UNIVERSITY OF RHODE ISLAND
MARINE ADVISORY SERVICE

PROGRESS REPORT

AND

PROPOSAL

FY 1979-1980

Project No. A/AS-3

Title: URI Marine Advisory Service

Personnel:

Administration
Sara S. Callaghan, Acting Coordinator and Marine Public Education Specialist

Field Specialists
Herrick Johnson, Fisheries Development Specialist
Jeffrey L. Howe, Seafood Technology Specialist
Andreas Holmsen, Marine Economics Specialist (1/3 time)
Neil W. Ross, Marine Recreation and Coastal Utilization Specialist
Prentice K. Stout, Marine Education Specialist

Subject Matter Specialists
Christine A. Duerr, Marine Affairs Communicator
Elisabeth Keiffer, Newsletter Editor (1/2 time)
William A. Bivona, Publication Distribution Manager
Victoria Desjardins, Publications Editor (1/2 time)

Support Personnel
Margaret D. Mitchell, Administrative Assistant
Susan Brownell, Technical Assistant, Information Services
Deborah Prefontaine, Secretary
Mary McNiff, Secretary (1/2 time)
Secretary (proposed 1/2 time)

PROGRAM OVERVIEW

Introduction

The mission of the Marine Advisory Service is to serve as the technology transfer and information link between the URI Sea Grant Program and the marine community of the state, region and nation. In this role, MAS attempts to assure:

a) the application of research results
b) the education of its community of users through the transfer of all available information
c) the availability of assistance in the wise utilization, management and development of marine resources
d) the provision of services intended to encourage the adoption of new ideas, techniques and practices, and

e) the identification of problems and/or opportunities in the marine community which might become appropriate Sea Grant research projects.

An important responsibility of the MAS is its role in the feedback loop which is designed to facilitate the delivery of information to users and to help users identify problems or opportunities which can become the subject of Sea Grant research investigations or new advisory service projects. At the core of this activity is frequent and intensive face-to-face communication with those involved or interested in marine-related activities and rapport with the University's research faculty.

MAS was established in 1970, subsuming the New England Marine Resources Information Program (NEMRIP) which had been the original advisory service activity funded through URI's first Sea Grant in 1968. This 1970 redirection of effort added a field specialist dimension to what had otherwise been a reactive information and publications emphasis.

Worthy of note here is the participation by URI/MAS personnel in numerous programs and projects that are regional and national in scope. While these activities are outlined later (see MAS Regional and National Projects), it ought to be emphasized that our commitment to regional and national programs is illustrative of the broad perspectives and talents of our specialists as well as the pioneering nature of many of the things in which they are involved. This is especially true of areas such as fisheries development, marine economics, marine education, seafood processing, marine recreation and publications distribution.

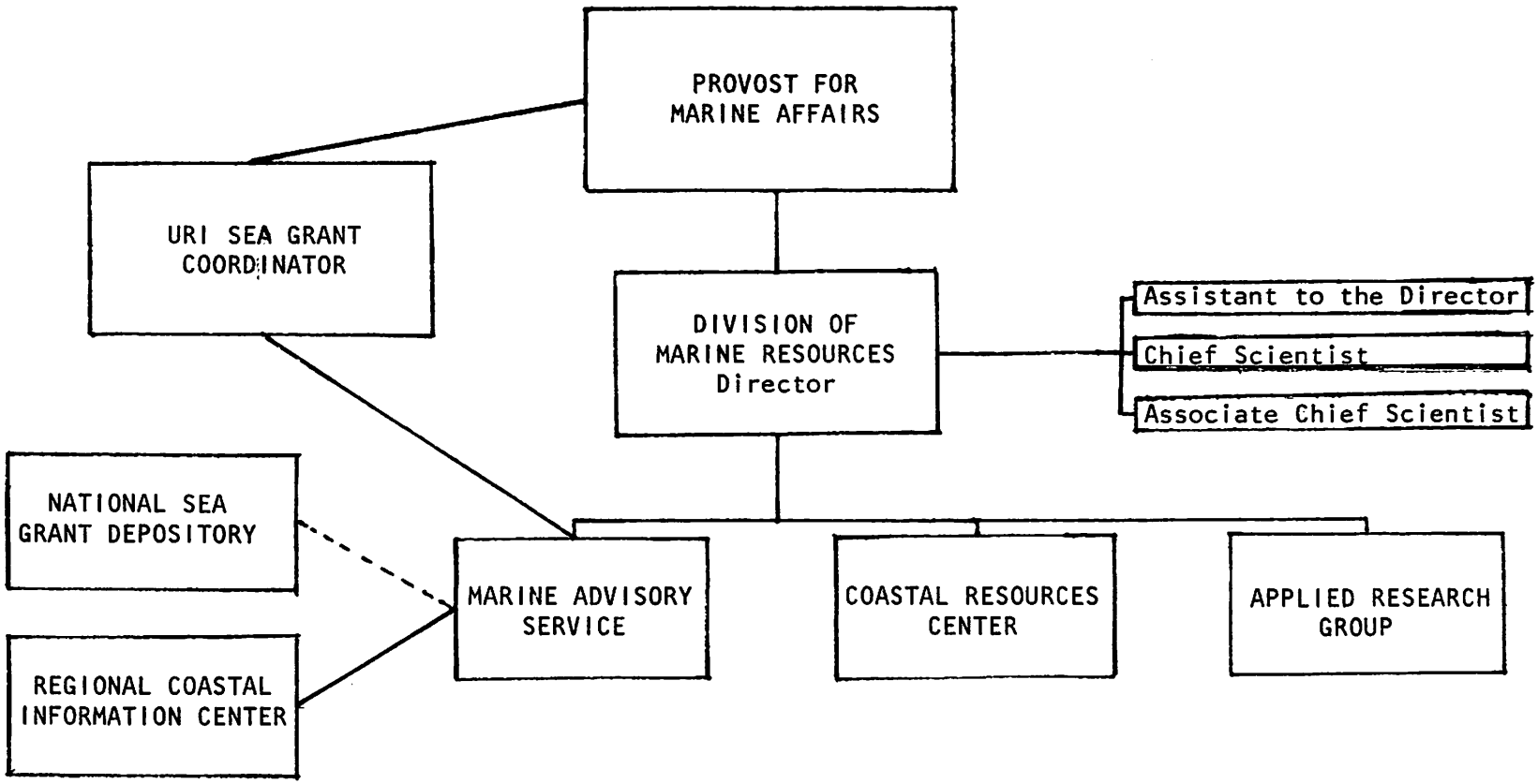
Organization

Organizationally, MAS is part of the University's Division of Marine Resources (DMR) (See Table of Organization). The Division was started in 1975 as the umbrella unit for URI's marine public service programs.

Its primary mission is to put knowledge to work for such diverse audiences as fishermen, seafood processors, resource managers, government agencies, school teachers, and marine businesses: any group concerned with understanding, developing, managing, or using marine resources.

TABLE OF ORGANIZATION

DIVISION OF MARINE RESOURCES



The Division conducts specialized applied research investigations, coordinated by its Chief Scientist, in cooperation with the University's Graduate School of Oceanography and with other URI research faculty who participate in the Division's activities on a project-by-project basis.

Besides MAS, the other principal operating unit of the Division of Marine Resources is the Coastal Resources Center (A/CR-5). Affiliated units consist of the Regional Coastal Information Center, which provides a search-and-referral service for agencies or individuals interested in coastal zone management, and the National Sea Grant Depository, which produces indexes and makes available loan copies of all the reports which result from Sea Grant projects across the country.

During the past year, the Division was responsible for 45 individual grants and accounts with a value of over $2 million dollars.

MAS comprises one administrator and nine specialists who, because some have part-time responsibilities, constitute 8.35 full-time equivalents--exclusive of clerical support. One specialist is one-third time, two are half-time. The 8.35 FTE's cover subject-matter areas in fisheries development, seafood technology, marine recreation and coastal utilization, marine economics, marine education, marine advisory communications, user information services and publications, as well as administration.

In April, 1978, the MAS moved into new quarters in the Watkins Marine Science Laboratory where, as part of the Division of Marine Resources, it shares space with the Coastal Resources Center (CRC) and the Regional Coastal Information Center (RCIC).

The new building is located at URI's Narragansett Bay Campus which is the home of the University's Graduate School of Oceanography. The Graduate School comprises 29 calendar year faculty, 160 graduate students, and another 245 persons (including DMR personnel) in professional, technical and clerical support positions. The 165-acre Bay Campus also includes part of the URI Department of Ocean Engineering and a three-megawatt nuclear reactor operated by the State of Rhode Island's Nuclear Science Center. Adjacent to the Bay Campus are the Northeast Research Center of the Environmental Protection Agency and the Northeast Fisheries Center of the National Marine Fisheries Service.

Program Administration

The purpose of MAS administration is to support and facilitate the broad range of educational projects and services conceived and developed by MAS specialists, to assure collaboration with appropriate individuals and agencies in program and project definitions, and to encourage cooperative programming among university and external individuals and agencies. MAS administration also represents advisory service priorities and needs to university and outside administrators and agencies; provides for MAS specialist review of research proposals; facilitates involvement in the feedback loop, and supervises and coordinates program goals.

During the past year some major changes in administration of the MAS have occurred. Walter J. Gray, MAS director since its beginning in 1970, was designated Assistant Provost for Marine Affairs and, in the process, gave up the titles of MAS director and Assistant Coordinator of the URI Sea Grant Program. He continued as Director of the Division of Marine Resources of which MAS is a member unit.

Sara S. Callaghan, part-time assistant coordinator of MAS for the past two years, was named Acting Coordinator of MAS to succeed Gray. Callaghan joined MAS in 1975 as a marine public education specialist.

MAS Regional and National Projects

Attention is directed to the fact that MAS projects--past, current and projected--are considered relevant to the overall objectives of the Office of Sea Grant, the NOAA Marine Advisory Service, and responsive to the various recommendations of the National Advisory Commission on the Oceans and Atmosphere (NACOA), the National Ocean Policy Study (NOPS) and various congressional committees which have reviewed the purposes and objectives of Sea Grant Colleges as well as the Sea Grant College and Program Act. Many of the projects initiated by URI/MAS have significance beyond the borders of Rhode Island. Examples of regional and rational MAS activities follow.

Regional

- Financial Management seminars for marina and boatyard owners/operators
- Marine Awareness Center
- Student Intern programs in marine education and recreation
- Multi-purpose processing demonstration plant
- Marketing of scup
- Fishing port offloading and handling techniques
- Fresh fish preservation processes
- Marine diesel engine repair, elecroloysis and corrosion and hydraulics workshops
- Feature articles in regional publications including the Boston Globe
- Danish and Scottish seining demonstrations
- Bottom and midwater pair-trawling demonstrations
- Two-pitch propeller demonstrations
- French polyvalent door demonstrations
- Shoreline facilities workshop

National

- Marine education curriculum development and information request
- National Fisheries Institute standards of analysis for seafood
- Publications distribution
- User information services
- Floating tire breakwaters
- Cooperative programming with boating industry and coastal management people
- Task Force on Boat Theft Information
- Environmental information on marinas and boats
- National marine recreation workshops and programs
- Feature articles in national media
- Specialist talent sharing activities
- Documentation of fishing gear

New England Marine Advisory Service (NEMAS)

Since NEMAS was established in 1975, the University of Rhode Island Marine Advisory Service has been an active participant. The past MAS director served as the founding chairman of NEMAS and the new

acting coordinator will continue to serve as a member of the regional group's board of directors. During 1978, MAS personnel contributed 20 days of talent sharing in the form of assistance in marine education, communications, business management and marine recreation.

Liaison With External Agencies and Groups

Throughout the year the MAS administrator and specialists acted in various capacities as a liaison with numerous external agencies and groups.

On behalf of the Institute of International Education in Washington, D.C., MAS organized a visit to URI by Dr. Laureano Sanchez, Head, Legal Department, Fisheries Directorate, Ministry of Natural Resources of Ecuador. Issues discussed included Sea Grant concepts, MAS activities in fisheries development, the Master of Marine Affairs Program and MAS initiatives in Outer Continental Shelf issues.

The MAS fisheries development specialist visited Chile at the request of the Consortium for the Development of Technology (CODOT) to advise on the potential for technological innovation in the local fishing industry.

MAS and CRC personnel continued to provide direct services on issues such as coastal management, fisheries, outer continental shelf and nuclear power plant environmental impact statements, among others, to such agencies as the Office of the Governor, the R.I. Coastal Resources Management Council, the State Department of Environmental Management and the R.I. Department of Economic Development.

Initial meetings were held with representatives of the Department of Interior's Fish and Wildlife Service to determine areas for joint educational programming.

MAS personnel briefed R. Slamet Prayitno, Director of Production, Directorate General of Fisheries of the Indonesian Department of Agriculture.

The MAS director arranged for, and participated in, various visits by outside groups. Among these were an orientation visit by Senator Claiborne Pell and Richard Frank, NOAA Administrator, and another by members of the R.I. General Assembly.

A special meeting arranged by MAS was held to discuss methods of explaining National Marine Fisheries Service stock assessment procedures to fishermen. Attendees included personnel from NMFS, the Northeast Regional Fisheries Management Council and the R.I. Department of Environmental Management (Division of Fish and Wildlife).

Living Within the University

The outgoing MAS director served as a member of the URI Sea Grant Program executive committee; member of the steering committee of the Center for Ocean Management Studies; member of the Graduate School of Oceanography Personnel Review Committee; presidential appointee to the URI Ad Hoc Committee on the Budget Process; presidential appointee as chairperson of the URI Athletics Advisory Board and member of the URI advisory board to the National Sea Grant Depository. He received the URI Administrative Excellence Award at the University's Fall convocation. The new - acting coordinator continued to serve as a member of the University's Publication Committee and was appointed to the Graduate School of Oceanography Affirmative Action Committee.

Planning Ahead

The URI Marine Advisory Service will be entering its tenth year in FY 1980. A close look at the question, "Where do we go from here?", highlighted the need for MAS administrative and specialist personnel to examine issues surrounding MAS's future potential and its growth over the next ten years. These issues included: 1) new staffing areas; 2) factors influencing the shifting priorities of existing personnel; and 3) changing relationships with cooperative agencies and groups. Staffing requirements for URI/MAS have just about peaked. Manpower projections made for the Office of Sea Grant in the Fall, 1977, indicated that URI/MAS anticipated a staffing cap of approximately 12 FTE's by the year 1990.

A collateral issue deserving attention here is the unique status of MAS field and subject-matter specialists in a state as geographically small as Rhode Island. The URI/MAS philosophy is that field agents (generalists) are unnecessary in such a

geographical context while field and subject matter specialists who combine the agent responsibility with some research participation or input are better equipped to serve their user audiences. On those occasions when specialists lack detailed knowledge in some specific area, there is sufficient marine-related expertise available throughout the University of Rhode Island to supplement program objectives and goals.

New staffing areas or existing areas needing additional personnel by 1990 will include marine economics, commercial fisheries, marine business management, marine engineering, aquaculture, marine law, coastal zone management, and administration. In most cases the additional personnel will come from summer faculty appointments.

Because of the quality and diversity of abilities and interests among the field and subject matter specialists currently serving in the MAS, there appears to be sufficient justification to assume that past and current projects will endure on their own merits and that existing personnel will yield to shifting priorities and increasingly devote their talents to new areas of concern.

If the specialists are to make wise decisions regarding new directions for programming, they must be informed about a number of factors which will influence such shifting priorities. These factors include energy needs, population shifts, water quality standards, nutritional needs, business strategies, expendable income, public access demands, communication patterns, government regulation and international policy.

To assist the specialists in confronting new areas of concern, they must be responsive to changing relationships with cooperative agencies and groups, be they public or private. These changing relationships will be most apparent in the areas of information dissemination, talent sharing, cooperative programming and future funding. URI/MAS has taken steps in all of these areas to broaden its relationships with other agencies and groups.

In a move to reduce overlapping jurisdictions and to promote sharing of increasingly expensive information resources, the MAS Information Center and the Regional Coastal Information Center were combined. The Principal Investigator of the RCIC

was named to head both units as well as serving as librarian for the Division of Marine Resources Library. Exploration of methods to effect efficiencies in the MAS publications distribution program will continue.

Continued attention will be paid to projects of regional and national significance, with special emphasis on talent sharing and broader dissemination of information about research and advisory projects having extra-state implications.

Additional efforts will be made toward cooperative programming and attraction of additional non-Sea Grant funds for support of a wide range of MAS activities and personnel.

Funding assistance for MAS activities and personnel has come from the National Marine Fisheries Service, Environmental Data Service, Raytheon Corporation, National Fisheries Institute, National Science Foundation, Office of Coastal Zone Management and the University of Rhode Island.

Cooperating URI Departments/Units

Graduate School of Oceanography
Division of Development and University Relations
Division of Marine Resources

Related URI Sea Grant Projects

A/CR-5 Coastal Resources Center
M/PM-1 Program Management
M/PM-2 Program Development

FISHERIES DEVELOPMENT

Background and Need

Prior to the full implementation of the Sea Grant Program, assistance to the commercial fishing industry by the University of Rhode Island centered around sporadic programs conducted by the Department of Food and Resource Economics, the Department of Fisheries and Marine Technology, and the Graduate School of Oceanography and its former Marine Experiment Station. While frequently productive, these activities were very much dependent on the particular advisory/extension interests of individual faculty and staff members and offered the industry little sense of continuity or direction.

The Marine Advisory Service has undertaken many significant fisheries projects since its hiring of a full-time commercial fisheries specialist in 1970. These projects have been in cooperation with the Point Judith Fisherman's Cooperative Association and other interested fishermen from Maine to Cape Hatteras. In Point Judith, the Co-op to which most of the leading boats and skippers belong, has played an indispensible role in forming the direction and providing the necessary feedback for Marine Advisory Service projects. The MAS will continue to promote a high level of interaction with the industry. MAS will respond to the needs of the fishermen in a timely fashion to assist the industry in such areas as the development of new gear, the introduction of more efficient fishing methods, the harvesting and handling of underutilized species, and the dissemination of information regarding fisheries management. There are new challenges facing the fishing industry relative to extended jurisdiction and the Fisheries Conservation and Management Act. Much of the work of the fisheries specialist will be directed toward assisting the industry to develop diversified fishing methods in order that they may comply with the new management schemes and maintain their economic viability.

Objectives

1. To educate fishermen about better harvesting and fish handling techniques and new or improved gear and equipment.

2. To communicate information to fishermen concerning proposed tools for the management of their industry.
3. To offer advisory specialist visibility to industry groups.
4. To exchange fisheries-related information and discuss major issues and technical applications concerning recent fisheries developments.
5. To initiate and/or participate in research projects resulting from industry feedback concerning problems or opportunities in the industry.
6. To develop and prepare proposals for new and supplementary fisheries development advisory projects.
7. To advise individuals and businesses on issues related to entry into, and areas of service to, the industry.
8. To serve on or advise industry, government and public committees as appropriate.

Approach

1. Hold daily face-to-face discussions with fishermen, fisheries managers and fisheries administrators.
2. Arrange demonstrations of new harvesting techniques.
3. Participate in fisheries gear research projects as appropriate and identify, with industry, subjects for Sea Grant research projects.
4. Issue reports, newsletters, pamphlets and other materials, including those of interest from other sources.
5. Serve on local, state, regional and national committees, task forces, etc. as an advisor on industry issues while avoiding an advocacy posture.
6. Plan and conduct an annual Fisherman's Forum as a vehicle to establish dialogue among regional fishermen, fisheries administrators, state and federal agency representatives, legislators and university personnel.
7. Cooperate with personnel from industry, government agencies, the New England Marine Advisory Service, Sea Grant institutions and similar programs in talent sharing activities.
8. Maintain liaison with appropriate representatives of the regional office of the National Marine Fisheries Service and other NOAA Program Operational Elements (POE's).

9. Coordinate interdisciplinary projects related to areas of concern.
10. Stimulate participation by industry representatives in issues of interest.

Progress During 1978

Vessel Propulsion Nozzle Demonstration

In cooperation with the Department of Fisheries and Marine Technology, a demonstration project to install a propulsion nozzle on a fishing vessel has been completed. The data are being analyzed and a final report will be available shortly. There are four new fishing vessels scheduled for delivery to Point Judith in 1979 which, as a consequence of this demonstration project, will have propulsion nozzles installed.

Danish/Scottish Seining

As a result of MAS work done in cooperation with the SNEFDP (Southern New England Fisheries Development Program) there are two additional Scottish seiners in Massachusetts and one in Maine. MAS has assisted many other fishermen obtain information necessary to begin Scottish seining. The commercial fisheries specialist travelled to Nantucket Island, Massachusetts and Kittery, Maine to show films on Scottish seining and to discuss the economics and business aspects of the technique with over 150 fishermen. There was a great deal of interest in Scottish seining, particularly expressed at the Maine meeting which was co-sponsored by T. G. Tobey Co., a fishing gear distributor. Based on the viewing of results from the earlier MAS Scottish seining demonstration projects, additional vessels from Maine and Massachusetts will be engaged in this type of fishing during FY 1980.

Bottom and Midwater Pair Trawling

Six additional vessels from Point Judith and Massachusetts were assisted in gear selection and equipment as well as assistance in fishing operations pertaining to pair trawling. These vessels have approximately 350 hp and are 70 feet in length.

Outboard Power Take-Off Demonstration

In cooperation with the Department of Fisheries and Marine Technology, ICMRD (International Center for Marine Resource Development), and Sea Power Co. of Maine, MAS sponsored a demonstration of a hydraulic power take-off for outboard motors. This gear is applicable to small scale fisheries such as lobstering, longlining, gill netting, or dragging with a skiff.

On-Board TV Monitoring of Gear Performance

The delays in this project caused by defects in the vessel underwater camera and related electronics prevented earlier completion of this project. With assistance from the URI Department of Fisheries and Technology, these defects were overcome and the vessel and equipment were fully operational in FY 79.

The project, supported by Sea Grant and SNEDFP, was intended to allow fishermen to view their own trawls in operation so that they can ascertain the trawls' true operating characteristics and make whatever educated adjustments might be necessary. The TV package consists of a skiff which holds a 40 foot mast bearing the TV camera--the skiff (trailerable) being towed by the fishing vessel.

During the final testing trials it was determined that the power supply, the boat maneuverability and stability and the focusing ability of the underwater camera combined to exclude the successful viewing of commercial trawl gear. Efforts are underway to utilize the electronics for tow tank observation and find an alternative use for the skiff.

Surface Pair Trawling for Needlefish in Chile

The MAS fisheries specialist traveled to Chile for a week in late summer to assist the Fundacian de Chile in evaluating the potential for adapting the midwater pair trawl to surface

fishing for needlefish. A demonstration was set up by MAS to permit the Chilian fisheries representatives to see pair trawling gear in action in the United States during October, 1978. It is expected that the commercial fisheries specialist will return to Chile for their initial pair trawling trials.

Fisheries Publications

In order for one fisheries specialist to answer the large number of requests for information about various types of fishing techniques and gear, several MAS publications have proved extremely helpful. The publications which are answering many often asked questions are:

- Pair Trawling for Herring in New England
- Scottish Seining in Southern New England
- Construction Diagrams for French Polyvalent Otter Doors
- Construction Diagrams for Portuguese Polyvalent Otter Doors

On file with the Regional Coastal Information Center are several other small information packets prepared by the commercial fisheries specialist. They include:

- A list of manufacturers and suppliers of Scottish seining gear
- Scottish seiner deck layouts
- Four-foot Chatham design scallop dredge construction diagrams
- Construction diagrams for the bullrake used for quahogs
- Construction diagrams for the hand tongs used for quahogs

Other Fisheries Development Specialist Activities - 1978

- Conducted annual URI Fisherman's Forum - 150 attendees
- Prepared six issues of the Commercial Fisheries Newsletter - 1900 subscribers
- Conducted numerous discussions with manufacturers and organizations
- Gave a lecture on the Point Judith fishing fleet to the South Kingstown Chamber of Commerce

- Provided information and showed films on Scottish seining to industry audiences throughout New England
- Gave a slide presentation on the differences between the Scottish fishing fleet and the New England fleet to the Lowery Foundation (a nonprofit organization which funds education projects in marine fields)
- Published three marine memos on otter trawl doors
- Conducted a tour of Point Judith for the American Fisheries Society
- Discussed fisheries extension work with representatives from foreign nations
- Arranged for a U.S. fisherman to tour Scotland and go fishing on a Scottish seiner
- Arranged for a Sea Grant marine extension agent from Virginia to take a fishing trip with a U.S. Scottish seiner

Projects Proposed for FY 79

Two Pitch Propeller Demonstration

To demonstrate its fuel saving capability and its towing power, a two pitch propeller will be installed aboard a selected 70 foot fishing vessel. The involvement of MAS and the URI Department of Fisheries & Marine Technology is expected to last 18 months at which time further adoption of use of the propeller by other fishing vessels will depend on the results of the pilot project.

Diesel Engine Maintenance Problems

In cooperation with the Department of Ocean Engineering and the Rhode Island Engine Company, MAS will run tests on actual fishing vessel engines to determine if there is a relationship between air intake temperature, exhaust temperature and premature valve failure. Several engines from Point Judith boats have experienced valve failure long before engine overhauls would normally be expected. The tests will help determine if changes in types of motor oil used, adjustments to the engine itself, or revised maintenance schedules will help to eliminate the costly valve failures.

Single Boat Midwater Trawling Demonstration

Point Judith fishermen and the MAS specialist will work together in developing new gear for off-bottom use. The target fish will be butterfish which, at certain times of year, swim too high off the bottom for catching with conventional bottom gear. Use of this technique should demonstrate improved seasonal catch rates for butterfish.

Documentation of Existing Fishing Gear

In order to facilitate the transfer of fishing techniques and gear to new fishermen or to develop the gear further, it is necessary to know exactly what gear is used at present. According to need, MAS will produce drawings of fishing gear such as bullrakes, scallop dredges, or new types of otter doors. This information will be distributed to fishermen through the MAS information services. Then, for these commonly asked questions, the follow-up services of the commercial fisheries specialist would be needed only in special problem situations.

French Polyvalent Doors

Last year the Department of Fisheries and Marine Technology installed a new type of otter door, called the French polyvalent door, on their teaching fishing vessel, the GAIL ANN. The doors have shown such promise and have generated such interest from the fishing community that MAS will obtain a demonstration set of the French doors and will work with interested skippers to evaluate the effectiveness of their use on small draggers.

Two-Speed Reduction Reverse Gear for Trawlers

The MAS specialist will work to document justification and background information for a potential research project dealing with the use of two-speed reduction reverse gears for trawlers in New England.

Cooperating URI Departments/Units

Fisheries and Marine Technology
Resource Economics
Management
Division of Marine Resources
ICMRD
Ocean Engineering

Related Sea Grant Projects

E/FT-1 Fisheries and Marine Technology
R/F-27 Trawl Testing
A/CR-5 Coastal Resources Center

SEAFOOD TECHNOLOGY

Background and Need

Rhode Island is fast becoming a leader in New England in seafood processing. Existing processing industries within the state are expanding dramatically to handle more round fish and processed products. Existing industries are also consolidating and efforts to attract other New England operations to relocate in Rhode Island have succeeded. Reasons for this overall expansion in the seafood processing industry have included a conscious decision by the Rhode Island Departments of Economic Development and Environmental Management to attract new and expanded processing industries, increased availability of site locations as excessed government lands are made available and an overall feeling of confidence among dealers and processors in the potential of the Rhode Island fishing fleet in providing raw products.

As this expansion occurs, members of the industry and the MAS seafood technologist are becoming more involved in policy and decision making matters as they relate to specific processing areas and the fisheries in general. During the past year, a Rhode Island Marine Management Council, an offshoot of the Governor's Fisheries Task Force, was organized and includes primarily fish dealers, processors and fisheries cooperative members. This Council, working in cooperation with the New England Regional Fisheries Management Council, is a policy group designed to deal with statewide fisheries management issues.

The all-university effort to consolidate and expand research and education programs in food science, with particular and continuing attention to marine foods, was officially completed during the last year. The new Department of Food Science, Technology, Nutrition and Dietetics combined the departments of food and nutritional science, food and resource chemistry, animal science and microbiology. As this new program develops, the MAS seafood technologist will become increasingly involved in its educational and applied research projects.

Objectiyes

1. To serve as liaison between industry and the URI Sea Grant Program for research applications and feedback of potential research projects.
2. To advise seafood processors, dealers and administrators on new product development.
3. To advise seafood handlers and packers on the most efficient seafood handling techniques.
4. To demonstrate the applicability of processing techniques and identify areas of future research needs.
5. To develop incentives designed to stimulate increased interest in, and concern for, improved fish quality.
6. To cooperate with university scientists in research and advisory projects including continued liaison with the URI Food Science, Technology, Nutrition and Dietetics Program.
7. To provide assistance and advice to associations, commissions, agencies and government.
8. To assist industry in operations analysis of processes and procedures.
9. To prepare and/or disseminate technical, scientific, engineering, and economic and business information for the seafood processing industry.
10. To serve as a referral service in identifying sources of technological, scientific, engineering, economic, and business expertise.
11. To stimulate participation by seafood processors, handlers, and dealers in issues of concern to the industry.

Approach

1. Hold frequent personal discussions with seafood processors and dealers.
2. Plan and conduct local and regional programs and meetings including the annual Fishermen's Forum aimed at establishing useful dialogue among seafood dealers, processors, handlers, and fisheries administrators, state and federal agency representatives, legislators, and university personnel.
3. Participate in programming and research planning with the URI Food Science, Technology, Nutrition and Dietetics Program.
4. Participate in research projects as appropriate.
5. Arrange demonstrations of new processing techniques.
6. Assist in technical service programs to assure production of safe and wholesome seafood products.
7. Serve on local, state, regional and national committees, etc., as an advisor on industry issues.

8. Assist industry in application of research results through mass media, workshops, conferences, and seminars.
9. Cooperate with personnel from industry, government agencies and Sea Grant institutions in talent-sharing activities.
10. Issue reports, newsletter articles, pamphlets and other materials of interest from Sea Grant or other sources.

Progress During 1978

Clam Depuration

Technological assistance was provided to the state and seafood processing industry on methods for clam depuration. Scientists and processors have agreed that the methods devised are feasible, yet political concerns within the State have not allowed actual depuration operations to proceed at this time. Presently the seafood technologist is proceeding with transfer of technologies developed for depuration to other facets of the seafood industry. For example, the specialist has worked to apply UV treatment methods and saltwater well production to lobster holding facilities,fin fish processing and aquaculture operations.

Clam Processing Waste Technology

An article entitled, "Research Turns Clam Processing Waste into Commercial Feed for Salmon" was written with the cooperation of the Marine Affairs Communicator for the May, 1978 issue of Quick Frozen Foods. The article was based on research findings and industry application of results of several prior research and advisory projects in which Sea Grant personnel were involved.

Multi-Purpose Processing Plant

The facility has been constructed and equipment is in place for a new multipurpose processing plant which began as a cooperative project between MAS and Amoriggi Sea Foods Inc., last year. The project, funded by the Southern New England Fisheries Development Program (SNEFDP) and the National Marine Fisheries Service (NMFS), is now in the initial debugging phase and demonstrations of the processing, freezing and packaging of five species including conch, squid, ocean quahog, Jonah crab and whelk will continue into 1979. This demonstration phase will emphasize proper sanitation, quality control and efficient processing techniques. To date the Amoriggi investment in this project is over $1,000,000.

Domestic and Export Marketing of Scup

Based on a URI survey that showed scup to be a marketable product with great potential, MAS developed a proposal for SNEDFP which was implemented during 1977 and continued into the past year. Allocation of $26,000 was aimed at developing an image and conscious awareness for the abundant species scup. Strategies for radio, television and news coverage were designed and implemented. Logos, recipes, and brochures all aimed at the southern New England area were devised and produced. All SNEDFP work was aimed at a domestic market. While working with the domestic project, it became apparent to the seafood technologist that industry representatives felt a potential export market for scup was emerging. Based on industry interest, the URI Sea Grant Program made funds available for expansion of the original project to include a preliminary study of foreign markets. Contacts were established and scup samples were sent to Europe and Asia. To date only limited amounts of actual fish have been sold to foreign markets but a great deal of interest continues. Rhode Island processors are now relying on the preliminary information gathered by MAS to establish a broader base for European distribution of fresh and frozen scup for the 1979 spring season.

Offloading and Materials Handling of Fish and Fish Products

A joint project between the seafood technologist and the fisheries specialist was launched early in the year to examine fish handling techniques for both onboard and shoreside handling.

The project, funded again by SNEDFP, began with a NMFS-MAS seminar conducted for fishing industry representatives and equipment vendors to establish interest and need as well as available technology to enter into such a project. The outcome of the seminar provided necessary direction for the project and designated the Point Judith Fisherman's Cooperative as the location of a demonstration project for the automatic offloading, grading, storing and packaging of fish. The seafood technologist and a Co-op official visited Vancouver, British Columbia, Washington, Oregon, California, and Nova Scotia to view automatic sorting, holding, boxing and freezing equipment in operation. A sample of the sorting equipment was installed at the Co-op during the spring and was used to handle high volumes of scup and butterfish. Engineering plans were drawn up for the entire holding, sorting and boxing operation and this plan has been adopted into the Co-op's expansion plans. The new automated facility should be operational as a demonstration unit during 1979. The project, officially scheduled to end in March, 1979, has spurred interest in ports from all over the eastern seaboard interested in adopting similar automated procedures. This project is expected to have regional application for some time to come.

National Fisheries Institute Methods of Analysis

Previously MAS administered a $3,000 grant from NFI to search published material concerning organoleptic, chemical, microbiological or biochemical methods to determine decomposition and/or acceptance and wholesomeness of seafood. NFI has provided an additional $3,000 to continue previous work and to establish some standard methods of analysis for the seafood industry. These standard methods will be submitted to the Association of Analytical Chemists for approval and adoption by the industry. It is anticipated that NFI will continue to ask MAS to administer yearly grants of this type.

Other Seafood Technology Specialist Activities - 1978

- Assisted the Statewide Planning Program in defining needs and establishing facilities guidelines for the present and future Rhode Island fishing industry.
- Continued to serve on the Board of Directors of the Atlantic Fisheries Technologists.
- Continued to serve on the Governor's Fisheries Task Force.
- Served on the American Heart Association (R.I. Affiliate) nutrition committee and assisted in planning the speaking program for a November conference called "Current Perspectives in Nutrition and Cardiovascular Health."
- Collaborated with a professor in Resource Chemistry and NFI on the writing and publication of a journal of abstracts titled "Marine Fish Quality Assessments, Factors and Methods."
- Continued teaching clambake workshops during URI Summer Session.
- Arranged processor/dealer portion of annual Fishermen's Forum.
- Assisted in preparation of Commercial Fisheries Newsletter.

Proposed Projects for FY 80

Food Science, Technology, Nutrition and Dietetics Program Involvement

In an effort to promote deeper involvement between the Marine Advisory Service and the University community and to give more depth to the MAS seafood technology program, the seafood technology specialist was named an adjunct assistant professor with the Department of Food Science, Technology, Nutrition and Dietetics. The anticipated involvement with this department and the new aggressive position of the Rhode Island seafood processing industry has led MAS to jointly cooperate on the following upcoming projects:

A. In cooperation with Grumman Allied Industries, a division of Grumman Aerospace of Long Island, NY, a project to determine hypobaric, enzymatic and chemical processes to preserve fresh fish will be undertaken. Another joint project will study the fish viscera utilization of food enzymes.
B. A lecture and slide program aimed at the application of seafood technology and seafood nutrition for secondary

school home economics classes and seafood consumers will be developed. The program, oriented around fish and shellfish available in Rhode Island waters, will be presented to groups by a member of the URI Food Science Club and cosponsored by MAS and the state Department of Education.

c. MAS is also coordinating for the Food Science Club a Seafood Technologist Intern Program. This program, initiated at the request of the seafood processing industry, through the MAS specialist, will provide on-the-job training for marine food technology students who wish to work in quality control laboratories as fish buyers or to work in processing plants to generally oversee fish quality. The students' curriculum will be tailored to industry needs and the interns will be provided summer employment in participating processing organizations.

Export Marketing of Scup

Based on a preliminary study of foreign markets for scup, the seafood technologist will continue to explore a plan for expanded export potential for this species. The specialist will work with two Rhode Island seafood dealers (one a harvester and one a processor) to join forces in providing European markets with fresh and frozen scup. MAS will coordinate the implementation of the plan. The plan shows great potential in that unsolicited orders have been received which conceivabley exceed the expected total Rhode Island landings.

Seafood Processing Site Locations

A project to ascertain the need by industry for methods to determine feasible and responsive processing site locations will be undertaken in cooperation with the Department of Organizational Management. If significant need and interest is determined, a proposal will be written to implement a research project in FY 81.

Cooperating URI Departments/Units

Food Science, Technology, Nutrition and Dietetics
Geology
Fisheries and Marine Technology
Resource Economics
Management
Division of Marine Resources

Related Sea Grant Projects

A/CR-5 Coastal Resources Center
E/FT-1 Fisheries and Marine Technology
R/T-11 Brine Shrimp
R/T-10 Fish Utilization in Food Service Systems
- - - Enzymatic and Hypobaric Processes to Preserve Fresh Fish

MARINE ECONOMICS/BUSINESS

Background and Need

The purpose of the MAS marine economics/business activity is to provide information of use to businesses, industry and government in decision making processes, to assist fishermen and marine firms in adjusting to federal and state regulations and a changing economy and to offer business advice to marine-related individuals and groups. In the past, most of the MAS efforts have been directed toward assisting commercial fishing interests. Dr. Andreas Holmsen, professor of Resource Economics at URI, who previously held a one-quarter time position with the advisory service has had a long standing personal commitment to the fishing industry. His decision during the past year to give up his advisory duties in favor of increased teaching and research loads prompted the request for funding of a new full-time advisory specialist with interests in business and economics in last year's proposal. Dr. Holmsen reconsidered his decision to leave advisory work and will again be involved in advisory activities on a one-third time basis. His decision is fortunate for our economics advisory program as it relates to commercial fisheries. With regard to other business management oriented issues, this past year has witnessed alternative methods for providing business advice to non-fisheries marine-related firms, groups, and individuals.

The practice of hiring other URI professors with public service interests from the College of Business Administration on a part-time basis to handle the non-fisheries projects proved very successful and beneficial to all parties involved. The advisory service gained the talents and cooperation of individuals with specific skills and interests, be they in management, insurance, accounting, finance or marketing. Professors who have nine-month contracts with the University and wish to engage in marine-oriented public service activities may do so by planning and researching programs and workshops during the summer months and by continuing to be responsive to incoming requests throughout the school year.

Objectives

1. To assist in the improvement of the business management of a broad range of marine business, including commercial fishing operations, seafood processing companies, marinas, boatyards and other such commercial enterprises.

2. To offer expert advice to marine firms, state and federal agencies, banks and individuals.
3. To conduct applied, short-term studies and training programs, and to issue reports on timely subjects of interest to the marine community.

Approach

1. Advise individuals and groups on relevant economic and business management issues.
2. Develop short-term applied research projects and issue timely reports responsive to issues in the marine community, including commercial fisheries and seafood processing.
3. Develop, conduct and participate in seminars, workshops and conferences.
4. Assist in identifying subjects for feedback research projects in the general area of economics and business management.
5. Represent MAS to state, regional and federal agencies.

Progress During 1978

Commercial Fisheries

Because MAS had no advisory specialist directly involved in marine management/economics during the past year, no formal projects assisting commercial fisheries interests were carried out. However, even though Dr. Holmsen was not officially on the advisory service staff, he did continue to receive and answer a number of requests from persons interested in establishing new fishing businesses, hiring persons to work in commercial fisheries and seafood processing businesses, and seeking more information about financial and tax matters as they relate to the commercial fishing industry.

Business Management

As an example of how faculty members with summer appointments with MAS have carried out successful advisory programs, six financial management seminars focusing on managerial interpretation of financial statements and financial ratio analysis were conducted in four New England States over the last year: Rhode Island (2), Massachusetts (2), and Connecticut (1). Thus far, the seminars have reached 100 marina and boatyard owners/operators in New England. The seminars, conducted by two business management professors from the URI College of Business Administration, will continue as demand from New England audiences dictates.

For each seminar, written notes were made available to all participants which formed the basis for the lecture portion of each session. Further, each seminar involved a workshop wherein each participant was given the opportunity to apply the techniques presented to his/her own financial statements.

The seminar received very positive feedback from the participants and from the cosponsoring agencies which included the University of Connecticut Marine Advisory Service, the Massachusetts Cooperative Extension Service and the Rhode Island Marine Trades Association.

Projects Proposed for FY 80

Commercial Fisheries

Past experience has dictated that the details of a large portion of economics advisory projects may not be planned in advance. However, there are four areas in which most of the programming for the coming year will take place. They are:

Finance and Tax Assistance

Because of changes in earning patterns in the fishing industry in recent years brought on by extended jurisdiction, a large majority of questions coming to the economics specialist will center on finance and tax issues. Much of the advice and assistance will be given to potential investors and venture capitalists, fishermen interested in making capital investments and fishermen wishing interpretations of the latest tax laws.

Increased Utilization of Different Fish Species

Now appears to be a time when additional fish species are becoming increasingly marketable. Due to the decline in the international value of the dollar and because some foreign countries are being closed out of certain U. S. fisheries, potential markets for the export of "new" fish species are emerging. Financial advice regarding the economics of entering specific fisheries will be of vital importance in this regard.

Port and Unloading Facilities

With an expanding fishing industry, in terms of volume of fish landed, number of species landed and number of vessels engaged in fishing, much pressure will be brought to bear upon existing port and unloading facilities. Delays in unloading causing loss of dollars to the fishermen and inadequate methods of fish handling for out-of-state and export markets are continual areas of concern. Cooperation of businessmen, economists, engineers and food technologists must take place to make

sound decisions regarding upgrading of ports and unloading and handling facilities and to provide proper layout and operation of unloading and handling facilities.

Economics of Specific Fisheries

Many questions from persons either entering, investing in, or studying the economics of specific fisheries are answered each year by the economics specialist. Of value in answering these questions would be short, but precisely written, informational brochures about the specific fisheries, categorized either by species or vessel size. Examples of such brochures would be purse seining for tuna, mixed-fish trawling, or longlining for swordfish. During the next year it is anticipated that several brochures of interest to New England fisheries would be written.

Business Management

The URI Sea Grant Program has taken a two-dimensional approach toward the improvement of financial management skills and techniques for marina and boatyard managers. First, MAS cosponsored a series of financial management seminars for marina and boatyard owners/operators which were explained earlier. The second dimension of the URI effort involved a Sea Grant research project for FY 79 designed to compile industry average financial ratios for marinas and boatyards in southern New England. During FY 80, URI will explore ways in which the seminars and financial ratio study may be extended to other geographical areas. This activity could take the form of training sessions for those at other Sea Grant institutions wishing to conduct their own survey and seminars or the URI personnel could offer to conduct the actual sessions and gather the research data. The extent to which this project will be pursued will depend on the interest of Sea Grant programs outside New England.

Cooperating URI Departments/Units

Division of Marine Resources
Management
Resource Economics
Fisheries and Marine Technology

Related Sea Grant Projects

A/CR-5 Coastal Resources Center
E/FT-1 Fisheries and Marine Technology
E/ME-2 Resource Economics Ph.D. Program
R/F-26 Capital Stock N.E. Fisheries
R/A-13 Economics of Salmon Aquaculture

MARINE RECREATION AND COASTAL UTILIZATION

Background and Need

In the early days of MAS, considerable discussion was held to determine needs and priorities in the marine community of Rhode Island. Having started with an information center and a fisheries development capability, discussions among MAS administration and specialists--together with other University faculty and extension people--centered around additional areas requesting or requiring advisory service assistance.

Some of the topics explored at that time (Circa 1970) concerned the beginnings of the state's coastal management interest, tourism, recreational boating, beach stabilization and utilization, marine resource economics and a host of other issues stemming from earlier studies by the Stratton Commission, the Bureau of Outdoor Recreation and studies by resource economist Dr. Niels Rorholm, one on the economic impact of Narragansett Bay and a second on the economics of marine-oriented activities in the Southern New England region.

These and other sources suggested emerging recognition of the variety of activities which would have an increasing influence on the businesses and uses of the Rhode Island shoreline. The subsequent withdrawal of the U.S. Navy from prime coastal locations intensified such interest.

Today, the issues of multiple-use of the coastal zone, sound business practices for smaller marine-related firms, coastal protection devices and strategies, sports fishing, environmental concerns, public access to coastal areas, and marine-related events, among others, confirm the need and desirability of MAS projects in marine recreation and coastal utilization. They are aimed at business, government, conservation and public groups to be ultimately of benefit to the universe of coastal users.

Objectives

1. To develop and implement marine recreation and coastal utilization advisory projects for the state, region, and nation.

2. To work directly with business groups such as marine trade associations, chambers of commerce, environmental and conservation organizations, governmental agencies, individual businesses, among others, to identify subjects for discussion and research.
3. To assist in the development of projects and activities which promote public utilization of the state's shoreline and address the issues of multiple-use and resource management.
4. To develop projects which upgrade the education and talents of firms and organizations engaged in coastal businesses.
5. To coordinate resolution of differences in coastal uses.
6. To assist in the identification of issues which may become the subject of Sea Grant research investigations.
7. To collaborate with URI Sea Grant research, education and advisory service personnel in arranging projects responsive to the needs of coastal user groups.
8. To collaborate with representatives of local, state, regional and federal agencies in the development of programs responsive to problems of and opportunities for coastal users.
9. To arrange for the extension and application of appropriate projects to regional and national audiences.

Approach

1. Develop state, regional and national communication links with business, industry, government and public and private groups interested in marine recreation and coastal utilization.
2. Provide mechanisms for feedback from user groups to Sea Grant and other research investigators at URI and around the country.
3. Participate as an advisor to business, government and public and private groups in identification of issues requiring research, study or discussion.
4. Generate publications, discussion papers, reports and other materials, as appropriate, in furtherance of project objectives.

5. Serve on advisory committees to university, governmental and other units as appropriate; to assist and facilitate discussion of appropriate issues.
6. Coordinate interdisciplinary projects related to area of expertise.
7. Cooperate with regional and national groups in talent sharing and the application/extension of locally-developed projects of interest.

Progress During 1978

Boating Industry and Coastal Zone Management

Since 1971 the recreation specialist has worked with marine trade associations and coastal zone management planners to help create a national awareness of the importance of recreational boating and the need for all groups to work together in developing coastal management strategies. Rhode Island has taken a leadership role nationally in planning for improved boating. In this role the specialist has spoken at local, state, regional and national meetings in over 20 states to encourage cooperation between marine trades and coastal management officials.

As a result of his encouragement, the Boating Industries Association (BIA) and the National Association for Engine and Boat Manufacturers (NAEBM) along with many state trade associations are now committed to CZM involvement and the national Office of Coastal Zone Management in Washington now classifies the marine trades as a high profile special interest group that must be involved in management issues.

Under direction of the specialist, over 13 reports dealing with coastal management and boating have been published by MAS.

Also MAS and BIA, after four years of planning, cosponsored the first biannual National Boating Facilities Conference in Newport in October, 1977. This conference generated coverage in national boating publications such as Soundings which based a 2-page article on coastal zone management issues covered by the conference. The 1977 conference set the precedent of cosponsored the biannual event with a Sea Grant Marine Advisory Service, and the 1979 conference will be held in conjunction with the University of California Sea Grant/Marine Advisory Program.

For the past 8 years the recreation specialist has played a successful (both high and low profile) catalyst role nationally in bringing these two groups together and appears, that in most states the groups now recognize the need to work together and the specialist's role will decrease in this context. The specialist will continue, however, to assist both marine trades officials and coastal management planners in dealing with specific management issues as the need arises.

Cold Water Survival and Hypothermia Treatment Workshop

As part of the specialist's involvement in the Rhode Island Boating Council, an exciting workshop for the northeastern states was organized for January 13 and 14, 1979, in cold water survival. The nation's five leading experts, including one Sea Grant researcher from Michigan, agreed to conduct the training session. Up to one hundred Instructor-Trainers will be certified by the RI Boating Council to conduct instructor training programs in the region. During the second workshop day, the Instructor-Trainers will teach others what they have learned. Cooperating agencies include: U.S. Coast Guard, Red Cross, R. I. Canoeing Association, R.I. Marine Trade Association, and the R.I. Department of Environmental Management. The public will be invited to observe the training, watch survival films, and talk with cold water survival equipment manufacturers. Topics of lectures and pool demonstrations will include drowning facts and myths, hypothermia theory, distressed swimmer syndrome, mammalian diving reflex, in-water cardiopulmonary resuscitation (CPR), natural flotation and personal flotation devices.

Marine Diesel Engine Repair Workshop

The 7th annual two-day workshop on diesel engine repair was attended by 15 persons from marinas, boatyards, and National Marine Fisheries Service personnel and was conducted for MAS by the URI Department of Fisheries and Marine Technology in March. As a result of participating in the workshop, attendees have reported increased incomes from the use of their training. Continuing requests for the program and the fact that half of

this year's participants came from marinas previously sending representatives to the workshop, indicates a high degree of continuing interest and success for our efforts over the past years in providing this learning experience.

Rhode Island Boating Council

In order to more effectively address the broad range of issues of concern to recreational boating interests in the state, the MAS specialist helped to establish the Rhode Island Boating Council (RIBC) during the summer of 1977. RIBC is a monthly public forum which brings together representatives of sixteen state consumer/boating organizations with seven state and federal agency representatives. Topics discussed to date include expansion of boating opportunities, boat thefts, boat taxation, legislation affecting boating, boating safety, coastal planning for boating, boating research and the promotion of boating tourism. The MAS specialist, through RIBC, assisted the "Be a Life Preserver" public service campaign of the R.I. Advertising Council during the summer. The specialist organized a training program and workshop for the RIBC on cold water survival and first aid which was held in January, 1979. The specialist continues as the RIBC secretary.

National Marine Recreation Workshops and Programs for MAS Representatives

Following the Rhode Island MAS initiative with the first National MAS Recreation Meeting in October, 1977, held in conjunction with the National Boating Facilities Conference), the specialist helped the VIMS MAS recreation specialist organize a second workshop held in March, 1978 in Norfolk, Virginia in conjunction with the National Sports Fishing Conference. Fifteen MAS specialists and administrators attended representing ten MAS programs. In addition to continuing the exchange of program ideas, the workshop had several other objectives. Among them were: 1) establishing a nationwide MAS recreation network composed of over 80 MAS personnel in Sea Grant; 2) publishing a directory of those Sea Grant recreational people; 3) forming a planning committee for a third workshop to be held in Chicago in the spring of 1979; 4) revising and distributing nationally a "Sea Grant Situation Statement and

Recommendations on Marine Recreation," and, 5) initiating a national MAS recreation newsletter with the first issue edited and published by the URI Marine Advisory Service. The URI MAS specialist took a leadership role in organizing each of these programs. The specialist continues to work closely with the NMAS program in Washington on recreational matters.

Floating Tire Breakwaters

Since its initiation as a Sea Grant research advisory project by URI and the Goodyear Tire and Rubber Company in 1972, about 70 FTB's have been constructed in the U.S. and Canada to protect marinas and coastal installations from waves of moderate size.

This year's activities relative to FTB's included: 1) collaboration in writing of a FTB report published by the University of New Hampshire; 2) completion of a comprehensive fouling community study begun in February, 1977 which will be published as a URI master's degree thesis in the spring of 1979; 3) touring FTB locations with a NOAA film crew producing a National Sea Grant film; 4) presenting papers on FTB technology at two conferences sponsored by the University of Wisconsin at Madison and SUNY at Buffalo; 5) talent sharing with the University of Connecticut MAS on a one-day field tour and lecture on Milford Harbor; and, 6) in cooperation with the Regional Coastal Information Center, publishing a comprehensive FTB literature search and bibliography. While the MAS role in FTB's has diminished as a program priority, inquiries on the subject continue unabated.

Seaweed Nuisance on Bathing Beaches

Several major beaches along Rhode Island's southern shore, especially in the Newport area, have always been plagued with seaweed in the surf zone which has discouraged swimming at ocean beaches. Since 1977, the recreation specialist in concert with the URI Cooperative Extension Service has conducted demonstrations on seaweed disposal. Cultivation of the plants into the sand worked well on test plots at Newport Beach during the last two summers and is being adopted by the city as the primary means of managing the problem while saving thousands of dollars in removal

costs without any loss of beach sand. During the year, two MAS fact sheets (Using Seaweed in the Home Garden, and Cooking With Seaweed) were published and distributed to the public. Seaweed and its use was the theme for the MAS exhibit at the 1978 Rhode Island Boat Show which attracted over 15,000 visitors.

Ecology of Marinas and Boats

Continuing an active interest in providing environmental information on marinas and boats which began with the landmark publication of the 1972 URI study entitled "Ecology of Small Boat Marinas," the recreation specialist participated in a number of activities over the past year. They included: 1) being keynote speaker at a national conference sponsored by the University of Wisconsin, 2) publishing "The Environmental Impacts of Marinas and Their Boats," a comprehensive literature review with management considerations for the boat owner, marina manager and coastal planner, 3) analyzing an aerial survey of all recreational marinas in Rhode Island under a contract from the Raytheon Company for a R.I. "208" areawide water quality planning report, 4) redefining for state planners that a "marina" is "any dock, pier, or moorage facility which serves ten or more recreational boats," 5) supplying the technical information for a "208" Citizen's Policy Committee bulletin on tips for boaters to help keep the waterways clean, safe, economical, and fun, 6) participating in special regional and state meetings on marine sanitation devices (MSD) for boats and influencing the adoption by R.I. of a "leave it to the laws of supply and demand" policy on the establishment of marina pump-out facilities through 1980, and 7) lecturing on environmental impact statements at a Texas A & M marine conference.

Marina Permits Workshop

Thirty marina owners, government officials and URI personnel attended a half-day workshop in October. Practical tips and information about the state and federal construction permit processes were discussed by the government representatives who directly handle and review every marina permit application in Rhode Island. The effect of the meeting was best summed up by

a marina owner who said, "until now many marina owners and I have been saying, 'keep away from the permit agencies', but now I feel that we should go to them first, before submitting our applications." As a follow-up, the recreation specialist and the MAS marine affairs writer are preparing an article on "How to Succeed at the Permit Process" for publication in a national boating magazine.

"Make Way" Brochure

With a developing offshore oil industry and a busy commercial port, support vessels and tankers and cargo ships travel Rhode Island waters each day. It is important for boat owners to realize that large ships operate under constraints. Knowing about those constraints and allowing for them can avoid collisions. To help provide supplemental information to boaters, the recreation specialist and the Sea Grant Coordinator, along with help from members of the Propeller Club of the Port of Narragansett Bay developed an information brochure called "Make Way! Keeping Clear of the Big Ships" designed to supplement traditional sources of information on seamanship and rules of the road. Ten thousand copies of the brochure were distributed through local marinas, boatyards and yacht clubs as well as to shipping company and oil company personnel, and at boat shows.

Anti-fouling Research

With millions of dollars being spent nationally on preventing fouling growth on boat hulls, cooling water pipes, and research tanks, non-chemical alternative controls are attractive. With this in mind a research/demonstration project was initiated by the specialist and Sea Grant purchased an ultrasonic anti-fouling device called "Barnacle Bill." The MERL (Marine Ecosystems Research Lab) research facility at URI will use one of their research tanks for comparative testing of the ultra-sonic device during the next year. Graduate School of Oceanography scientists will study the system's effectiveness and publish their findings.

United States Olympic Sailboat Trials

At the request of the Newport Chamber of Commerce, the specialist arranged to have engineers from the Ocean Engineering Department participate in the state of Rhode Island team which met with the US Olympics site selection committee for the sailboat events. The URI researchers presented tide, current and wind data from the computer model of the state's waters, previously funded by Sea Grant. The team effort paid off and the Olympic sailboat trials will be conducted in Newport in 1980, with pre-trial racing in 1979.

Model Sailboat Competition

The specialist continues to provide program services to the American Model Yacht Association and the Hobby Industry Association of America in planning the Mini-American's Cup Race for radio controlled sailboats in 1980. He has helped the Mini-Cup planners organize and conduct the two previous competitions between international model racers in 1972 and 1977.

Other Marine Recreation/Coastal Utilization Specialist Activities 1978

- Arranged educational exhibits about Sea Grant projects at the Newport and Rhode Island Boat Shows
- Conducted seminars for graduate students at Texas A & M University and the URI Master of Marine Affairs Program
- Presented a paper on marine tourism at a Connecticut conference on tourism development
- Assisted two Narragansett Bay cruise lines in developing educational narratives about historical, biological, physical, navigational and economic highlights of the Bay
- Initiated an archaeological dig on 17th century seaport ruins found at the URI Narragansett Bay Campus
- Cooperated with the URI Department of Community Planning special task force project on the tourist development of the Newport, R. I. waterfront
- Hosted a SCUBA training program in Rhode Island's waters for the West Point Military Academy's SCUBA Club

- Continued as chairperson of the URI Native American Committee, working with Narragansett Indians towards the development of cottage industries for shellfish culture
- Cooperated with the URI Coastal Resources Center staff (A/CR-5) in preparation of recommendations for the R.I. state management of recreational boating and marinas

Projects Proposed for FY 80

Marine Diesel Engine Workshop

The 8th Annual Marine Diesel Engine Workshop will be held in January, 1979 in cooperation with the Department of Fisheries and Marine Technology.

Marine Electrolysis and Corrosion Control Workshops

A series of training programs for boating industry and recreational boaters will be conducted in the southern New England region by staff and graduate students of the URI Ocean Engineering Department. A portable model, instructional instruments and handbooks for use by the trainers are being developed. The program will be designed as a self-contained package which will be available for use throughout the NEMAS network.

Marine Hydraulics Workshop

MAS has had many requests from marina operators asking that it offer a training program on the maintenance and repair of hydraulic systems such as would be found in travel lifts, fork lifts, tractors, and hydraulic steering systems. Work is proceeding with the Department of Fisheries and Marine Technology to design such a program for the region.

Ice Engineering

The recreational specialist will assist researchers from the Army Corps of Engineers CREEL (ice engineering laboratory in New Hampshire) in gathering background information and data

concerning salt water ice conditions which cause half a million dollars damage to marinas in Rhode Island annually.

"GSO Harpoon Seminar"

The first annual special discussion by recognized marine and ocean experts will be organized for April 1, 1979 designed to encourage the exploration of far-reaching concepts for the development and use of the state's coastal resources.

Boat Theft

Intensive interest by participants at the 1978 Northeast Boating Administrators' Conference in Newport led to the formation of a URI Task Force on Boat Theft Information represented by the MAS recreation specialist, Sea Grant researchers, the Departments of Insurance, Industrial Engineering, and Marine Affairs as well as the Rhode Island Police Academy. With dollar value of boat thefts estimated at over $80,000,000 per year and increasing in the U.S., the lack of an effective, coordinated system to provide information on the problem became painfully clear. The first three-day National Workshop on Boat Theft is scheduled for March, 1979 and will bring together key experts from enforcement, insurance, government, boating industry and academia. Strategies will be developed and presented on theft information sharing, prevention, and enforcement. These guidelines and position papers will be published by MAS. Follow-up and spin-off programs are anticipated as a result of this direction-setting meeting.

Surface Temperature Charts

Utilizing data already gathered through previous Sea Grant research projects, members of the Ocean Engineering Department and MAS will produce a publication (similar to the earlier tide and tidal current booklets) focusing on surface water temperatures in Narragansett Bay and Rhode Island coastal waters. This monthly temperature chart will be useful to those concerned with cold water survival and first aid. It may also be useful to the offshore oil industry in complying with OSHA regulations, and for

SCUBA divers, ocean scientists, commercial fishermen and recreational boaters. Currently this temperature data is not available in any convenient format and this publication should become an often used standard of reference.

Marine Recreation Student Interns

In cooperation with graduate programs at Texas A & M University, URI and other institutions, an intern program will be continued to give students an opportunity to participate in special research/ advisory projects which will complement the work of the marine recreation specialist. The two previous interns have now graduated and found employment as marine recreation specialists in Sea Grant programs in Delaware and North Carolina. Both students credit the URI experience as a key factor in their career choices.

International Marine Recreation and Coastal Utilization

The specialist will begin exploring possible involvement in international Sea Grant and recreational and coastal utilization programs of other foreign nations on both a short and long term basis.

Experimental Yacht Design Workshop

The recreational specialist and the Experimental Yacht Society (Florida) are working toward organizing a workshop to explore innovative, non-traditional concepts of designing and building boats with particular emphasis on low energy consumption during construction and highly efficient operation.

Cooperating URI Departments/Units

Management
Insurance
Marketing
Cooperative Extension Service
Ocean Engineering
Community Development
Plant and Soil Science
Resource Economics
Graduate School of Oceanography
Adult and Community Education
Division of Marine Resources

Related Sea Grant Projects

A/CR-5 Coastal Resources
E/FT-1 Fisheries and Marine Technology
R/MR-3 Marine Recreational Fishing

COASTAL MANAGEMENT

Background and Need

Since 1971, URI has had an involvement in the area of coastal management through the activities of the Coastal Resources Center (CRC). The MAS and CRC are units of the URI Division of Marine Resources and share office space and support services at the Narragansett Bay Campus. The mission of CRC, which is partially funded by Sea Grant, (see A/CR-5) is to apply the skills of social and natural scientists within the university and elsewhere to practical problems in coastal zone and marine resources management.

Since its inception in 1971, the Center has been concerned with the development of information and management techniques which resulted in the formal approval of a Rhode Island Coastal Resources Management Program by the Secretary of Commerce in May 1978. To implement the Program, Rhode Island will receive approximately $1,000,000 annually. Throughout the planning phase for the Program and continuing into the implementation phase, the education specialists associated with the URI Division of Marine Resources have received support from the R.I. Coastal Resources Management Council (CRMC) for carrying out public participation/education programs. These programs have included holding numerous workshops and field days, producing exhibits and slide shows, developing speaker's programs, running an annual essay contest, and writing a variety of curriculum materials and public-oriented brochures and flyers.

The Marine Advisory Service's close working relationship with the Coastal Resources Center has remained the reason that it has been unnecessary for MAS to employ a full-time specialist involved in the wide range of coastal management matters. The Center's small and highly diversified staff of specialist have technical expertise in resource planning, fisheries, energy, estuarine ecology and business economics and will continue to provide advisory services in the area of coastal zone management.

Progress During 1978

Exhibits and Slide Programs

Now that Rhode Island is moving into the implementation phase of its Coastal Management Program, a new 24 panel photo exhibit to

to depict the need for continued involvement in planning and management in terms of protecting natural areas, maintaining quality of life and easing conflicting uses of coastal areas was designed and constructed. The portable exhibits are being used in a variety of locations throughout Rhode Island including libraries, museums, schools, banks, boat shows and environmental meetings. Also, an updated slide/tape program explaining how the management program will be implemented was produced.

Curriculum Development

Since 1977, the education specialists have been responsible for the production of two sets of curriculum materials relating to coastal management for use in Rhode Island schools. The first was a very successful, "Down Where the Water Is: A Coastal Awareness Activity Book" and an accompanying "Teacher's Activity Guide to Coastal Awareness." These materials have been widely distributed and to date have been requested by over 450 elementary teachers in Rhode Island and programs in 40 other states including other Sea Grant programs. The R.I. CRMC continues to take responsibility for mailing of the Activity Books and in the last year distributed over 20,000 additional copies. Last year a second set of curriculum materials was produced, this time for the junior high school level. Three different units on People and the Sea were prepared for use in 7th, 8th, and 9th grade English classes. These units, written, edited, and distrubted by MAS, were designed to increase the interest, awareness and involvement of young Rhode Islanders with the sea and its coast so that the students will care enough to protect and preserve it when they have the opportunity and responsibility as decision-making adults. The popularity of these units with Rhode Island English teachers made it necessary for a second 400 copies of each unit to be printed and distributed during the last year.

Speaker's Programs

The first coastal management oriented speaker's program which was begun five years ago focused on barrier beaches and was aimed at secondary school and adult groups. This program, revised and continually updated, continues today. Last year over 50 programs were given to a variety of audiences. Because of expanded use of the Coastal Awareness Activity Book in elementary classrooms, a speaker's program was begun last year to complement its use. Over 130 programs were given to elementary classes in Rhode Island.

Last year also saw the planning taking place with the seafood technologist for a third speaker's program aimed at adult groups and secondary school cooking classes on seafood and nutrition.

Barrier Beach Brochure

A barrier beach poster brochure originally designed to provide technical, yet easily understandable information, about the importance of barrier beaches for a general audience was revised and 10,000 were reprinted for distribution to schools and interested citizens.

Coastal Issues Poster Brochure

A new coastal issues poster brochure designed to accompany the Management Program photo exhibit was written and printed and will continue to be distributed to audiences viewing the exhibit.

Applicant's Handbook

An applicant't handbook, designed to assist people in applying for construction permits to develop new facilities in the coastal region, was written and will hopefully answer the large number of requests each year for information on the subject.

Coastal Resources Essay Contest

The third annual Coastal Resources Essay Contest for junior high school English and Science students was held in the spring. The contest attracted over 125 essays from 28 junior high schools statewide.

Projects Proposed for FY 80

Workshops and Field Days

Five to eight Coastal Issue Field Days for local citizens, planners and teachers will be given throughout the state during 1979. These field days, held at a variety of coastal locations throughout the state, will focus on preservation, protection, and sound management of Rhode Island's barrier beaches, coastal ponds, salt marshes and rocky areas.

Curriculum Development

Since the previous two years have concentrated on the production of curriculum materials for the elementary and junior high school level, the coming year will see the production of coastal-oriented materials for use at the high school level. These materials, supported by background materials from the Marine Awareness Center which include laboratory and field exercises and suggested experimental work in the classroom, will seek to make relevant to the students the role they will play in community planning and action as it relates to coastal management issues.

Speaker Programs

Speaker programs in the elementary and secondary schools and those tailored for public and adult groups will continue.

Cooperating URI Departments/Units

Division of Marine Resources
Division of Development and University Relations
Audio Visual Center
Education

Related Sea Grant Projects

A/CR-5	Coastal Resources Center
R/ES-14	Circulation Dynamics Narragansett Bay
R/CL-1	Physical Models/Ponds
R/CL-2	Waterfowl in Coastal Lagoons
R/CL-3	Macrophytes in Lagoons
R/CL-4	Sediment Transport -- Salt Ponds
R/CL-5	Fish and Fisheries -- Salt Ponds
R/CL-6	Options/Techniques -- Salt Pond Management
---	CZM and MAS - Applications of Remote Sensing

MARINE EDUCATION

Background and Need

Rhode Island is called the Ocean State. It has 419 miles of shoreline, a population of about one million of whom 95 percent live within thirty miles of Narragansett Bay and the Atlantic Ocean. This MAS activity is intended to provide broad-reaching marine awareness and appreciation projects to elementary and secondary school teachers in Rhode Island, to special interest groups, students of all ages, and the public. The projects for the most part are designed for use within the state, but always with the realization that many of the programs are easily adaptable to others interested in marine education throughout the region and nation.

Working primarily with Rhode Island teachers and administrators, the State Department of Education, Coastal Resources Center, selected URI oceanography and education department faculty, regional aquaria and museums, 4-H and YMCA programs, NEMAS educators, and other organizations such as the Audubon Society and the Environmental Protection Agency, the underlying concept is to develop programs that will "educate those who will educate others." Because of this philosophy and the solid relationships between MAS education specialists and the many other education groups, a pyramid effect has evolved enabling large numbers of students and the public to benefit from first-hand contact with highly-qualified marine educators who continue to assist MAS in accomplishing its goals. To facilitate interaction with even more users, a new Marine Awareness Center located at the Narragansett Bay Campus was created during the past year.

Until recently, students and teachers in the state's 40 school districts and the public have had little exposure to, appreciation of, or knowledge about the role that the Bay and the Ocean play in the scientific, cultural, political, social and economic aspects of Rhode Island. Progress in educating the constituency is taking place and the integrated projects proposed for the future will continue to build on the strong base which has already been established.

Objectives

1. To create awareness of and appreciation for the marine environment of the state and region.
2. To educate those who will educate others.
3. To broaden the base of marine awareness to include art, history, music and literature.
4. To provide a clearinghouse for the coordination of efforts at the local, state and regional level in the creation and dissemination of marine-related projects and curricula.

Approach

1. Work with school teachers in developing units and guides for classroom use.
2. Conduct meetings, workshops, seminars and field experiences for teachers, students, interest groups and the public.
3. Coordinate programming with appropriate representatives of the URI Department of Education, the URI Curriculum Research and Development Center, the State Department of Education, the Department of Environmental Management, the URI Graduate School of Oceanography, Roger Williams Park Museum, and the New England Marine Advisory Service.
4. Develop and make available materials of interest to the public.
5. Develop courses and mini-courses for participants in the URI Summer Session.
6. Utilize the media for general interest marine education.
7. Work with environmental education groups for program guidance.
8. Develop displays, exhibits, slide presentations and films for user groups.
9. Provide supportive services for marine education programs of interest to the Rhode Island and regional audience.
10. Solicit feedback from user groups for future programming.

Progress During 1978

Marine Curriculum Development and Dissemination

Marine Awareness Center

Proposals were written to seed funding for the Marine Awareness Center (MAC) located at the URI Narragansett Bay Campus. An award for $14,821.00 from the National Science Foundation was granted to MAS for a dissemination program in marine science for the seventh through ninth grade. The Marine Awareness Center houses the Sawyer Marine Resource Collection, various books, field trip equipment and a vertical file of marine-related articles. Under this grant, MAC personnel will conduct a full dissemination program consisting of workshops reaching target audiences in each of the 40 RI school districts and visits by teachers and administrators to the Marine Awareness Center. The Center is staffed by a Project Coordinator and volunteer assistants.

Marine Bibliography

Full cataloging of marine-related curriculum guides and marine-related periodicals has been completed. A full bibliography has been printed and disseminated to over 300 schools, Sea Grant marine educators and members of the Marine Science Libraries Association. Funding from the National Science Foundation and Sea Grant gives us the capability to update these bibliographies on a regular basis.

Curriculum Information Requests

Local, state, regional and national inquiries about marine curricula were handled by the education specialist. Specific requests were answered from the Sawyer Marine Resource Collection and copies of relevant materials were sent to those requesting them. Requests unanswerable from the Collection were referred to the Marine Advisory Service Information Center, the Regional Coastal Information Center, the National Sea Grant Depository and the Pell Marine Science Library.

Marine Environmental Education Exhibit and Resource Center

Plans for a cooperative effort to establish a marine environmental education exhibit and resource center at Roger Williams Park Museum in Providence, RI, are well underway. The project is now in the advanced design phase and renovation of the site by the city of Providence nears completion.

The design for the exhibit focuses on Narragansett Bay and its relation to people and nature. The People and the Bay section centers around Settling the Bay, the twenty-one coastal communities, Harvesting and Farming the Bay, and Research In and Beyond the Bay.

The Nature and the Bay section includes models, aquaria, and other graphic representations of seven marine habitats, the physical characteristics, the Bay Food Cycle, and a Bay Weather Station. A large fiber optics model of Narragansett Bay is the feature exhibit.

The acquisition of education materials in the form of books, slides, tapes, specimens, etc., for inclusion in the Resource Center in the Museum has taken place over the last year in cooperation with the Marine Awareness Center at the Bay Campus. A URI undergraduate student intern with a background in museum work and the life sciences began in September developing the educational programs which will accompany the exhibit material.

Literature Authored

The marine education specialist authored three articles for marine educators. "Marine Magazines in the Classroom," was printed in the Journal of Marine Education. "Students Who Sail in the Name of Science" was printed by the American Littoral Society in their journal Underwater Naturalist. The third article, "Using Periodicals in the Science Classroom," was printed by the Connecticut Journal of Science Education.

Salts--Seagoing Apprentices Learn Technical Skills

A special new project to design a pilot program of vocational training for young men and women interested in obtaining sea-going jobs was initiated this fall by the marine education specialist. Captain John Lucas, master of the research vessel WESTWARD of Woods Hole, Massachusetts, worked with the education specialist in outlining the program's objectives which are:

1. To inform senior high school students of seagoing job opportunities and show them the realities of working at sea.

2. To prepare students for work at sea through "hands-on" apprenticeships.
3. To build character and self-confidence through sea training, and to give students perspectives on the role of the merchant marine in the nation's economy.

The pilot program will be implemented in the fall, 1979, with regional shore courses and apprenticeship programs administered through the state school system.

National Sea Grant Involvement

The marine education specialist served as co-chairperson for the Sea Grant Education Council meeting at the Annual Sea Grant Association Meeting in New Hampshire in October. He was involved in planning and presenting an all day seminar "Ships, Captains and Merchants--Keepers of the Books". This seminar was designed to assist marine educators to better utilize and locate marine-related historical and literary material in their own communities. In addition, a meeting with New England representatives of the Council of Chief State School Officers brought to light many innovative ways in which education programs developed by Sea Grant educators could be better utilized by various school departments.

School and Public Marine Awareness Programs

Public Presentations

Special slide shows were given to 23 schools and adult groups. Such groups included garden clubs, science fair participants, science groups and professional associations. These shows, in addition to those presented to elementary and high school groups, seek to heighten the awareness of the various aspects that make up the world of water. Also a program was given for the New Jersey Marine Sciences Consortium to address the marine education needs of adults and the public.

Coastal Awareness Day: The RI Science Teachers Association in cooperation with the Coastal Resources Management Council, and the Marine Advisory Service cosponsored a Coastal Awareness Day at the Narragansett Bay Campus on December 2, 1978. The meeting, attended by high school teachers and selected students, was aimed at increasing their awareness of coastal-related research and potential field trip activities. Speakers included biologists, coastal zone planners, and marine ecologists all studying Rhode Island issues. An information packet, prepared by the Marine Awareness Center and the Regional Coastal Information Center, was given to each participant, who will in turn take the information back to their respective school systems. Attendance was 150 and a considerable waiting list prompted the session to be scheduled again in January.

Field Trip Activities

Eight field trips to the URI Graduate School of Oceanography or area beaches were either run or organized by the marine education specialist. Those benefitting from these trips included 4-H groups, Rhode Island school children and a group of 40 students and teachers from the Newport, Vermont school system. As in the past, materials were given to these students before and after their field trip to heighten their awareness of what they had seen and to further their interest.

Career Education

The marine education specialist continued to be involved in the RI State Department of Education's Experience-Based Career Education (EBCE) project. He supplied a visiting area for students who wished to sample the work of Marine Advisory Service specialists. These students, from various Rhode Island high schools spent from one to four days at the Marine Awareness Center. Short tours of the Bay Campus were arranged and support material was issued to each student. Where possible two students who showed a greater interest were given short-term intern positions to increase their understanding of the scope of job opportunities within the Marine Advisory Service and other ocean-related fields. The booklet Marine Related Occupations, A Primer for High School Students was distributed to the EBCE students and to more than 200 other individuals and schools requesting them.

Projects Proposed for FY 80

Marine Curriculum Development and Dissemination

Marine Awareness Center

Continued funding will be sought for further operations of the Marine Awareness Center. Proposals will be submitted to the National Science Foundation for K-6 and 10-12 dissemination programs. This continued funding will give the Marine Advisory Service the capability to further disseminate materials on hand at the Marine Awareness Center and to seek a platform from which we can launch new programs that will answer needs not addressed by current materials. The MAC will also undertake a two-year program designed to share our collection with other New England Sea Grant marine educators. The goal of this program will be to stimulate the development of other statewide marine resource centers with MAC serving as a prototype and provider of support.

New England Resources Publication

The New England Water Study Manual pilot project begun during last year was completed, yet it was the decision of the NEMAS educators not to go ahead with compilation of the complete manual at this time. Because the manual would have contained not only case studies, but also suitable laboratory and field exercises that, for the most part, would be drawn from the curriculum files at the URI Marine Awareness Center, it is proposed that URI work toward publishing a similar volume.

Summer Interns

Two undergraduate students from New England colleges or universities will be selected to take part in a Marine Advisory Service Summer Intern Program. The students would take one summer course and would work in the Marine Awareness Center approximately 20 hours per week. These students would work with the education specialist on curriculum redevelopment projects and help to prepare elementary and secondary level programs on topics such as Narragansett Bay Life and Commercial Fishing in Rhode Island.

Fact Sheets

The writing and printing of twenty new one-page fact sheets are planned for the coming year. Subjects covered by the fact sheets will directly relate to many of the subjects being dealt with in the Narragansett Bay Exhibit at Roger Williams Park Museum in Providence.

Marine Environmental Education Exhibit and Resource Center

The Narragansett Bay exhibit and resource center will be operational during the current fiscal year and nearly all programs of the MAS education specialist will in some manner be correlated with the programs and exhibits planned for the Museum. Relevant educational materials disseminated through the Marine Awareness Center will also be available through the Museum's new resource center. The museum exhibit and resource center, although primarily manned by permanent museum staff members, will also be manned by MAS student interns and docents who will be trained by MAS during the year.

School and Marine Public Awareness Programs

R/V Endeavor

A renewed effort shall be undertaken to more fully utilize the R/V ENDEAVOR, the URI research vessel, as a teaching aid in Rhode Island schools. The URI Marine Superintendent's office receives daily location positions for the ship which will be provided weekly to selected classes. These classes will then plot her position on large classroom maps. Participating teachers will be provided with supporting material regarding geographic locations of the ship and navigation. Classes involved in the project will be studying science, geography or history and will hopefully find that association with the ENDEAVOR will encourage improvement of mapping, mathematical, and geographical skills.

Narragansett Bay Campus Exhibit

Each year, the Marine Advisory Service receives numerous requests from teachers and organizations for some type of exhibit depicting various Sea Grant research, education and advisory service activities that take place at URI. To answer these requests and provide additional visibility for the Sea Grant marine programs, a small portable exhibit will be designed and produced. The exhibit, scheduled through the Marine Advisory Service, will be aimed at a middle school and public audience.

Marine Education Policy Formulation

Rhode Island and Marine Education

An introductory meeting to encourage coordination of marine education efforts within Rhode Island is planned during 1979 which will bring together all statewide organizations having marine education interests. Invited will be groups such as the Rhode Island Environmental Education Association, Department of Environmental Management, Audubon Society, Cooperative Extension Service, 4-H, Coastal Resources Management Council, Providence Recreation Department, Environmental Protection Agency, and various Departments of Education at both the state and university level. The purpose of this conference will be to formulate a statement of Rhode Island marine education policy which will be submitted to the State Department of Education for adoption by its school systems. The Statement will also be submitted to the National Sea Grant Program in hopes that it will form a model for other state marine education policy statements.

Rhode Island is also playing a prominent role within the Council of Chief State School Officers in marine education policy formulation. Dr. Thomas Schmidt, the Rhode Island Commissioner of Education, has been appointed to the newly formed Marine Education Council within the Council. Further nurturing of relationships between the Marine Advisory Service and the R.I. Department of Education will continue to be vitally important to the level of acceptance that marine education programs will receive within school systems.

NEMAS Educators

In the past, the Marine Education Specialist has worked closely with advisory programs in Maine, New Hampshire and Massachusetts. With the new Marine Awareness Center at URI acting as a vehicle for imporoved working relationships and lending of materials and equipment, we anticipate further cooperation with programs in Connecticut and New York.

National Science Teachers Association

The Marine Education Specialist will serve as marine education coordinator for the 1979 National Science Teachers Association meeting in Hartford. This year marks the first time that NSTA has devoted a full six sessions to marine education and should be a good opportunity for discussing National marine education policy and disseminating URI's marine education materials to a regional and national audience.

Cooperating URI Departments/Units

Education
Graduate School of Oceanography
Cooperative Extension Service
Audio-Visual Center
Division of Marine Resources
Division of Development and University Relations
Summer Session
Zoology
History
Graduate Library School

Related Sea Grant Projects

A/CR-5 Coastal Resources Center
E/FT-1 Fisheries and Marine Technology

MARINE ADVISORY COMMUNICATIONS

Background and need

Print and electronic communications efforts by the MAS writer and publications editor are designed to convey to specialized and general audiences the goals and accomplishments of the URI Sea Grant Program. In addition cooperative projects are undertaken with other Sea Grant communicators on a regional and national basis. These are designed to make audiences aware of Sea Grant activities and to provide them with marine-related information.

Objectives

1. To provide wide exposure for URI Sea Grant projects in research, education and advisory services.
2. To help promote the application of Sea Grant research results by specialized audiences through specialized articles.
3. To provide communications support to MAS activities.
4. To edit, publish and promote Sea Grant publications.
5. To acquaint various media with topical marine issues being addressed by Sea Grant and other university researchers and advisory specialists to complete the feedback loop.
6. To inform specialized and general audiences about the marine environment.

Approach

1. Initiate dialogue with participants in the URI Sea Grant Program to determine communications potentials and needs.
2. Write and supervise distribution of news releases and feature articles to newspapers, trade and professional journals, and other appropriate print media.
3. Arrange for production of radio tapes and TV clips to accompany news/feature releases.
4. Arrange for the writing and production of public service announcements for radio and TV outlets.
5. Write and supervise distribution of bi-monthly MAS newsletter and assist in production of the bi-monthly Commercial Fisheries Newsletter.

6. Collaborate in design and production of MAS exhibits and displays.
7. Cooperate with school and public marine education specialists in the promotion of school and public-related projects.
8. Provide support for all facets of MAS projects.
9. Aid in the identification of broader user groups for Sea Grant products.
10. Work with media personnel to generate an awareness of topical marine issues and to facilitate their access to university specialists and knowledge.
11. Establish uniform procedures for editoring, designing and producing quality Sea Grant Publications.
12. Assist in advertising and distribution of Sea Grant and other marine publications.

Progress during 1978

Information Dissemination

During the year 24 news releases were sent to newspapers, trade publications, organizations and broadcast media to publicize events, to respond to an informational need or to report on research results. These were utilized by not only the state's daily and weekly newspapers but also New England and national papers. The mailing lists used to disseminate this information were continually updated and revised. Special requests were answered to do articles on specific topics such as summaries of discussions at the 1978 Fishermen's Forum, the manufacture of aquacultural feed rations from seafood processing by-products, the Rhode Island Boating Council, historical aspects of the Narragansett Bay Campus, activities of the URI Marine Advisory Service, and descriptions of various marine education projects. These articles appeared in the following publications: NATIONAL FISHERMAN, SOUNDINGS, MAINE COMMERCIAL FISHERIES, QUICK FROZEN FOODS, AND SEA GRANT 70's. The information that electronic media received resulted in features about URI marine research and other activities throughout the year on various news and talk shows. Examples of features were URI's research vessel ENDEAVOR, the Chinese marine scientists' visit to URI, an open house aboard ENDEAVOR, the American Fisheries Society annual meeting and visits to URI of top fisheries officials. Also in conjunction with TV and radio stations, a public service spot designed to market the URI Sea Grant Program Publications Catalog was produced and distributed within the state.

Two special projects were launched with the state's major daily, the PROVIDENCE JOURNAL BULLETIN. One was a series of stories on marine science research and activities written by the paper's science writer on topics suggested by the marine affairs communicator. The other was the preparation of a special issue of the newspaper's Sunday magazine, The Rhode Islander, on the marine life of Narragansett Bay. The issue, called BAY LIFE, was conceived and written by the Sea Grant communicator. She also collected illustrations for the issue from local underwater photographers. The publication, which credited the Sea Grant program, reached an audience of 250,000. The issue was used by teachers throughout the state and is part of an instructional kit on marine life and on loan to elementary teachers. The special issue won for its author the 1978 excellence in science writing award in the newspapers over 100,000 circulation category which is given annually by the American Association for the Advancement of Science (AAAS) and Westinghouse Corporation. The award marks the second time that a URI Marine Advisory Service-sponsored project won the national competition. In 1972 Dennis L. Meredith, then a science editor for URI, won in the under 100,000 circulation category for a series of articles on nuclear power plant siting.

Photographic Services

Photographs and slides were taken by the communicator or the University photographer to illustrate Sea Grant activities, projects and programs. A slide collection on general marine subjects was also begun. To make the slides more accessible for users, a system of cataloging was instituted.

Publications

The Sea Grant publications editor supervised production of 34 research and advisory reports of which 21 were reprints of articles based on Sea Grant research investigations which appeared in refereed professional journals. The Sea Grant communicator helped develop an abstract form which is being used to advertise publications. She abstracted each publication for advertisement and in appropriate cases built a news article around them.

Services to Media Clientele

Personal contacts were maintained with major media outlets in RI as well as with major trade publications in order to initiate story suggestions. Also information on Sea Grant research and advisory projects and names of appropriate contacts were provided upon request to print and broadcast journalists at the local, state regional and national level. Examples follow:

A local news reporter was scheduled aboard a research cruise on the URI R/V ENDEAVOR.

Background information was provided the Providence Journal Bulletin on seaweed problems at the state's bathing beaches.

Assistance was given to a BOSTON GLOBE writer who featured the Point Judith Fisherman's Cooperative and URI's assistance to the Cooperative in the paper's Sunday magazine, New Englander.

The national Sunday supplement, PARADE, featured a story on the effects of the 200-mile limit management efforts on fishermen for which the URI communicator helped provide information. An author writing books on aquaculture and on oceanography schools was supplied photographs and background material. Also, NBC News was supplied information on lobsters for a future feature story.

Help was furnished also to two film crews who featured URI marine activities in their productions. One of the films was on Sea Grant programs across the country. The other, on Narragansett Bay, was partially funded by the URI Sea Grant Program. Its film scriptwriter and photographer received extensive help from the URI communicator in selecting visual material and in setting up filmings both within the university and the marine community in general.

Regional and National Communications Programs

The communicator joined others in the New England Marine Advisory Service Communicators Group in publicizing a bibliography on seafood publications and in developing publicity efforts for the Sea Grant Association National Conference. In July, URI hosted a workshop for the NEMAS communicators which investigated ways that they might help educate audiences on the Fisheries Conservation and Management Act and help develop better communications among the regional council members, fishermen and government fisheries personnel.

At the workshop a plan of action initially developed by the URI communicator served as the basis for a communications program to be undertaken by the regional communicators. This program includes developing educational radio spots for fishermen which would be aired next to marketing news, exploring ways that foster better dissemination of fishery management decisions and upcoming hearings and discussions on management plans, designing educational materials and sponsoring educational programs for the media on fishery issues. The URI communicator will represent the group on the NEMAS Fishery Communications Committee which is composed of Sea Grant, Regional Council and National Marine Fisheries Service representatives which is also trying to resolve communication problems among participants in fishery management and to coordinate efforts in this area of various groups and agencies. As part of the background for this assignment, the URI communicator attended a national invitational conference on limited entry, one issue in fishery management, held in July, 1978.

Another fisheries-related NEMAS project, in which the URI communicator was involved, was participation in Fish Expo, a trade fair for the fishing industry. The URI communicator helped provide ideas from URI Sea Grant personnel to the planners of the Fish Expo seminars, assisted in the set up of a film festival for the Expo, arranged for URI Sea Grant researchers in utilization of seafood processing wastes and in fishing net design to present their results through informal talk sessions in the booth and help staff the booth and distribute publications of interest to the fishing industry.

On a national level, the URI communicator completed the compilation of marine line art contributed by Sea Grant programs across the country. The 165 individual art pieces ranging from fish to lighthouses to cartoons can be used by communicators to illustrate flyers, small brochures, etc. Each program can order (at cost) from the MARINE DINGBAT collection, as it is termed, those pieces of artwork which individual programs would like to have permanently on hand to aid in simple and inexpensive layout and design of various publications.

Projects Proposed for FY 79

Information Dissemination

Continued support to Sea Grant researchers, educators and advisory personnel will be provided by publicizing events, distributing news about research results and their applications and responding to media information needs. Radio and TV news stories and public service announcements will be produced as needed to publicize Sea Grant research results and to convey to audiences information about the marine environment. Marine researchers, advisory personnel and educators will also be scheduled for talk and feature shows.

Special Articles

Several special articles will be prepared for print outlets. One will be a series on marine careers for the marine newspaper SOUNDINGS (Circulation 65,000). Another is a science series on the coastal ponds of Southern Rhode Island which will be published in the weekly newspapers which serve the area. This series is part of a public information and participation campaign on the coastal ponds project which is being developed by the URI communicator and the project's leader. The URI communicator will help oversee the campaign. For a boating magazine, an educational series will be written on the formation of islands and boating around these various islands. This will bring out the latest research results from scientists at URI's Graduate School of Oceanography. Also, an article for the URI alumni magazine (circulation 17,000) will discuss all oil-related research being conducted at URI, much of which is Sea Grant supported.

Utilization of Industrial Publications

In order to expand into an area not yet touched, that of internal publications in state, regional and national industries, a series of stories on marine topics will be prepared and distributed for use during the summer of 1979. These will seek to provide information about the marine environment which will seek to educate audiences on safety, marine life, etc. This project may lead to inclusion of similar material in external publications of industries.

Attempts will also be made to include programs on marine topics in the agendas for meetings of regional media organizations.

Newsletters

The communicator and the half time newsletter editor will continue participation in the writing of the bi-monthly MAS newsletter, the NEMAS Information newsletter and the Commercial Fisheries newsletter. The NEMAS editor will again produce the URI Sea Grant annual report. Articles will also be written by the communicator for the oceanography school magazine MARITIMES.

Visits to Editorial Offices

This time-consuming but necessary activity of regular visits to editorial offices has resulted in several special articles and the promise of additional articles, particularly in trade and special interest publications. In the process, much is being learned about the clientele served by these media and a better picture is being obtained of the audiences being reached by MAS information output.

Publications

In conjunction with the New York Sea Grant Program, the URI Sea Grant communicator will furnish manuscripts to students in the technical journalism program at Rensselaer Polytechnic Institute for rewriting as publications for lay audiences. This is a pilot project which will be handled under the supervision of the communicator.

Cooperating URI Departments/Units

Division of Development and University Relations
Division of Marine Resources

Related Sea Grant Projects

All

USER INFORMATION SERVICES

Background and Need

In March 1978, the Marine Advisory Service Information Center (MASIC) was placed under the administrative supervision of the Northeast Regional Coastal Information Center (NERCIC) since both centers provide user information services and products to a regional audience for the New England Marine Advisory Service (NEMAS). Both MASIC and NERCIC utilize the services and collection of the newly expanded (September 1977) Division of Marine Resources Library (DMRL) also supervised by NERCIC.

All three of these information units are emphatically user oriented, share resources wherever possible, and actively cooperate and interact with other Division of Marine Resources user information components: the Marine Awareness Center (see Marine Education section), the National Sea Grant Depository and the Publication Distribution Unit (see Publications section).

The Marine Advisory Service Information Center responds to requests for marine information in subject areas such as oceanography, resource economics and ocean engineering. Users served include federal, state and local government, industry, academia, citizen interest groups and the general public.

Coastal and marine issues and concerns are interdependent and draw on many of the same disciplines for research, decision-making and problem solving. With MASIC cooperating so closely with NERCIC in providing answers to both coastal and marine questions, duplication of effort is minimized, information aids are shared and the inquirer, particularly the non-expert, receives a prompt and total answer.

A number of other interactions between the various information components contribute to the successful operation of the user information services. The Marine Awareness Center takes advantage of the ordering function and cataloging capabilities of the DMRL. The National Sea Grant Depository and the Publication Distribution unit serve as invaluable additional sources of free, inexpensive or loaned documents, which frequently provide a complete answer to incoming inquiries. In addition, the NSGD cooperates on specific requests and provides computerized searches of their unique data base. The Publications Distribution maintains mailing lists for MASIC and NERCIC.

Objectives

1. To continue to identify and assess national, regional and local sources of marine information.

2. To develop, update and maintain specialized information files.

3. To respond to direct requests for marine information from the broad user community, other information sources and the specialists of the New England-New York Marine Advisory Service (especially URI.)

4. To construct information packages to respond to frequently asked questions, generate short publications, brochures and fact sheets to facilitate transfer.

5. To assist and sponsor pertinent conferences, workshops and presentations.

6. To cooperate and interact with other Division of Marine Resources user information components, and other information sources.

7. To increase the awareness of available sources of marine information of priority user groups, the broad-based user community and Division personnel, especially MAS specialists.

Approach

1. Maintain current information files and maintain relationships with information sources within and without URI.

2. Anticipate events/issues which will generate interest and develop materials for responses.

3. Identify user information request trends and develop packaged responses as appropriate.

4. Give priority to significant inquiries from business, industry and government groups in determing magnitude of customized responses.

5. Conduct periodic surveys to identify groups using the service, the effectiveness of the responses they received and their application of the information.

6. Advise on cost and time savings possible for information service efforts.

7. Meet regularly with MAS specialists to determine their information requirements and those of their client groups.

8. Expand information service efforts as demand, funding and time allow.

Progress During 1978

Reorganization Priorities

The six months following the reorganization were devoted to maintaining response to all incoming marine information inquiries, evaluating the status and scope of the center and constructing a plan to update and streamline existing MASIC resources and integrate these materials into the previously outlined organizational blueprint.

Knowledge Survey

MASIC worked with the URI MAS Coordinator and Communicator in the development of a human resource file outlining areas of expertise of all URI marine-related personal including faculty, staff and students. A survey form was designed for circulation to the URI marine community to ascertain and record special areas of expertise that members of the community may be willing to share with other information center users, and a brief indication of their time limits for providing assistance

The results of this survey were compiled by MASIC for easy reference and access for use in request response and dissemination to interested advisory specialists.

Information Inventory

A concentrated weeding of the existing files of the MASIC has been ongoing for the last six months. This process of eliminating duplicates, consolidating similar information materials and updating entries is time consuming but essential.

Benefits derived from this inventory were:

1. Severe space limitations in the MASIC were accomodated by a reduction and consolidation of the materials.
2. Easier and more efficient access to the information was facilitated.
3. Accuracy and timeliness of the information was insured by updating of materials.

All hardbound books and bulky technical reports, proceedings and the like were pulled from the file cabinets and were catalogued, if needed, into the DMRL collection. They remain available for user research and loan. Duplicate items were pulled and, if timely and pertinent, placed in storage for use when needed. The MASIC reference collection, not updated since 1972/73 for the most part, was updated and augmented. This collection of handbooks, directories and manuals (eg: marine trade association lists, fishing gear manufacturers' directories, etc.) is critical for accurate response to many requests.

A new file, the PIP (see discussion under RCIC), was ordered and materials for input continue to be collected from the existing files, previous requests and other information sources.

Request Form Revision

Coordinated request response was instituted in March. A request form already in existence was revised for use by both MASIC and RCIC and has been adapted for use by the NSGD and MAC. A more concise list of subject areas covered and client types served was developed and aids for statistical compilation and evaluation were added.

Information Packaging

Synthesized answers, bibliographies and lists of referral sources worked up during the course of researching requests were copied and placed in a quick reference file for future use.

Assistance to Fishing Industry

During the past year, the Marine Advisory Service Information Center assisted the URI MAS Fisheries Specialist in determining the need for the publication of a first installment in a series of blueprints to document various types of fishing gear. Prior to this, the often requested diagrams were non-existent, incomplete or not suitable for comprehension of mechanics or reproduction.

Open House and User Seminars

MASIC participated in an Information Services Open House in December to explain the functions and generate increased usage from Division of Marine Resources personnel, including MAS specialists, and other URI users. Seminars outlining the information services were presented to various groups throughout the year including the URI Master of Marine Affairs Program, the US Coast Guard and the Federal Interagency Field Librarians.

Specialized Bibliographies

MASIC recently participated in the update and cumulation of the Rhode Island Marine Bibliography. The format was redesigned for ease of use, programs were written and updated, new information was inputted (particularly an inventory of data sampling stations), a new index to maps and an update file for the next edition was constructed. The union list of articles included in the bibliography was weeded, and new items added.

MASIC also assisted in the compilation of a bibliography for the URI Community Planning School's ongoing studio design project for Newport Harbor. This annotated bibliography was published for public dissemination in December, 1978. Others are planned for next year.

Regional Coastal Information Center

COASTAL INFORMATION is the first Regional Coastal Information Center (RCIC) for the Northeastern United States. Started in June, 1977, as a project of NEMAS (New England Marine Advisory Service), the Center is located at the University of Rhode Island, and serves the information needs of coastal planners, legislators and decisions-makers, federal, state and local governments, commercial concerns, citizen interest groups, researchers and the general public.

The Regional Coastal Information Center Network is a joint project of three components of the Commerce Department's National Oceanic and Atmospheric Administration (NOAA). The Environmental Data and Information Service (EDIS), the Office of Coastal Zone Management (OCZM) and the Office of Sea Grant (OSG) have funded these centers to provide concise and accurate coastal and marine information in the right form to the right people at the right time.

Concentrating on the special concerns of the Northeast region, the Northeast Regional Coastal Information Center (NERCIC) responds to, and determines the region's most critical coastal information needs. In providing a perspective on these issues and concerns, Coastal Information strives to eliminate duplication of effort and gaps in the information base, and to provide current information on coastal issues and problems as they arise--not after.

The Center provides quick access to all sources of coastal-related information. It developed, maintains, and updates three coastal information files, conducts literature searches on coastal issues, and provides full library services to its users.

A newsletter, Coastal Information, distributed bi-monthly, provides up-to-date information on coastal issues, information sources, new publications and related activities in the region.

National Sea Grant Depository

Another separately funded project, under MAS purview since 1977, is the National Sea Grant Depository (NSGO). Established in 1970, its function is to collect and archive copies of all Sea Grant reports, to publish annual indexes, to conduct information searches of its holdings on request, to make copies of Sea Grant documents available on loan and to market the availability of its products and services to a national audience.

In addition to its ongoing responsibilities, the NSGD, during 1978, began to explore more effective communications links with advisory services nationally. Increased marketing efforts led to a 500% increase in loan services. Printed searches of the Depository's collection were distributed nationally. Aquaculture, outer continental shelf resources and fisheries were subject areas covered.

The annual index was condensed into one volume instead of three and directions for its use were simplified. The monthly acquisitions list was designed with a new format and its distribution has since doubled.

During the coming year, more cooperative searches are planned and the NSGD will participate in a computer conference with the Regional Coastal Information Center Network.

Division of Marine Resources Library

The Division of Marine Resources Library (DMRL) was, until September 1977, the coastal planning library for the Coastal Resources Center, the technical arm of Rhode Island's Coastal Zone Management Program when its scope was expanded to respond to the library needs of all Division of Marine Resources components, including the Marine Advisory Service.

The library's collection consists of approximately 3000 volumes with notable special collections in outercontinental shelf oil and gas exploration, alternate energy sources and Rhode Island coastal resources. The library's unique cataloging system is currently being revised and its design published in an information package to assist libraries, agencies or other organizations in setting up a similar collection or fine tuning an existing one elsewhere.

The collection is currently being weeded in anticipation of partial computerization and in preparation for publishing of a frequently requested holdings list. Monthly acquisitions lists, by subject, are circulated to libraries, information centers, researchers and other interested persons.

The DMRL takes charge of publication ordering for all Division personnel. Specific requests for books, journals, newsletters, technical reports, etc., are processed using a simple bookkeeping system. Other materials are selected by the librarian to maintain a well-rounded and timely collection.

DMRL catalogs all documents, compiles request statistics for RCIC and MASIC and maintains and updates all information files. The most important function of DMRL is to serve as the documentary research backup for the RCIC, MASIC, and MAC in their efforts to respond to information requests, to compile information packages, bibliographies and publications and to aid users in their research.

Projects Proposed for FY 80

Utilization of Master File of Information

MASIC continues to add to, utilize and update the master file of documentary information sources developed by the NERCIC.

User Statistics

Continued compilation of user statistics greatly increases determination of particular areas of concern, gaps in the information base, proper selection of new materials and need for information packages or fact sheets.

Information Packaging

Revised request response procedures will continue to aid in determination of need and construction of information packages. MASIC strives to give an answer appropriate to the level of expertise of the user and in time to meet user deadlines. Clients frequently do not have time to search a list of sources and/or documents and may not be able to extract the information pertinent to them because of the highly technical nature of materials. A synthesis of the issues and available information is, in these cases, an often communicated user need. Wherever possible, MASIC will strive to provide this type of answer.

Evaluation of Information Provided

To evaluate the usefulness of the information provided in a particular request (to make a decision to start a business, to solve a problem, etc.) an evaluation form for feedback on prior answered requests will be sent to a representative sample of users. Responses to the evaluation form will hopefully help MASIC in documenting the benefit of their service to the various marine user groups.

Cooperation With Other Information Services

MASIC will continue to cooperate and interact with other Division of Marine Resources information sources. It will also cooperate with other information sources in the region in research, interlibrary loan (ILL) and strive to continue this type of cooperation and to take up specific projects where pertinent.

Selective Dissemination of Information

MASIC will assist DMRL in doing an inventory of all incoming newsletters, magazines, periodicals, press releases and bulletins. When the final list of such items is determined, MASIC will participate in an experimental SDI (selective dissemination of information) project with the NERCIC aimed at the MAS specialists.

The DMRL, NERCIC and MASIC staff members (and any other interested DMR staff) will be responsible for the routine scanning of several predesignated periodicals. Information will be noted for future input into information files. In addition, a list of topics of interest to other DMR members including MAS specialists and top priority users will be given to each SDI participant. Each newsletter or publication will be scanned for pertinent information in these areas and communicated to the requestor.

This experiment is a prototype for the wide scale computerized SDI for priority individuals and critical user groups.

Cooperating URI Departments/Units

Graduate School of Oceanography
Division of Marine Resources
Regional Coastal Information Center
Rhode Island Water Resources Center
Center for Ocean Management Studies
Graduate School of Library Science
Fisheries and Marine Technology
Resource Economics
Community Planning

Related Sea Grant Projects

A/CR-5 Coastal Resources Center
A/COM-1 Center for Ocean Management Studies
E/FT-1 Fisheries and Marine Technology

PUBLICATIONS

Background and Need

Since 1970 the publication unit of the Marine Advisory Service has had the responsibility of handling and distributing the entire annual output of the URI Sea Grant Program. The publishing effort of the Sea Grant Program serves a significant role of relaying information to the people who cannot be reached personally by the advisory specialists and researchers and augments the personal assistance that they render. Presently, we reach with regularity an audience of 20,000 people by direct mailings of newsletters, conference announcements, and special notices, and an additional 6,000 people who request publications.

The number of research, education and advisory publications distributed this year averaged about 55,000 copies - an increase of 10,000 over last year. Approximately 150,000 copies of one-quarterly and five bi-monthly periodicals were sent to an audience of approximately 20,000 individuals, businesses, offices and schools.

This volume of publications is handled by four primary services: the South County Association for the Retarded Sheltered Workshop; the Home Work Program of the Rhode Island State Services for the Blind and Visually Impaired; the URI Mail Room, and a commercial mailing service. Very few mailings are prepared by the MAS administrative staff. Utilization of extra-university services provides direct income for the handicapped workers whose services are used, while relieving the MAS staff of these time-consuming operations.

Bi-monthly periodicals published by the MAS include the Commercial Fisheries Newsletter (1942 subscribers); MAS Newsletter (1390 subscribers); and NEMAS Information (11, 161 subscribers) published for the New England Marine Advisory Service. Periodicals distributed for other URI marine-related components include the quarterly GSO Maritimes (6,601), the bi-monthly CRMC Briefing (4,630) and the annual Marine Affairs Journal (307). Since these periodicals advertise the availability of all the Sea Grant and other URI marine publications, many requests for publications are received directly from these readers, or from others who have read subscribers' copies.

Objectives

1. To disseminate publications resulting from URI Sea Grant research, education and advisory projects.
2. To assure the availability of publications to the marine audience.
3. To make known the results of the Sea Grant projects to as broad an audience as possible.
4. To cooperate with NEMAS and Sea Grant Marine Advisory Services in disseminating regional/publications.
5. To recover the cost of printing and distribution through user charges as appropriate.

Approach

1. Maintain an adequate inventory of publications to assure their availability from MAS over an 18-month period.
2. Assure their future availability from the National Sea Grant Depository and the National Technical Information Service.
3. Determine through user feedback and other means, as feasible, the value and utilization of URI Sea Grant publications in the marine community.
4. Make known the availability of URI Sea Grant publications to as wide an audience as possible in cooperation with the MAS communicators.
5. Maintain and access a master file of mailing addresses.
6. Maintain and update a comprehensive publications index.

Progress During 1978

Distribution

Approximately 55,000 copies of URI Sea Grant publications were distributed.

34 publications were issued during the year, 21 of them reprints of refereed articles in professional journals.

An increasing proportion of Sea Grant-generated information is being published in the open literature. This trend reflects a concerted effort by the MAS to obtain the widest possible distribution of information through traditional outlets.

National Marine Advisory Service Publication Distribution

As part of our effort on behalf of NMAS, 1,500 copies of the new U.S. Coast Guard publication on inland rules of the road were distributed to Rhode Island marinas and boatyards, as well as to individual requestors. The publication was also distributed with other marine recreation publications from our booth at the annual Newport Sailboat Show.

150 copies of "Cold Water Drowning - a New Lease on Life", published for the Coast Guard by the Michigan Sea Grant Program were distributed to Rhode Island marinas.

Catalog of Publications

One thousand copies of the first comprehensive URI Sea Grant Publications Catalog were printed and distributed. The catalog contains detailed abstracts of over 300 publications so that potential requestors will recognize the degree of technicality of particular publications. It offers a convenient and appropriate answer to frequent requests for information on our publications in all marine fields, since the titles and abstracts are listed under 16 broad subject categories.

Automated Publication Control System

During this period, progress has been made toward achieving an automated publication control system. Computer programs have been obtained and a system is being developed for real-time on-line input of data to the publications information data base currently maintained on punched cards.

The present punched card data base is used to generate printed indexes, sequenced by corporate author, subject, title, National Sea Grant Depository accession number, MAS inventory location number and Marine Publication Series Number. These lists are used to coordinate the publishing and distribution efforts conducted at three geographically separated offices. It is hoped that a system can be developed for meeting periodically recurring reporting requirements, as well as providing instantaneous access to specific information about the current status of each publication. The system would also deliver complete and timely information needed to make decisions on reprinting and on retirement of publications that are obsolete or for which demand has diminished. To develop criteria for this intended use, the investigator attended a seminar sponsored by a publishers' association, entitled "How to Manage Inventory - Guidelines for Reprinting".

Abstract Distribution

An abstract distribution program was initiated designed to reach all technical and managerial personnel at URI having marine interests, all Sea Grant communicators, and all personnel listed in the NOAA Marine Advisory Service Directory.

Concurrent with the initiation of this program, the number of hard copy publication copies distributed on a blanket list was reduced to only those agencies, libraries and individuals who required the full publication, either by contract obligation or real need. This policy change will result in a considerable annual saving in printing costs and will permit longer print runs for publications really needed and reprinting of popular publications exhausted by demand.

Address List Maintenance

This unit is responsible for the maintenance of distribution lists for all Sea Grant related activities, but also includes additional maintenance responsibilities for other URI marine-related activities.

The current master file of addresses stands at approximately 20,000. Major increases were incurred to provide services to the new Regional Coastal Information Center (731 addresses) and the Center for Ocean Management Studies (3,216 addresses). These are new programs and their audiences are expanding rapidly.

A new address list of approximately 2,000 addresses was added for distributing a monthly newsletter to be published by the Center for Ocean Management Studies. 1,000 of these addresses will probably be entirely new, but another 1,000 will probably already exist in the master address file.

The objective of maintaining one master list for all marine activities is to provide a single source for correct address information, and to provide access by every activity, by means of subject codes appended to each address. Thus, every fisherman is coded "0200", and the marine advisory specialist need only request this code to obtain a complete list of all the fishermen's addresses, whether or not he submitted them for processing. There are 1,112 addresses coded for "fisherman" and 1,942 addresses on the URI Commercial Fisheries subscription list. Our computer programs can combine these two lists without duplicates, and select by geographic region from the combined set.

Some lists, like the ones for the New England Fisheries Steering Committee (4,000 addresses) and the Atlantic Fisheries Technologist Association (1,500 addresses) are maintained separately for these organizations for a service charge.

Major master address file deletions were accomplished for the re-located Law of the Sea Institute (1,500 addresses) and for NEMAS Information (460 addresses deleted) and Maritimes (960 addresses deleted). Since many of the Maritimes subscribers are also subscribers to NEMAS Information, both subscriptions were deleted if the subscriber failed to return a subscription renewal card that was printed on the back cover of two consecutive issues of Maritimes. Over 6,000 subscription renewal cards were processed and at least 25% of these indicated a change in title, location or name.

To make additions, deletions, or changes in the master file, each address is looked up in the file. If the addressee already appears in the file, the code for the program submitting the address is added to the existing address. If the addressee does not appear in the master file, in any form, then the entire address and associated code is added to the file. Additionally, the address is coded for type of organization (i.e., government, industry, etc.) and type of activity (i.e., environmental, regulatory, etc.) as well as for specific implied or expressed interests and subscriptions to be sent.

Cost Accounting and Tracking System

A manual simulation model of a computerized cost accounting and tracking system was used to test the systems design concept. The simulation model consisted of a 3.5 file card with numbered positions printed along the top and space below for recording the publication title and inventory location number. Below, on the body of the card, a box for recording a date was numbered to correspond to the numbers along the top of the card. Each numbered position corresponded to each of 19 possible stations that each publication might pass through, from inception to delivery to the distribution center. As the publication moved from station to station, a colored marker was moved from position to position along the top of the card, and the date of movement was recorded on the body of the card. One could tell at a glance just how many publications were in each phase of development, and the current location of any publication.

The three-month test of the manual simulation system for tracking publications showed that such a fine degree of tracking was unnecessary, and that the system it simulated would be a waste of time to program.

On the other hand, a manual simulation model of a publications cost accounting system showed that useful cost data could be conveniently assembled for both periodical issues and monographs. The major stumbling block to success was the precarious route that accounting paperwork traveled through other manual systems that makes it very difficult to obtain complete records. This fault may be the deterrent to accuracy.

The publication tracking system finally adopted was implemented by indexing the pre-publication title into the publications control system, and by filing every transaction pertaining to that title in the same numbered folder. This system gives access to all the information about a particular publication, as long as the inquirer knows at least the subject of the publication and an approximate title.

The cost accounting system will be mechanized, so that cost figures can be added to a computerized data base.

Serial Publication Indexes

The manuscript for a subject index to the first 100 issues of NEMAS Information has been prepared from a punched card file, and copies of the index will be distributed free of charge to all subscribers, as a supplement to issue number 100. The index will be an invaluable resource to those teachers and libraries which have saved past issues, since the periodical covers a very broad range of marine topics of general interest. This index will complement an index to curriculum development materials published by the marine education specialist. That index includes citations to both periodical and monograph literature.

Index to URI Marine Publications

All publications distributed by the MAS Publications Distribution Unit are indexed by title, subject, issuing department, and stock location ("P") number. Each index entry lists the title, URI marine series number or publishers's number, P-number, price, National Sea Grant Depository number, supplier, and publication year or reprint citation.

Thirteen copies of the indexes are distributed to the Marine Advisory Service (3), Publications Office (1), Coastal Resources Center (1), Publications Distribution Unit (2), URI Library (L), Pell Marine Science Library (1), Regional Coastal Information Center (2), National Sea Grant Depository (1), and URI Bookstore (1). The intent is to index all monographs pertaining to marine topics published by URI departments, centers and institutes, and additional publications distributed by the Publications Distribution Unit. The indexes, therefore, are a fairly complete record of all marine-related URI publications and permit the ready identification of the publishers and suppliers of these publications.

Notification of Publication

In accordance with suggestions voted upon by the Advisory Services Committee at the 1978 Sea Grant Association Meeting, the Publications Distribution Unit will send a Notification of Intent to Publish to each advisory program for advisory publications that other programs may be interested in distributing in quantity. Once published, publication abstracts for advisory and other Sea Grant publications, which serve the purpose of Notification of Publications forms, will be sent to representatives of each advisory program.

Projects Proposed for FY 80

Manuscript Promotion

Efforts will be continued and expanded to promote the use of non-Sea Grant funds to publish and/or distribute the results of Sea Grant funded research.

Specifically, other university and state agencies, as well as industry will be encouraged to publish these research results in a format appropriate to the needs of their particular audiences.

Continuing Projects

Many of the functions performed by the manager of the Publication Distribution Unit are activities which continue from year to year. Several of these activities are:

1. Code addresses on the abstract distribution list.
2. Merge the abstract distribution list with the master address list.
3. Updating of Publications Catalog.
4. Maintain publications index.
5. Continue to develop new methods for reader feedback.

Cooperating URI Departments/Units

Division of Development and University Relations
National Sea Grant Depository
Division of Marine Resources
Graduate School of Oceanography

Related Sea Grant Projects

All