

SEA GRANT EXTENSION PROGRAM
SITUATION STATEMENT AND PROGRAM PLAN

NEW YORK

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See Grant #79-001

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SEA GRANT EXTENSION PROGRAM

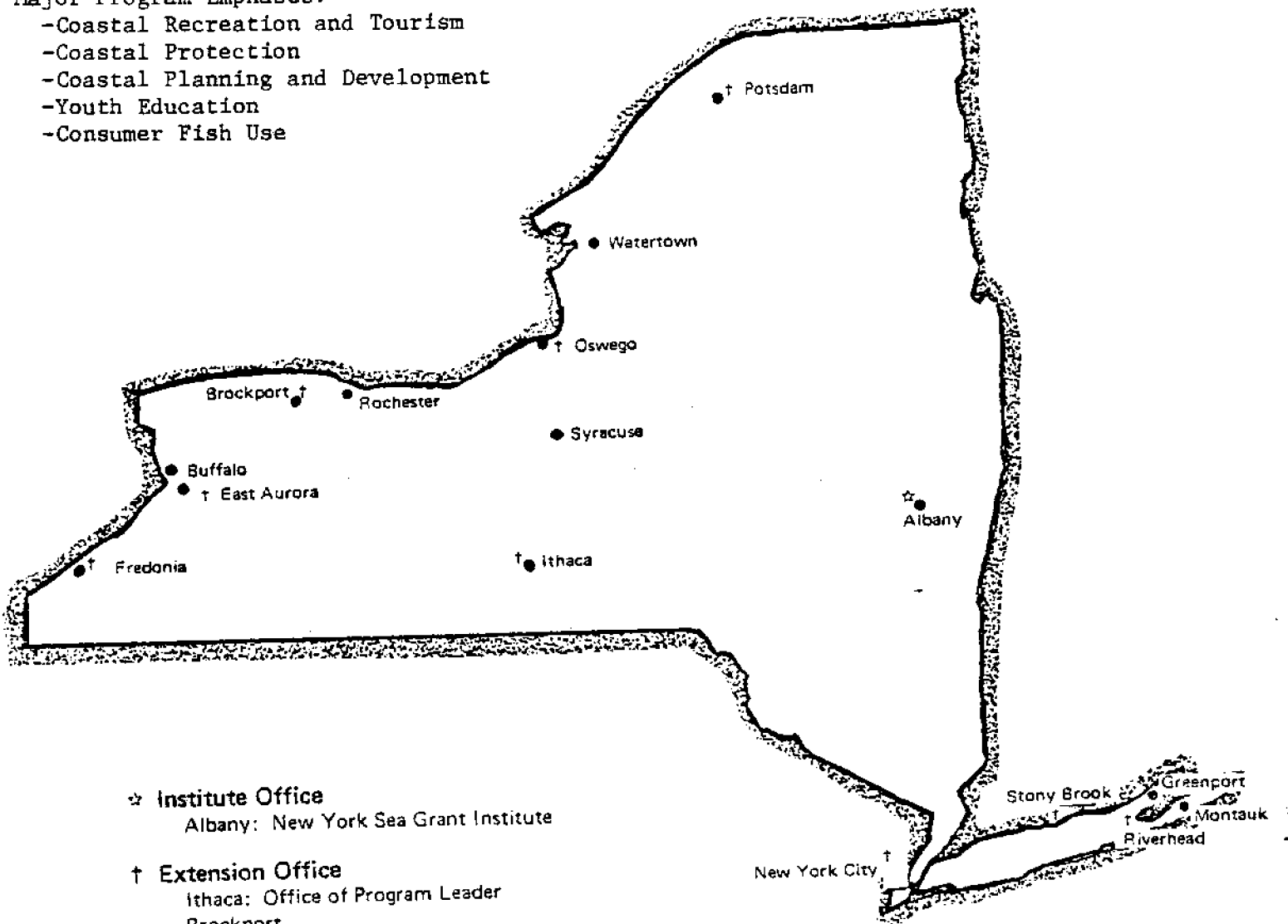
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SUMMARY OF SEA GRANT EXTENSION PROGRAM ACTIVITIES

Great Lakes/St. Lawrence Region

Major Program Emphases:

- Coastal Recreation and Tourism
- Coastal Protection
- Coastal Planning and Development
- Youth Education
- Consumer Fish Use



☆ Institute Office

Albany: New York Sea Grant Institute

† Extension Office

Ithaca: Office of Program Leader

Brockport
East Aurora
Fredonia
New York City
Oswego
Potsdam
Riverhead
Stony Brook

New York City

Major Program Emphases:

- Coastal Planning and Development
- Youth Education

Long Island

Major Program Emphases:

- Commercial Fishing
- Seafood Processing
- Coastal Protection
- Coastal Planning and Development
- Consumer Fish Use

I. PROGRAM PERSPECTIVE

The National Sea Grant mission to enhance appropriate use of our marine and Great Lakes coastal resources is carried out in New York by the New York Sea Grant Institute. This consortium of the State University of New York and Cornell University is one of 12 Sea Grant Colleges designated by the U.S. Department of Commerce.

The advisory service effort called for in the enabling legislation is conducted in New York through Cooperative Extension, and staff carrying forth that work are New York Cooperative Extension employees.

Eighty-five percent (15 1/2 million) of this State's residents live in the 28 counties bordering the Great Lakes and marine coastlines.

Only in New York are significant coasts present on both the Great Lakes and the Atlantic Ocean (600 and 1800 miles respectively). The problems and potentials along these valuable coastlines--where people live, work and play--are many and diverse.

The role of New York's Sea Grant Extension Program is to carry out educational efforts that will help coastal residents, users and decision makers resolve current and projected problems while developing and conserving the coastal resources of New York State. To carry out this role the Extension Program:

- Transfers knowledge to persons who can use it to solve coastal problems.
- Stimulates appropriate persons to apply this knowledge to solving problems.
- Stimulates researchers to generate knowledge needed to solve coastal problems.

These roles are carried out by:

Identifying priority information needs using advisory committees, current research and other sources.

Implementing problem-solving educational programs and activities with: commercial fishermen, marine recreation industries, seafood processors and handlers, consumers of marine foods, marine mining industries, coastal zone decision makers, coastal property owners, marine recreationists, urban minority youth, and others.

Maintaining and further developing working relationships with other agencies and groups so resources are used more efficiently and programs implemented more effectively.

Assisting in developing the directions of future Sea Grant research efforts so they are in accord with needs of the coastal users and the welfare of society.

Increasing the proficiency of the Extension Program staff to execute programs relevant to the needs of coastal users.

To carry out these tasks, there were 22 professional positions in the Sea Grant Extension Program as of January 1979 supported in full or in part by Sea Grant funds. These include Specialists in: Extension offices in Riverhead, New York City, East Aurora, and Fredonia; Specialists housed at State University campuses at Stony Brook, Brockport, Potsdam and Oswego. Located in Ithaca are a Program Leader, Assistant Program Leader, Media Specialist, food scientist and a recreation researchers (1/3 Extension time). See map.

The programs of Sea Grant Extension Specialists vary according to the needs in their geographic areas, but often problems are common to several regions. Following are situation statements describing major problems involving several regions. Long-term educational objectives to resolve such problems are noted. Programs of limited effort or duration have not been included.

For further details consult Specialists' annual Plan of Work.

II. Regional Situations

Long Island

In many respects Long Island is the most marine oriented segment of New York. Its citizens know they live on an island and they value its recreational and aesthetic features. The Nassau-Suffolk Regional Planning Board is New York's closest approximation to regional government. The Regional Planning Board has developed the most sophisticated coastal zone plan in the state. Recreational use of the coastal zone is one of the most important values for Long Island residents. Water quality deterioration, particularly along the Atlantic Coast and Long Island Sound affect water contact sports. In conjunction with the MESA New York Bight Project, an extension effort has been initiated to alleviate some of the tensions which grow during peak utilization of Atlantic beaches when closures through pollution occur. Sixty percent of New York's boaters (over 1.5 million) are located on Long Island causing severe crowding of limited facilities. Often these facilities offer inadequate anchorage, protection, and safety.

Suffolk County is New York's most important agricultural county, but also produces the most marine crops. In fact, Nassau and Suffolk Counties together account for most commercial fishing in the state: 84% of the weight of finfish and 97% of the weight of shellfish landed in the state were from Nassau-Suffolk ports. Although landings data grossly under-report the importance of New York's fishery, hard clams were the most important component with 1977 reported land value of \$18 million, accounting for about 59% of the total national production. Total reported dockside value of fin and shellfish landed in 1977 was \$30.5 million. The 1976 value of processed seafood in New York was more than \$84 million.

Long Island's sand beaches and bluffs are prone to erosion. In Nassau and Suffolk Counties lie 10% of the critical erosion areas of the nation. These two counties, with just 0.6% of the nation's coastline, have as many "Priority 1" erosion sites as the rest of the country combined.

New York City

New York City has a 580 mile waterfront. Today 25% of this waterfront lies abandoned, awaiting productive redevelopment. Its population of 7,646,818 persons, many economically deprived, seek access to the shore for recreation. Industrial uses of publicly owned lands are often inappropriate and return low value to the city.

The metropolitan complex of New Jersey and New York (NY-NJ SCA) remains the largest manufacturing area in the United States, accounting for over 8% of the manufacturing employees and about 8% of the total manufacture value. Its nearest rival is the Chicago SCA with slightly more than 5% of the employees and almost 6% of the added manufacture value. This complex is, to a large extent, fed by the greatest port in the country, the Port of New York and New Jersey. Container facilities here are more numerous and more diverse than those found in all other U.S. ports. Products moved through this port have a value greater than any other port in the country. But with such development comes problems. Although outdated manufacturing facilities and traffic choked on congested highways impede growth in the region, 1 in 4 jobs in New York City depends upon the port functions. Interest is growing in the city's marine heritage: the Bicentennial parade of tall ships sparked a resurgence of public interest in the port and its aesthetics. Over 50 community planning groups are working in New York City. Many are seeking ways to rejuvenate deserted streets and wharfs and provide access to the coast - New York City has grown by accretion, with successive generations filling pierheads, adding to the coastal region a "block" at a time.

While Long Island served as a source of fill in early days, most recently the metropolitan area has become the buyer for the largest offshore mining operation in the world, with an average of over 5.5 million cubic yards of fill per year taken the last decade. Most of the fill comes from sand and gravel operations in New York Harbor. Spoil disposal from maintenance dredging will be a problem as ocean disposal, usually of contaminated material, is banned in 1981.

Yet, through such development, the city has isolated its citizens from the coastal region. Millions of children living within a mile of the shore are barricaded from that shore by expressway traffic, like the Franklin D. Roosevelt Drive and the Shore Parkway. Lack of awareness of the opportunities also bars many of these children from taking full advantage of the resources near where they live. The 1.1 million youth in the city seldom see the water, let alone learn of the importance of coastal resources. Although 40% of high school students drop-out, marine education is seen as a means of stimulating natural curiosity about an aspect of an island environment little known to inner city dwellers.

Waste disposal remains the key problem for metropolitan New York which dumps more sewage sludge and toxic materials in the ocean than the rest of the country as a whole. The effects of both treated and untreated sewage discharge have had a negative impact upon water quality which affects the fishery and recreational opportunities of city residents. Because the metropolitan area is far removed from the acreage required for contemporary alternate disposal techniques, something new will be required for disposal of garbage, toxic materials, and sewage derived nutrients, and soon.

Upstate New York

For practical purposes this area includes the Hudson River estuary (to Troy), the St. Lawrence, Lake Ontario, the Niagara River and eastern Lake Erie. Included are Buffalo and Rochester--the second and fourth largest cities in the state, several smaller cities, and extensive stretches of agricultural land. The region is a primary asset for the state in recreation; considerable attention is currently being directed towards the development of a tourism industry.

A sports fishery initiated by introduction of Pacific salmon and other trout species has given great promise. The fledgling industry saw nearly \$500,000 expended through 23,000 angler trips to the Salmon River region in 1975. Communities along the Great Lakes shoreline are beginning to realize the economic worth, social benefits, and impacts associated with this fishery, as witnessed by the holding of the largest fishing derby in New York State in the spring of 1978. Development of this fishery was slowed significantly in 1976 and 1977 by the discovery of PCBs and Mirex (an insecticide and fire-retardant) at levels high enough to trigger medical concern and the 18-month imposition of a ban on possession of certain Lake Ontario species. Removal of this ban has brought renewed interest in sportfishery growth; however water quality problems remain a critical factor in the future development of a recreation industry and the safeguarding of the health of the general public.

Public access to the upstate coastal region is a major problem. Over 85% of the Great Lakes shore is privately owned. Questions and misconceptions of ownership are present. There are only 9 harbors of refuge along the 325 miles of Lake Ontario shore. In addition, difficulties have arisen in providing additional access due to the needs for wetland preservation and consideration of environmental concerns.

Water levels of Lake Ontario are controlled by the International Joint Commission (IJC) according to Regulation Plan 1958-D which controls outflows through the St. Lawrence River. Because of certain climatic variables and political decision, record high lake levels have been experienced during the last seven years. This situation has increased tension between the riparian owners who feel they are suffering extensive shoreline damage, and the shipping and power interests who have benefitted during this high water episode.

The Ontario shoreline consists mainly of bluffs composed either of clay, sand, or glacial till, making them particularly susceptible to erosion. Recent Sea Grant studies show that many areas have 100-year recession rates of 2 feet/year or greater. In addition, flooding problems become very serious in high water periods during spring and early summer storms. Thus, it is extremely important that shoreline owners along Ontario be made aware of ways to minimize coastal erosion and flooding.

Innovative coastal protection techniques used successfully in other portions of the country are now being adopted, particularly the use of floating tire breakwaters to create better ports of refuge. Adoption of use of vegetation and drainage to enhance stabilization of the bluff areas is increasing.

Recreational and tourism potentials of the Great Lakes region are only beginning to be understood by the citizenry. Local governments, usually composed of part-time representatives, are in need of technical backstopping to assist them in planning and decision-making towards development of their resources.

The 1977 State Legislature lifted the ban on drilling for offshore gas in Lake Erie. However, there has been little guidance given to local communities on the nature of the economic impacts such development may have and of the kinds of demands that may be made on the local services structure.

III. COASTAL ENGINEERING AND DESIGN

Background

Use of New York State coastal areas for housing and recreational purposes has increased the need for protecting coastal properties. With average erosion rates ranging from 1 to 3.5 feet per year along Great Lakes and Long Island Sound coastlines, the social and economic loss to property owners is a critical problem.

Nassau and Suffolk Counties on Long Island include 10 percent of the nation's critical erosion areas with the North Shore incurring annual erosion damages of over \$5 million. Although this area represents only 0.6 percent of our nation's coastline, it has as many "Priority 1" erosion sites as the rest of the nation combined.

Lakes Erie and Ontario have been afflicted by high water levels which have accelerated erosion and flooding damages to coastal properties. In 1973, over \$20 million in damages were incurred by Great Lakes property owners. Damages which occurred during the spring of 1976 were estimated to be over \$2 million. In 1976-77, twelve coastal counties were declared disaster areas by Presidential action after residents sustained severe storm and flood damages.

Marina operators and other shoreline landowners suffer severe ice damage annually along the Great Lakes and occasionally along the marine coast.

Problem

Government and private interests are not effectively coping with coastal protection needs due to the following factors:

Cost - Coastal protection often requires measures which are beyond the financial capability of private and public landowners. Lower cost methods of mitigating coastal protection problems have not been adequately evaluated for application by landowners. In some instances, initially more expensive methods can be cost efficient depending upon longevity and maintenance requirements of the structure used.

Structural Integrity - Premature structural failure is occurring due to faulty engineering design and construction methods. This reduces the lifespan of coastal protection design and materials which would lead to increased effectiveness and efficiency of current techniques.

Lack of Guidelines - Effective application of coastal protection methods requires awareness of coastal processes and correct interpretation of geologic information. Efficient use of resources for coastal protection must include economic and land use considerations. For lack of site specific guidelines, decision makers often make poor decisions on coastal protection devices, involving lengthy permitting procedures by governmental agencies.

Coastal Protection Information - Many coastal landowners are not aware of loans, grants, and income tax options which can assist them in recouping losses from erosion and flooding. They lack knowledge of firms competent in constructing coastal protection devices. There is a lack of public understanding of why coastal erosion occurs and devices which may assist in limiting its effects. Newer techniques, such as bluff groundwater drainage and vegetative plantings, are not being adopted because of lack of local experience.

Approach

Educational programs should provide decision makers with information to solve coastal protection problems in a manner which is economically efficient, environmentally acceptable and physically effective. Establishing coastal bluff stabilization demonstration sites will generate opportunities for experience and evaluation.

Objectives

Have individuals, recreation businessmen and other coastal landowners knowledgeable about, and able to evaluate alternatives on coastal protection, permitting more appropriate coastal protection decisions.

Have professional engineers and contractors become more knowledgeable about coastal processes and structural design methodologies for application to landowner situations.

Have planners become knowledgeable about coastal processes and protection methodologies,

IV. COASTAL TOURISM AND RECREATION: TOURISM

Background

In New York, some 30 million visitor-nights of outdoor recreation, sightseeing, and entertainment occur annually. These visitors spend over \$1.2 billion each year. This money generates 51,000 jobs and \$152 million in taxes.

The tourist industry in coastal counties generates \$262.8 million annually, largely brought in by coastal recreationists.

Tourism is the science and business of attracting, accomodating and serving visitors.

A Great Lakes salmonid fishery is being developed by the State Department of Environmental Conservation. This fishery has enhanced the coastal recreation base and has increased the region's attractiveness. Nearly \$500,000 was expended during 23,000 angler trips to the Salmon River in 1975. Future development of the fishery is hampered by the presence of toxic chemicals in Lake Ontario fish. However, resultant shifts in emphasis to Lake Erie have significantly increased the recreational fishing potential on that coast. There is evidence that tourism in Western New York significantly lags behind that occurring in the remainder of the State while much potential for tourism development exists there.

Tourism is the second most important industry in the St. Lawrence River Region, capitalizing on the river, the international boundary, the 1000 Islands, and the St. Lawrence Seaway. While outdoor recreation opportunities are numerous, indoor attractions are limited.

On Long Island over 250 charter and party fishing boats operate as small recreational businesses and represent a multi-million dollar tourist industry.

Problem

Investments of talent, time, funds, enthusiasm and commitment are required to stimulate, attract and maintain the tourist industry. Scenic beauty and other elements which attract tourists must be protected so they maintain their appeal. The very things that attract tourists may otherwise be exploited to the point of degradation. Attitudes of personnel and decision makers must be attuned to the needs of the industry.

Tourism is a highly competitive enterprise. Unless supported, encouraged and adjusted to current needs, people will be drawn to other regions to recreate; thus, the number of visitors will diminish, and the economic value of tourism will decline.

Approach

Tourism can make an area economically viable and a better place to live and visit.

Communities in several areas of the state should understand tourism and act to foster the type of tourist development that will increase the economic and social benefits to the coastal area without compromising environmental resources.

Objectives

Have the tourist industry and commercial recreation understood and appreciated by community decision makers, business-oriented organizations and community residents.

Have tourism meet area-wide goals

Have community decision makers understand and use tools such as taxation, research, regulations, development, support and education to enhance tourism.

Have coastal oriented tourist and commercial recreation businesses run effectively and profitably.

Increase off-season use of coastal tourist areas.

Stimulate participation of recreationists in activities which will meet their needs in a safe manner and will help the region reach its goals.

Enhance economic viability of tourist businesses.

IV. COASTAL TOURISM AND RECREATION: RECREATIONAL ACCESS

Background

Water based recreation is rapidly growing in New York State, and much of this is occurring along the Great Lakes and marine coasts.

The number of boaters in New York is expected to increase to 4.2 million by 1990, an increase of 28% from 1970. The number of people fishing is also expected to increase from the 1970 level of 3.5 million. By 1990, boating in the New York City Metropolitan Region is expected to be operating at 40% over capacity. Similar pressures are developing along the Great Lakes. In the same time frame, it is expected that about 190,000 New York State residents will be fishing on an average summer weekend day, while accommodations are likely to handle only 150,000.¹ Access to coastal water is increasingly limited, often to the extent that safety hazards exist or recreationists are discouraged from participating. A recent Sea Grant research study found that lack of docking spaces and adequate boat launch facilities were identified as problems by New York boaters.

About 60% of New York's boaters live in the New York/Long Island area. The result is that facilities there are already overtaxed, with inappropriate anchorage in unprotected harbors and at unsafe facilities commonplace.¹ On Lake Ontario, there are only nine harbors of refuge along the entire 325 miles of U.S. shore.

In New York State's 96 miles of coastal Lake Erie, there are only three harbors which have structural wave protection for recreation craft. And, two of these harbor's offshore breakwaters perform so inefficiently as to allow numerous boat sinkings and damages each year. Due to adverse media publicity concerning Lake Erie and inefficient dissemination of coastal recreation opportunity information, this resource is not optimally utilized by residents and tourists alike.

Private enterprise obviously has a role in relieving anticipated access problems. But it is clear that federal, state and local governments will be called upon to assist in providing direct access to water resources and facilities such as harbors.

Problem

Federal, state and county agencies lack accurate assessments of recreational access needs in New York's coastal zone.

Many local communities are not aware of the opportunities and liabilities in creating and developing access.

Individual recreationists and landowners lack understanding of their roles in providing and maintaining coastal recreational access.

Boaters face hazards resulting from lack of safe harbors.

Businesses, governmental agencies and municipalities are not aware of the strengths and limitations of Floating Tire Breakwater (FTB) technology's use in enhancing protection of coastal recreation facilities.

Approach

Major programs in recreational access involve: (1) harbor of refuge development and facilities protection on the Great Lakes, including use of floating breakwaters, (2) management information for private recreational enterprises, (3) diminishing conflicts between recreationists and landowners (largely in the Great Lakes region), and (4) coastal awareness for potential coastline users.

Objectives

Have coastal communities evaluate access needs and the possibilities for public and private provision of access areas, including use of floating breakwaters.

Have coastal communities minimize difficulties resulting from increases in coastal recreation.

- continued -

¹ N.Y.S. Office of Parks and Recreation. 1972. People. Resources. Recreation. - New York's Statewide Comprehensive Recreation Plan. 201 pp.

Have planners and developers recognize and treat recreational access as a major consideration in coastal waterfront development.

Have involved communities and agencies provide adequate harbors of refuge on New York's Great Lakes to allow safe recreational boating.

Have landowners and recreationists needing access to coastal water minimize conflicts.

Have private enterprises (such as charter boat and marina operators) use current technical knowledge to improve and develop facilities that could enhance public access to coastal waters.

Have potential coastline users aware of the recreational and educational opportunities of the coasts.

V. COASTAL PLANNING AND DEVELOPMENT

Background

The coastal areas of New York State have been subject to increasing industrial, residential, commercial and recreational development over the past few decades. To seek a balance between the many and often conflicting demands placed on our nation's coastlines, Congress passed the Coastal Zone Management Act of 1972. The Act encourages coastal states to develop comprehensive programs to guide the use of valuable coastal resources.

New York applied for and received its first grant under this Act in November, 1974. The planning phase of the Coastal Zone Management Program, which runs for four years, is devoted to preparing a management plan subject to federal guidelines. The second or managerial phase commences after New York's program has been adopted and implemented. By its very nature the plan could have significant impacts on boaters, tourists, coastal industries, shoreline residents and the general public.

Problem

The State's coastal zone includes 28 counties, 112 towns, 103 villages, 25 cities, and 4 Indian Reservations, with eighty-five percent of the State's population. In New York City there are 50 community planning boards and more than 20 other agencies with coastal jurisdictions. The Great Lakes and Atlantic areas each possess distinct physical, economic and political characteristics.

Responsibility for the coastal management program in New York lies with the Coastal Management Unit of the New York Department of State (DOS). DOS has sub-contracted coastal management work to approximately 22 different counties, cities, regional planning boards and state agencies, thereby allowing local and regional units of government to perform the planning task. The DOS provides leadership, direction and coordination to subcontractors. They must ultimately bring together this piecemeal set of programs and develop one statewide CZM plan for submission to the federal Office of Coastal Zone Management.

CZM contractors represent the nucleus of New York's Program. They perform the grassroots work and therefore are in closest contact with local user groups, special interests and the general public. However, they often lack the staff and expertise, and at times the desire, to effectively involve the public in the development of the plan. There are often questions of a technical nature (i.e. erosion, access, pollution, etc.) for which subcontractors need assistance.

Approach

Awareness of coastal resource problems and understanding the need for coastal zone management is important. Assistance can be offered in the process of developing the plan, especially in public participation efforts. Technical knowledge and management alternatives should be made available to all, especially planners.

Objectives

- During planning phase:

- Have user groups, special interests and the general public understand the need for CZM.
- Stimulate awareness and increased participation in the development of the plan by user groups, special interests and the general public.
- Have CZM subcontractors familiar with process and skills in carrying out public participation requirements.
- Have CZM planners and others familiar with technical information, planning tools and CZM research results.
- Enhance cooperation with the Coastal Management Unit of the Department of State and other involved personnel.

- During managerial phase (after plan has been adopted):

- Have user groups, special interests and the general public understand what the CZM program means to them in particular.
- Have local decision makers and special interest groups informed of the legal implications and regulations of the CZM program.
- Have local contractors and/or lead state agency kept aware of new research which may effect existing CZM policy and recommendations.

VI. COMMERCIAL FISHING INDUSTRY

Background

The value of the commercial fishing industry to New York State has risen steadily from \$10 million in 1964 to \$32 million in 1976 (not adjusted for inflation). The growth in real value of the industry results primarily from the increased value of shellfish landed, since the dollar value of finfish has not risen accordingly. Of the total landed value of fish for 1976, hard clams accounted for \$18 million and oysters \$5 million. New York is ranked 10th among other states in the landed value of fish and produces over half the nation's hard clams.

Approximately 2,000 full-time and 3,000 part-time fishermen participate in the commercial fishing industry of New York State. As with most food production industries, there has been a decline in some employment sectors. Between 1969 and 1974, the number of fishermen (primarily finfishermen) employed on vessels of five net tons or over fell from approximately 700 to approximately 600. This trend reflects a decline in New York's offshore finfishing industry due to overfishing and increased capital and operating costs.

However, on boats of five net tons or less, the number of full-time and part-time fishermen rose from 1,430 in 1969 to 1,571 in 1974. The number of other part-time fishermen, predominately baymen, also rose from 2,993 in 1969 to 3,155 in 1974. This upward trend reflects the increased value and productivity of shellfish found largely on public bay bottoms.

The United States extended jurisdiction over fishery resources out to 200 miles on March 1, 1977. Extended jurisdiction is expected to prevent an excess of foreign fishing and provide new opportunities for revitalization of the offshore segment of the New York fishing industry, the processing sector and associated shore-based facilities.

Problem

Fishermen are like farmers, in that many small businesses comprise the industry; but fishermen typically harvest a publicly-owned resource, one they have no control over. Thus they are faced with regulations by those "owning" the resource, i.e. town government in the case of most shellfish, state government for fish within three miles of New York's shoreline, the Federal government beyond that point to the 200-mile limit.

Approach

Retention or expansion of New York's commercial fishing industry will be dependent upon several factors including:

1. effective management decisions on the part of individual businesses,
2. development of marketing distribution programs which result in increased returns to the vessel and some degree of control to the fishermen,
3. availability of appropriate facilities for handling and processing of landed fish,
4. appropriate legislation permitting effective management of fishery resources,
5. legislation which promotes efficiency in the commercial fishing industry.

The educational task requires involvement of federal, state and local bodies. Policy makers need adequate information to identify and respond to industry needs. Fishermen must be helped to recognize their own problems and seek appropriate solutions.

Objectives

Have fishermen develop management expertise needed to survive in the face of increasing costs and competition.

Have regulatory agencies understand the pragmatic impact of regulations on the commercial fishing industry in New York.

Stimulate interest in and provide guidance for the development of processing and other shore-based facilities necessary to maintain a vigorous industry.

Have fishermen adopt marketing goals, analyze alternative marketing strategies, and develop marketing distribution programs.

VII. SEAFOOD PROCESSING

Background

New York State ranks first among 11 New England and Mid-Atlantic states in the number of wholesale fish and seafood outlets and is fifth in the number of processing plants. The number of wholesalers declined gradually from 206 in 1959 to 176 in 1973 and then increased to 195 firms in 1976. About one-half of the New York fish wholesalers are located at the Fulton Fish Market in lower Manhattan. Although several fish piers are located at that market, most fish and seafood products are received by truck. Over the years, employment in fish wholesaling and total poundage passing through the Fulton Fish Market has been relatively stable. In 1975 there were 1,554 year-round wholesale employees and 1,758 seasonal workers, nearly twice that of the second-ranked state, Massachusetts. In the same year about 157 million pounds of fresh and frozen seafood passed through the Fulton Fish Market.

In 1975, 35 processing plants in the New York City - Long Island area employed 836 workers. Massachusetts' 120 processing plants employed nearly 4,000 people. In Virginia, Maine, Maryland and New Jersey, there were 133, 97, 90 and 40 processing plants, respectively, in 1975. Fish filleting was the major activity for 15 processors in New York City, 2 processed caviar, and 1 prepared smoked fish. Other processors in the greater New York City area packaged fish and seafood specialty items including breaded shrimp, smoked and cured fish, caviar and anchovy paste, cocktail specialties, fish sticks, cakes, frozen fillets, gefilte fish, canned squid, cod and other seafood products.

In 1976, 42 processors in the New York City - Long Island area were listed with the National Marine Fisheries Service. There were 42 retailers in Suffolk County and 52 retailers in Nassau County. Queens, Bronx, Manhattan and Brooklyn had 69, 71, 93, and 187 retail outlets, respectively. Of the 14 processors on Long Island, most shuck shellfish, principally bay scallops. One company is involved in processing sea scallops. Two process surf clams. There are 2 filleting operations in Suffolk County, 1 fishmeal plant, 1 crab processing operation, and 1 processor of oysters. Although most fish products go directly to the Fulton Fish Market, alternatives to marketing are being investigated. In addition, there were 18 New York processors and dealers along the Great Lakes.

Problems

The Fulton Fish Market is inefficient. Few mechanical aids, insufficient refrigeration and lack of storage space exist. Thus, wholesalers are unable to buy more than they can sell in a day or two. Even though the Fulton Fish Market is said to be one of the largest of its kind in the world, most processors in the area are experiencing difficulty in obtaining raw materials.

The Fulton Fish Market and the majority of other seafood processing plants in New York State are not conducive to a developing fishery. The relatively antiquated methods of many packers and processors do little to encourage the hopes of fishermen who expect to receive a reasonable and stable price for fresh fish in quality condition. While processors in other areas of the New England and Mid-Atlantic states are beginning to take advantage of opportunities relating to extended jurisdiction, New York State for the most part is still oriented to a fresh fish market similar to that which existed 2 or 3 decades ago. Part of the decline in the number of processing plants may be attributed to mergers rather than business failures. In fact, the fresh and frozen seafood industry has been given a tremendous boost by such innovations as quick freezing units and conveyor

belt processing. The value of fresh and frozen packaged fish in New York more than doubled during the period from 1959 to 1970. Processors in New York handled \$9 million worth of fresh and frozen packaged fish in 1959 and nearly \$23 million in 1970. The value of canned and cured seafood in 1970 was about \$39 million. In 1976 the value of processed seafood was more than \$84 million.

There is a tremendous contrast between fish and seafood processing industries and the fish and seafood wholesaling industry. Although the processing industries are gradually growing, the fish and seafood wholesaling industry appears to be stagnant or declining. Few capital improvements have been made, it is known that wholesalers are not adequately supplying the processors' needs, the size of the labor force has been steady for more than a decade, the volume of fish handled and the methodology is much the same today as it has been for the past several decades, and there seems to be no interest on the part of the Fulton Fish Market to make necessary improvements to handle expected increased volumes of fish landed.

Approach

Effective research and educational programs should inform processors in the Long Island - New York City area of up-to-date and innovative seafood processing methods, technology and equipment. Alternatives to present marketing systems should be investigated and export of processed items should be considered. Information on improved overseas and domestic transportation and seafood handling should be provided to processors. Until the Fulton Fish Market is receptive to change, efforts should be directed toward assisting others in the New York City area and on Long Island.

Objectives

Stimulate use of more efficient seafood processing equipment by packers and processors.

Have processors and packers begin to market underutilized species of fish, minced fish and minced fish products.

Have wholesalers, processors and financial interests in New York City and on Long Island become aware of the potential for increased processing of fish and squid as a result of extended jurisdiction.

Encourage the improvement, expansion, and construction of docking and off-loading facilities capable of handling increased volumes of seafood.

VIII. CONSUMER FISH UTILIZATION

Background

While the annual per capita consumption of fish products has risen slightly over the last 20 years (from 10.2 to 12.9 lbs. per average American), the use of fish in the American diet still trails far behind the consumption of other animal protein sources. Annual per capita consumption in the U.S. ranks considerably below that of the majority of other developed industrialized nations. It is estimated that only 1-1/2¢ of the U.S. food dollar is spent on fish products. Much of the fish eaten by Americans can be classified as either processed "convenience" foodstuffs - canned tuna and shrimp, prepared frozen fish sticks - or high cost, less abundant fish foods - fresh shrimp, lobster and other shellfishes, and frozen flatfish fillets. Consumption of abundant but less known and less costly fish species such as ocean perch and freshwater mullet totaled less than a pound in the average annual American diet in 1975. The consumption of fresh fish can be estimated to be 20% of the total amount placed on the kitchen table. Recent studies of seafood consumption patterns indicate that "dining out" accounts for a major portion of the fish consumed by the average American (National Marine Fisheries Service).

The amount of fish caught through recreational sportfishing has recently been estimated as equaling the total domestic commercial catch in this country. While not every pound of this catch is consumed, studies on sportfishing motivation suggest that a large percentage of fishermen eat their catch. This recreational catch can add 26% to the figure of 12.1 lbs. of fish eaten per average American annually (Sportfishing Institute).

As the popular fish species have become more scarce and consequently more costly, food scientists with support from Sea Grant and other agencies have been seeking lower cost fish food alternatives in the form of more convenient foods from underutilized species and innovative aquaculture techniques.

A wealth of information has accumulated during the past 20 years documenting the fact that fish is a nutritious, high protein food, low in sodium and in polyunsaturated fats.

Problem

1. There is disproportionate dependence on the part of Americans, and hence New Yorkers, upon high priced and less abundant prepared and processed fish foods, such as crustaceans, mollusks, tuna and flat fish species. Restaurant consumption of fish is apparently more common than home consumption. This might suggest that expertise in fish preparation is lacking. In a recent fish retailer survey of New York and New England (New England Fresh Fish Committee), 363 store owners including some owners from Albany, Syracuse, Rochester and Buffalo, identified the lack of preparatory and culinary "know-how" on the part of their potential clientele as a severe limitation to the sale and consumption of fish.

2. New fish products using underutilized species are now becoming available. Public awareness of these products, their advantages, and characteristics is needed to establish consumer acceptance of underutilized species and less dependence on scarce stocks of preferable fish.

3. The popularity of recreational sportfishing in the state and the contamination of major water bodies with toxic chemicals requires public education on selection and preparation of fish which may be contaminated.

4. Given the escalating price of high protein animal foods and the importance of the diet in preventing illnesses, there is a need for greater understanding of the economic and dietary benefits of fish food.

Objectives

- Have fish consumers become knowledgeable and skillful in the home preparation, handling and cooking of fish, especially those techniques applicable to low cost, underutilized species.
- Have fish consumers become aware of the benefits of fish in the human diet.
- Have fish consumers become informed of new foods resulting from innovative processing procedures for underutilized or underappreciated fish species.
- Have fish consumers, especially sportfishermen, recognize and understand the potential health hazard of consuming certain fish species from contaminated waters and use appropriate preparation techniques that may minimize ingestion of contaminants.
- Have the fish retailer understand his market, new product developments and the needs of fish consumers.

IX. YOUTH EDUCATION: MARINE DISTRICT

Background

Approximately one out of every seven persons in the New York metropolitan area derive their livelihood from the port; it is the largest port in the nation. The maritime industries offer a wealth of diverse job opportunities for youth who are entering the job market.

New York City schools have an enrollment of 1.1 million youth and employ 48,000 teachers, but with a high school dropout rate of 40%.

Although surrounded by water, city youth are disassociated from the marine environment.

Problem

The future of society depends on youth developing practical and personal skills. One of the greatest motivational tools for developing these skills is relevancy. A shortage of life experiences, inadequate academic skill, and a sense of defeatism contribute to the high dropout rate. Without proper training, jobs will be difficult to obtain.

Wise marine resources management decisions depend on an educated populace. Informed youth are the informed decision makers of tomorrow.

Approach

Sea Grant has assumed a role of training teachers and agency leaders of youth from low income families. This training enables them to undertake educational activities and programs by which youth develop awareness and skills related to the marine environment. The "multiplier effect" deriving from teacher training enables the program to reach a much wider audience. In seven years of existence, the NYC 4-H Program has been able to reach over 150,000 youth by this method.

Sea Grant has coordinated cooperative marine education programs linking marine expertise and teaching resources to teachers and students.

Objectives

- Have marine education recognized and treated by educators and youth agency leaders as a major consideration in coastal development.
- Have marine education recognized and treated by educators and youth agency leaders as a viable tool for personal and educational growth of youth.
- Have youth aware of and identify a relevancy for our coastal resources and their problems.
- Stimulate teachers to undertake marine related educational and recreational activities.
- Have youth aware of career potentials related to the marine environment.
- Stimulate youth to continue education based on a career interest.
- Stimulate educational programs pursuant to marine career opportunities.
- Assure marine industries qualified employees that have pursued educational requirements for specific careers.
- Have youth aware that oceans are a major producer of food.

IX. YOUTH EDUCATION: GREAT LAKES

Background

Many programs involving or related to marine education have evolved independently in Upstate New York resulting from the perceived and actual needs of educators in this region. As a result of this independent evolution, marine education exists in different stages of relative health throughout the region.

Programs in K-12 formal education can be grouped into two general areas: programs resulting from a teacher's desire to bring information to students about a local water body and general marine education. The first generally are aquatic educational courses concerning the Great Lakes and Finger Lakes. Also, information bearing on these locally relevant water bodies is incorporated into existing science and social studies programs. The second area is a desire to study the "salty" marine environment. This is due to its unique ability to present a solid environmental approach to a whole ecosystem. In this case, a program may exist in oceanography because the teacher feels a study of the ocean stands by itself. There is sometimes also a combination of the two approaches to compare a limnological study to an oceanographical one. In short, many teachers or school systems provide water related education for what need they perceive. Teachers working in these areas typically belong to associations of science teachers, social studies teachers, etc.

4-H has long recognized water resources in the area of conservation. The introduction of fishing projects has provided a facet of program material in this area. Other projects such as nature trails, bird study, and entomology are adaptable to water related topics.

In addition to fishing projects, Sea Grant has "tested the water" in Upstate New York through limited programs in career education and marine education. Also, a workshop in October 1977 brought together over 100 interested teachers who showed an enthusiasm for marine education and were representative of the many districts that have need of water resource related information and teaching activities/methods.

Upstate New York has many programs in the informal educational areas. Strong museum and nature center programs exist throughout the State. Foremost in environmental/natural resource programming is the New York State Outdoor Education Association (NYSOEA) which provides Great Lakes educational programs and links the museums and nature centers together. The Niagara Falls Aquarium is a resource for "salty" activities and environments. The State D.E.C. has its Urban Fishing program in the Rochester and Buffalo areas serving as an informal program for youth.

Marine education programs, teachers, and resources exist throughout Upstate New York. The emphasis placed on the time and importance of water resource programming varies due to priorities of program implementors. One factor affecting this is that no clear cut statewide policy concerning marine education has been established on the formal K-12 setting. 4-H has addressed marine education as a subject matter area in its "4-H In Century III" document. However, marine education ranks relatively low in the program priorities of New York Agents.

Approach

1. Statewide K-12 Marine Education Policy has not been established. Specialists (Upstate and N.Y.C.) should work with State Department of Education officials to establish such a policy. This will provide a needed focus in K-12 for teachers and district supervisors.

2. A working complement to a statewide policy in the Upstate area is a Great Lakes chapter of the NYSMEA. Communication among existing programs is thin. Once a need for marine education is given focus by a statewide policy, a decision can be better made by educators whether to utilize existing organizational structures for communications or to create a new association linked with NYSMEA downstate. This problem area is also being wrestled with in other Great Lakes States. Major difference is that New York has an Ocean Coastline and an existing Marine Education Association. The upstate specialist should work to establish an organization of teachers dealing with Great Lakes and Marine topics. Contacts with the State Department of Education and local leaders should be utilized to reach teachers interested in Marine Education. The National Marine Education Association meeting in August on the Great Lakes should provide a concrete example of teacher cooperation and interest in Marine Education on America's fourth coastline.

3. Following up on the Century III document, workshops and individual contacts with 4-H staff and volunteer leaders should stress the importance of marine education. Better understanding of the nature of marine education could give it higher priority hence more use.

4. Collection and development of subject matter material and activity resources should continue to provide needed information to educators. Materials gathered from other states and adapted, specialist developed materials, and college developed materials will compose most of these resources. To this end, further development of links between field specialists and staff of the University and other Sea Grant network personnel should occur.

Objectives

To establish a viable, constructive communications link among marine educators in New York State primarily along the Great Lakes coastline.

To provide up-to-date subject matter, teaching materials and activities for Marine Educators in cooperation with the Sea Grant and the Land Grant colleges of the United States.

To encourage the development of an awareness of and a sense of responsibility toward water involving a new "water ethic" that embraces the proper uses, protection and conservation of oceans, the coastal zone and fresh water resources. This includes career education and use of marine education to generate interest in other related subject areas.

X. APPENDIX

Outline of Economic Development Activities
Conducted by the Sea Grant Extension Program

A. Direct Education Programs

1. Tourism Education

- Business management training
- Hospitality training
- Techniques in using travel research
- Coastal recreation facilities development

2. Commercial Fishing Development

- Business management training
- Identification of new markets
- Implications of the 200 mile limit
- Developing direct marketing

3. Seafood Processing

- New technology and efficiency measures
- New products information

4. Marine Trades (marinas and marine sales)

- Business management
- New technology and efficiency measures

5. Waterfront Development

- Primarily working with communities on waterfront redevelopment options

6. Youth Career Education

B. Support Structure and Activities

1. C.E. Agent Training

- Tourism and hospitality
- Recreational access
- Coastal management

2. Marine Economics Faculty Position

- To be located in Cornell Ag Economics Department

3. Recreation and Tourism

- Partial commitment of T.L. Brown in Department of Natural Resources

4. Current Research Activities

- Hospitality training
- Great Lakes tourism
- New seafood product development
- Marine economics