and extracts from the elements useful in the formulation of a training strategy and design of courses.

Training programs for CRM have been offered by a number of international, national and private institutions in developing countries. The goals of the programs are varied, but can be grouped under the following three general headings:

1. Creating awareness and familiarizing government officials with the concept of CRM.
2. Training of specialists in the scientific disciplines that nourish CRM.
3. Problem oriented training on specific coastal issues in specific areas.

The number of international organizations involved in training programs in CRM has been quite limited until recently. In 1973, the United Nations began a coastal area development program. Through the program a series of seminars were offered in the years 1976-1981. Another very active and well established organization is the International Ocean Institute (IOI), founded in 1972. The IOI has offered several training courses in ocean (not coastal) development every year since 1976. More recently, the Organization of American States, USAID and the International Center for Ocean Development have offered courses in coastal or ocean management designed to create awareness of the concept and the need for CRM in developing countries. Specialist training has been offered by UNESCO for a number of years. UNESCO has emphasized the study of coastal ecosystems (mangroves, lagoons, estuaries, coral reefs) and the interactions among them. The aim of UNESCO is the establishment of regional networks of advanced

training and research programs and the siting of a few projects in each major region of the world. The basic strategy for implementing regional activities is the integration of research and training and the establishment of guidelines for management. The United Nations University has given several year-long training courses that depended largely on the participation of universities or governmental agencies in supporting a research program for the participants. Training programs on specific coastal issues have been offered in the South Pacific with an emphasis on offshore mining and inshore marine resource development projects. Additionally, the Eastern Caribbean Natural Area Management Program has recently provided some training for coastal area managers in St. Lucia.

Vallejo also found that each organization and country involved went through an identifiable path in the selection of training program orientation and strategy of implementation. Some chose to emphasize the scientific basis for CRM while others were more interested in the economic and managerial aspects or in the training of technical personnel to support CRMP. As a result, the programs vary and the training approaches are open to innovations. The review showed that there are fairly regular opportunities for specialized short-term training in many of the technical disciplines upon which CRM depends. However, there are no short-term courses specifically addressing CRM that are given on a predictable basis. CRM courses that are offered teach general principles; but rarely teach pragmatic techniques for putting principles into action. We did not find any training courses

on how to put a coastal management plan together or on alternative planning strategies and institutional arrangements for the effective incorporation of CRM in national development planning.

D. Training Initiatives by the Pilot Countries

There have been a number of recent attempts to initiate CRM-related training in developing countries. Our review of such initiatives is limited to a cursory review of the three URI/AID pilot countries and remains incomplete. A work task to review existing programs and institutional capabilities for training is included in all pilot program work plans for this year.

Sri Lanka: The University of Kelaniya has begun planning a post-graduate diploma in environmental management. One planned area of specialization for this diploma is CRM. The URI/AID CRMP has initiated discussions on how to best design and support this effort which is tentatively scheduled to begin in Fall of 1987.

Ecuador: While several seminars on CRM have been held in Ecuador, there are no CRM-specific courses/programs regularly offered. The CRMP helped sponsor a training seminar in Environmental Impact Assessment. There is interest in building on this effort to emphasize coastal impacts. In addition, ESPOL, a polytechnical school that has strong fisheries and aquaculture programs, is interested in offering some courses in CRM, but currently lacks the expertise or resource to do this.

Thailand: A number of CRM-related short-term training programs have been offered in Thailand and two universities--Mahidol and Chulalonghorn are considering offering CRM-related degree programs.

A recent evaluation of these efforts (by Elkyas Baker of TISTAR) suggests that current efforts are not building local institutions to enable Thailand to be self-reliant in CRM-related training.

E. US State Coastal Management Programs

One premise of the URI/AID CRMP is that the nearly 15 years of experience gained by the United States in managing its coastal resources provides useful lessons to developing nations as they design and implement coastal management programs for their countries.

In 1972 the U.S. Congress passed the Coastal Zone Management Act (CZMA), which was intended to address problems created by a growing population in coastal areas and associated economic and development activities. Although a major goal of the CZMA is to protect and preserve natural coastal resources, the primary intent of the Act is to change the way federal, state, and local agencies manage and allocate resources. The Act provides for a voluntary partnership whereby the federal government provides funds to assist the states, whose role is the management of coastal resources according to independently developed plans that must meet national standards established in the CZMA. The decision to rely on the states rather than the federal government as the appropriate level to manage coastal areas was based on several factors. First, the coastal zone of the USA is immense, covering more than 95,000 miles of shoreline administered separately by 35 states and territories. The environments vary greatly, from subtropical to cold temperate. Population pressure is large and growing; projections are that by 1990, 76 percent of the population will live within 50 miles of the shore. Finally, the US is a federalist government which means that governmental powers are vested

in the states unless specifically granted to the Federal Government. In fact the power and authority of the states to manage coastal resources is greater than that of the federal government. While the Act was being written the coastal states strongly opposed all attempts to vest more power over coastal resources in the federal government than in the states.

Thus the context in which coastal management in the United States must be understood is that of a strong state and local government system, great population and economic pressure and very diverse environments. Hence, considerable flexibility was allowed to the states in their choice of program goals and implementation techniques. The background paper by Archer sets out the enormous variety in the approaches taken by state programs. There are a wealth of examples of successes and failures among US state programs. Thus, US coastal management experience can be a valuable source of information for others wanting to learn the process of CRM.

2.4 The Approach of the CRMP to Professional Improvement

A. Education or Training?

A number of approaches to professional improvement exists, two of which will be addressed in this report. The first of these is formal education--normally lengthy, time structured and culminating in an academic degree. The goals of academic education primarily are the acquisition, evaluation and assessment of existing concepts and facts, and the development of skills to determine new facts and concepts. The second approach, training, has as a primary function--the transfer of existing knowledge and skills. Training may involve the transfer of either technical or management and planning information, techniques and

skills. This training might include small engine repair through accounting techniques to conflict resolution skills. The differences in the conceptual base of training and academic education raise the question of how best to implement a program that must be a combination of the two. The needs for both training and education have been voiced in all three pilot countries. Additionally, there is clear overlap between the two because the development of new concepts or procedures cannot occur if there has been no training.

The evolution of the training and educational efforts in CRM suggested by Vallejo's analysis (see her background document) show that both approaches to professional improvement are available at national and international levels. Past, present and future activities indicate a trend towards an expansion in training efforts and the concurrent development of academic programs specially devoted to CRM interests. Until now training has been the approach most frequently used.

We suspect that training--with the support of well established academic disciplines--will remain the primary vehicle for the preparation of human resources. This raises the question of how best to implement a program that must be a combination of formal education and training. In the case of URI--a leading marine institution--the foundations for a solid academic background are readily available, making this an ideal location.

TARGET GROUPS

There are a wide variety of people, drawn from many levels of government, whose activities and decisions affect the management of the coastal areas and resources. All probably could benefit from further knowledge or skills development. The training to be offered must account for the backgrounds and the relative positions of the participants. Different courses and different strategies must be planned, depending on which group is to be addressed. It is useful, therefore, to identify the groups of people that have requested or are perceived as needing training in CRM.

First are the policy makers and upper-level bureaucrats whose portfolios include responsibility for the management of coastal areas. It does not seem likely that formal training is required (or even possible, given time constraints) for this group. However, single lectures or seminars and opportunities to observe operational CRM programs are sometimes appropriate and very useful.

Second are upper-management personnel including bureau chiefs, program directors and key people from both public and private sectors. These usually are extremely capable managers who may recognize the importance of CRM but are not fully aware of what it is or how it works. Very short courses, seminars, round-table forums, etc. would seem to be an appropriate approach for this group.

Third are the junior- and middle-level administrators who have been working with coastal resources but who lack expertise in specific topics such as project design and management, or coastal tropical ecology, etc. Training courses should be available on a regular basis

for this group. Additionally, there should be a strategy for identification of up-and-coming young administrators who might do well in academic (degree-granting) programs.

Fourth are the specialists and local-level managers who may require training in techniques ranging from data base management and satellite imaging to permitting and enforcement. Short standardized courses could be offered at regional training centers for this group.

2.5 Types of Training

Two broadly defined needs for training were identified by the Training Issues Team: first training in the general principles of CRM and second, training in specific techniques. Within these two general categories there can be a wide range of topics presented in a variety of styles and course types. In this section the several types of courses that might be offered in response to needs identified by the pilot countries are discussed, as well as the initiation of a short course in the principles of CRM.

A. Study Tours

High-level government officials in policy-making positions often require orientation to the principles and problems of CRM. One effective and quick way of providing this orientation is exposure to several ongoing programs in the USA or elsewhere. During the three study tours given by the CRMP so far, the following benefits were noted:

1. They are useful focusing events. During study tours it is possible to get high level policy makers to focus on CRM issues, increase their awareness of problems, and develop their interest in the project.

2. They are useful for team building. For new projects that require interagency coordination, the value of enhanced interpersonal relationships for key project members and shared experience cannot be overestimated.
3. They bring fresh ideas. New approaches to problem solving can be explored on neutral turf.

The CRMP should remain responsive to requests for study tours.

B. Workshops, Forums, Intensive Courses

Another approach to the orientation of policy makers to the principles and problems of CRM is to use short but intense presentations by CRM practitioners. These could take several forms, including workshops that address specific topics, round-table discussions or forums on emerging problems or very short courses that provide an overview of CRM and how it meshes with other regional and national resource planning activities. These training approaches are envisioned to last no more than two or three days, and might be attached to other gatherings such as national or international meetings.

C. Core Course

As was pointed out earlier, the Training Issues Team was unable to identify any existing courses that specifically address the mission of the CRMP--the planning, development and implementation of effective coastal resource management programs in developing countries. This gap needs to be filled. Such a course could act as the flagship or "core" of the CRMP training program. The course should emphasize policy development and implementation for coastal resource management, while focusing on the need to merge science with policy and the concept that

CRM is an interdisciplinary, multifaceted approach to coastal resource management problems. The target group for the core course is envisioned to be mid to upper level managers responsible for the production of coastal resource management plans or programs at the national or regional level. A course of this nature can probably be given in almost any location. A proposal for a core course is given in Appendix A.

D. Specialized Training

The practice of CRM requires specific skills. These include areas as diverse as the interpretation of remote sensing data, fisheries population dynamics, preparation of environmental impact assessments, and negotiation. It is not possible for any of these skills to be addressed in great depth in a core course, and it is impossible for the URI/USAID CRMP to respond to all relevant training needs. It seems reasonable to suggest that the stance of the CRMP with regard to courses such as these should be two-pronged. First, the CRMP should be aware of the courses being taught internationally and be ready to refer inquiries to the sponsoring institutions. To do this will require the development of a course information clearinghouse that could be located at the CRMP or elsewhere. Second, when a clear need for a technical course is identified but not fulfilled by other agencies, the CRMP should be prepared to present the course using either in-house staff or consultants.

E. On-the-Job Training

There is no mechanism for on-the-job training in coastal management. Such experiences could be of great benefit to selected personnel because it provides a different type of training, one that is

based on practical experience and allows sufficient time to ensure the understanding of problems and management techniques. Ways would have to be found to rotate the trainees through more than one coastal management program, and to encourage the trainee to adapt his or her work experience to the home country environment. It was suggested that The Coastal States Organization is interested in helping to organize an on-the-job training program.

F. Academic Degree Programs

Formal educational programs are also an important part of the preparation of people for coastal management positions. The background document by West reviews the academic degree programs in the United States that specifically deal with marine and coastal management. At present there are degree programs that offer a Masters in Marine Affairs and one that offers both the masters and a doctorate. The University of Rhode Island will probably soon add a doctorate to its existing masters program. The stance of the CRMP with regard to these programs should be to refer potential students to appropriate marine affairs programs. To do this, adequate information about each of the programs should be on hand at the CRMP office or available through the ICMRD library.

IV. THE TRAINING STRATEGY

The training strategy proposed is based on four major elements: (1) resources; (2) course development; (3) administrative actions; and (4) support services and materials.

The team recognizes that the CRMP must make decisions on how best to use its limited fiscal resources for education and training. Building upon existing programs and using existing materials whenever possible are suggested. New initiatives for training should be made only when: (1) a clear need exists; (2) there is no existing program to meet the need; and (3) CRMP resources (both human and fiscal) are sufficient.

In this strategy the CRMP should use the full resources of the University to develop training and educational opportunities for people from the pilot countries. In particular the CRMP should work with the Marine Affairs program as it develops certificate and Ph.D. programs.

The project should also aim at the development of capabilities for CRM education at universities in the pilot countries. Building of local institutions should be a central theme of all CRMP training programs. In the pilot countries, "partner institutions" could be developed which would co-sponsor or jointly undertake programs of research, education and training. Additional work is required to define more clearly how such institution building should occur.

As regards to course development efforts should be directed to the immediate implementation of a "Core Course" of six-week duration, which will emphasize policy development and implementation with a major focus on the socio-economic and environmental aspects of coastal management. This course should satisfy the need for a short training program on how

to put a coastal management plan together and institutional arrangements for the effective incorporation of CRM within the framework of national development planning. The outline of this course, titled "Design and Implementation of Coastal Resources Management Programs" is found in Appendix A.¹

Two other types of training courses should be taken into consideration. First, the design of a short course for policy makers with a major focus on policy formulation and, second, to explore the possibilities of an on-the-job training program for CRM with the Coastal States Organization. A potential funding source may have to be identified.

It is envisaged that these three types of courses--delivered both individually in a combined form (e.g. core course and on-the-job training) could cover the present training needs of two target groups: policy-makers and middle and junior level administrators (see Table 3).

As regards to Administrative Actions the team recommends the recruitment of a director of Training Programs whose initial responsibilities will be to design, coordinate and implement a core course, pursue collaborative relationships in the pilot countries,

¹After discussions with AID and pilot project counterpart agency personnel, there was consensus that delivering a core course was not the best vehicle for achieving the CRMP's training objectives. Instead, the approach, concepts and materials for the core course will be further developed and utilized in cooperative training programs in each pilot country.

initiate fund raising and carry out other recommendations of this team. The director's budget should be sufficient to implement these activities.

To assist the director of Training Programs, an Advisory Council on Training for the CRMP should be constituted. This group could include some or all the members of the Training Issues Team as well as other individuals with relevant expertise and experience.

A third aspect to be considered is the potential outreach of the training program and its role within the framework of other ongoing efforts. To this effect the CRMP should initiate and participate in an effort by all international CRM institutions to develop a networking system to allow the exchange of information about training and education in CRM. This will allow the CRMP and other organizations to be aware of and use CRM training programs worldwide.

As regards to Support Services and Materials, the team recognizes that available training materials for CRM are scarce and scattered in different organizations. Therefore, the CRMP should in conjunction with the ICMRD Information Service, develop a bibliography and collection of materials useful in CRM training. New materials for the core course and future training efforts such as case studies, simulation exercises and readings should be developed only where needed. In addition, brochures should be prepared describing both the CRMP training course and the educational opportunities at URI for potential coastal managers from developing countries.

APPENDIX A¹

PROPOSED SHORT COURSE IN DESIGN AND IMPLEMENTATION OF COASTAL RESOURCES MANAGEMENT PROGRAMS

Target Group: Resource level managers in LDCs responsible for the production of coastal resource management plans or program implementation at the national or provincial level and to potential "trainers" from the pilot countries (university professors, etc.).

Geographic Orientation: Tropical coastal regions.

Perspective: The course will emphasize policy development and implementation for resource management. Socio-environmental aspects of tropical coastal systems will be the major focus.

Timing and Location: We recommend that this six-week course be given annually.

Training Approach and Materials

The approach will be practical with emphasis on techniques for designing and implementing CRM programs with case studies drawn from developing countries.

FACULTY:

- Coordinator
- Core faculty: 2-3 for the entire course (2 technical, 1 process person). Technical people must have CRM experience in developing countries.
- "Consultants" in technical fields (both academics and practitioners). Senior people may be a good and low-cost resource.

¹This outline was prepared assuming that the first core course would be offered at URI. This outline should be viewed as a model that can be built and adapted for use in the pilot countries.

MAJOR TOPICS OF CORE COURSE

- I. GETTING TO KNOW EACH OTHER
- II. THE COASTAL ZONE: ISSUES AND PROBLEMS
- III. THE COASTAL MANAGER'S TOOL KIT
- IV. SELECTED ISSUES
- V. FIELD TRIPS
- VI. DEVELOPMENT OF AN INTEGRATED MANAGEMENT PLAN
- VII. END OF COURSE AWARDS.

PROPOSED SHORT COURSE IN DESIGN AND IMPLEMENTATION OF
COASTAL RESOURCES MANAGEMENT PROGRAMS

I. GETTING TO KNOW EACH OTHER

There are several goals to this section of the course--primarily, community building among the participants and instructors and familiarization of the participants with the local environment. Additional goals include introducing techniques used in the course, such as case studies, simulations, lectures, small group discussions, along with a clear statement of the course goals and objectives. All this might be done in the context of an overview of management in several countries: U.S. CRM programs, approaches of other developed countries to CRM, initiatives in the LDCs. It may be useful to have informal participant presentations on their own area or country programs. Another goal could be to assess the skills of the participants, particularly with English, and formulation of strategies to deal with possible problems.

Suggested Activities (for a first offering at URI)

1. Keynote Address and welcome, logistics, settling in.
2. Lectures followed by discussions on principles of coastal management.
3. Lectures and background readings on the principles of the case study method and simulation gaming.
4. Student presentations on who they are and what they do.
5. Field trip--overnight--for fun and information--perhaps to New Bedford (fishing fleet, pollution) and Cape Cod (tourism, National Seashore).
6. Preparation of a photo-composite for identification of one another.

--In this section of the course, and throughout the rest of it, evening sessions should be planned that are both informative and enjoyable.

II. THE COASTAL ENVIRONMENT AND HUMAN ACTIVITIES: ISSUES AND PROBLEMS

The goals of this section are largely information transfer. They include an introduction to the ecology and geology of the coastal zone, and to the broad issues that CRM tries to address. The material should be presented in the context of management and should be better integrated with the next section of the tool kit. Problem diagnosis should also be a goal here.

Suggested Activities

1. Lectures and discussions on the natural systems of the coastal zone (coral reefs, mangroves, coastal processes, etc.). Here the concepts of ecology and geology should be addressed).
2. Lectures and discussions on uses and economics of the coastal zone (fisheries, tourism, etc.).
3. Lectures and discussions on institutional issues; the socio-political context. Here demographic issues and coastal development should be included.
4. Lectures and discussions on the impact of development. A particularly important and integrative topic is health and safety issues.

III. THE COASTAL MANAGER'S TOOL KIT

The goals of this section are for the participants to gain information about the practice of CRM including:

- A. Problem identification
- B. Definition of management objectives
- C. Identification of information needs
- D. Identification of management options
- E. Design of management strategy

Suggested Activities

Lectures, examples, case studies and exercises that illustrate:

- inventories/profiles
- science for management
- planning and management techniques (permit systems, use of environmental assessment, setback, zoning, special area planning, public education, national planning, etc.).
- assessment of technological alternatives that can lead to development and conservation together
- enforcement
- monitoring
- negotiation and conflict resolution

IV. SELECTED MANAGEMENT PROBLEMS

In this section, the participants will consider two or three typical issues in tropical coastal resource management drawn from developing countries. Case studies will be presented, and participants will be provided with a great deal of background information on the issues. For each, the participants will be required to define the problems and to develop management strategies which eventually will be

woven into an overall management plan. The issues (examples: tourism, waste management, aquaculture, siting of industry or dams, deforestation, parks, habitat destruction, etc.) will be chosen carefully so the resulting management strategies conflict with each other. In each course two or three issues would be explored in depth. Suggested issues for year one are aquaculture, tourism and waste management. Here we should attempt to move the students out of their "home" roles and have them try other "hats".

Suggested Activities:

For this section we suggest the use of incremental case studies whose presentation simulates how managers actually acquire and deal with information. At the end, comparison of the solution suggested by the participants could be compared to the real solution. The following sequence might be used for each issue:

1. The inquiry (information)
2. Defining the problem (exercise and information)
3. Doing your homework (exercise and information)
4. Define management objectives (exercise)
5. Design program for implementation (exercise)
6. How it was actually done (information)

V. FIELD TRIPS

The goal of this section is to allow the participants to gain information about integrated coastal management planning. Participants should be able to see that there are different paths to the implemented plan. To this end, at least two state programs should be visited.

Suggested Activities:

Visits to state programs, perhaps Rhode Island and North Carolina?

VI. DEVELOPMENT OF AN INTEGRATED MANAGEMENT PLAN

The goals of this section are to: understand the planning process, to practice the writing of plans, to practice negotiations and conflict resolution. This section must be reality-based insofar as possible. Realistic situations (maps, background documents, etc.) must be provided for the simulation. It should be clear that the process is not taking place in a vacuum; the pressures must come from not just the selected issues working on before, but from the wider context of other coastal issues.

Suggested Activities:

Use the selected issues of Section IV in a simulation game whose goal is to put together an integrated management plan. The group should be divided in some way (agencies? planning teams?) to allow conflicts to arise and negotiations to occur. A well defined time frame must be set. The following tasks should be accomplished:

1. Compilation of the plan.
2. Review of the plan.
3. Revision.
4. Convince a skeptical government.
5. Present to the public...for real. This will get the adrenalin flowing.

VII. CLOSURE

A formal closure is needed that reinforces the lessons of the course and prepares the participants for return with the lessons gained to their home , social and political environments. It could take the form of allowing each student to tell how, what he or she learned in the course will be applied to a specific issue back home. The students should know of this exercise before coming to the course and bring materials in preparation for it. During the period of preparation during the course, the instructors can act as resource people for the participants. Feedback about the nature of the application to the specific problem should probably come from both the instructors and the other participants.

VIII. END OF COURSE CEREMONIES

Presentation of certificates to all participants, speeches, special awards, closing dinner and party, etc.

EVALUATION

An important aspect that is not specifically related to the course outline is evaluation. At the very least, the participants must have the opportunity to assess their experience at the end of the course, and to inform the course leaders of what was good and what was less good. If at all possible, some objective pre-course and post-course assessment would be very useful, especially if the post-course assessment could be carried out six months or a year later. This might take the form of some type of gaming done at the beginning and repeated after the course. It would be very useful to the CRMP if contact with all former students could be maintained. This will both provide knowledge of the "cadre" of trained students and allow the CRMP to see how those students succeed in the future.

TIME ALLOCATION

I. Getting to Know Each Other	4-5 days + weekend
II. The Coastal Zone	1 week
III. The Tool Kit	1 week
IV. Selected Issues	5-6 days
V. Field Trips	8+ days
VI. Development of Plan	3 days
VII. Closure	2 days
VIII. Ending	1 day

ESTIMATED BUDGET FOR A CORE COURSE IN THE U.S.

Course Costs

Training Faculty	\$40,000
Field Trips (exclusive of travel)	5,000
Brochure	2,000
Graduate Assistant	6,000
Printing	4,000
Logistical Materials	1,000
Clerical Service (6 wks)	2,000
Local Transport (Vans and Drivers)	<u>2,000</u>
TOTAL	\$62,000

Tuition will be course costs divided by the number of participants. If there are 25 participants, a course estimated to cost \$62,000 would charge \$2,480 for tuition.

Start-up Costs (Year 1 only)

Materials Development	\$20,000
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Participant Costs

Room and Board	\$1,500
Books and Materials	300
Transportation within USA	1,700
Pocket Money	500
Tuition (assuming 25 participants)	2,480
Health Insurance	150
Banquets, Ceremonies, etc.	<u>200</u>
TOTAL	\$6,830

Note that the above budget assumes the presence of a full-time director of training programs.

APPENDIX B

Individuals and Institutions Contacted by Training Issues Team Members

Burbridge, Peter (Dr.)

(Private Consultant and CRM Trainer)

Conservation Foundation

Jeff Leonard, Senior Fellow
Robert Healy, Senior Fellow, and Duke University
(L.Z. Hale 20, August 1986)

Council of Europe

Gunter P. Mudrich
(Stella Vallejo)

Dalhousie University

Institute for Resource and Environmental Studies
Dr. Arthur Hanson, Director
(J.S. Cobb, 23 September 1986)

Dr. Robert Fournier, Vice President for Research
(J.S. Cobb, 23 September 1986, by telephone)

Inter-American Development Bank

International Center for Ocean Development

Dr. Evelyne Meltzer, Dr. Carol Amaratunga
(J.S. Cobb, 24, 1986)

International Ocean Institute

Dalhousie University, Halifax, Nova Scotia
Dr. Elizabeth Mann Borges
(J.S. Cobb, 23 September 1986)

National Oceanographic and Atmospheric Association

Office of Ocean and Coastal Resource Management
Dr. Nancy Foster and two assistants
(J.S. Cobb, L.Z. Hale, 20 August 1986)

Organization of American States

Alberto Leonardi
(S. Vallejo, 20 August 1986)

UNESCO

Marc Steyart
Division of Marine Science, Paris, France

United States Department of Agriculture

International Training Division

Richard S. Affleck

Veronica J. Priddy

(J.S. Cobb, S. Vallejo, 21 August 1986)

Graduate School, USDA

Anni Shea

Robert Mashburn

(J.S. Cobb, S. Vallejo, 21 August 1986)

The World Bank

Economic Development Institute

Jacques Crosnier

Surinder Deol

Claude Salem

(J.S. Cobb, S. Vallejo, 21 August 1986)

World Wildlife Fund

Jerry Lieberman

(L.Z. Hale, 20 August 1986)