SITUATION STATEMENT AND PROGRAM PLAN - 1986

New York Sea Grant
Extension Program
Fernow Hall
Cornell University
Ithaca, New York 14853

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SEA GRANT AND THE CURRENT COASTAL SETTING

Background

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. The advisory service effort called for in Sea Grant enabling legislation is conducted in New York through Cooperative Extension; 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, marine coastlines and tidal waterways.

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

Our Roles

The role of the Sea Grant Extension Program in New York is to carry out educational efforts that will help coastal residents, users and decision-makers resolve current and projected problems in developing and conserving coastal resources. 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 and conducting problem-solving educational programs and activities with such audiences as 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 that resources are used more efficiently and programs are 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.

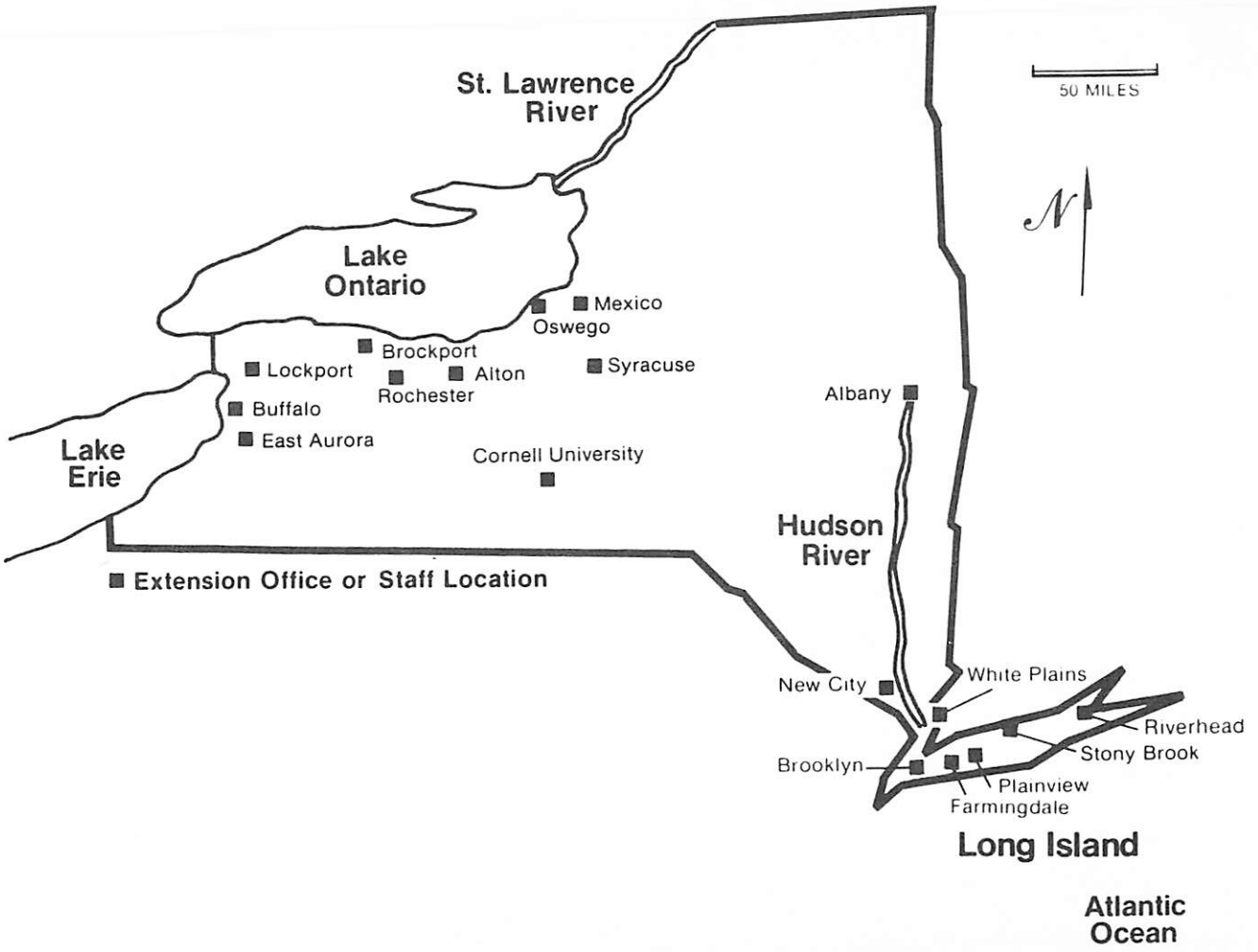
Staffing

In June 1986, there were 31 professional positions (21 FTE) with significant Sea Grant Extension Program commitments. Of these persons, 7 were regional specialists; 6 were college-based subject matter specialists; 15 were county extension staff with Sea Grant education emphasis, plus the Program Leader and Program Coordinators. Numerous additional county extension staff conduct Sea Grant educational programs intermittently.

Longer Term Goals

The programs of Sea Grant Extension Specialists vary according to the needs in their geographic areas, but often problems are common to several regions and the nation at large. 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.

Location of Staff with Significant Sea Grant Extension Program Commitments



COASTAL RESOURCE MANAGEMENT

Background

Coastal resource use potentials and problems do not fit easily within a single technical category either because they are inter-disciplinary in nature or because social, rather than technical, decisions are called for in their solution.

Over 80% of New York's population lives within the state's 28 coastal counties. Use demands placed upon coastal resources by this population are varied (including industrial, commercial, recreational, residential, and agricultural uses) and randomly interspersed throughout New York's 2400 miles of Great Lakes and marine coasts. These uses are not always compatible with natural or ecological characteristics of the coast, with other coastal resource uses, or with local social or economic needs and frequently result in inefficient utilization of resources, conflicts between competing uses and deterioration of the very resources which initially attracted those uses to the coast.

Much existing coastal development has been allowed to deteriorate, degrading both the quality of the coastal experience and the socio-economic base of coastal communities. In some instances entire ways of life, such as those evolved around small harbors, are threatened. Coastal facilities (such as marinas, boat launches, public access sites) are often lacking, old and rundown, or poorly planned/implemented. Revitalization or reuse of existing development could improve the coastal environment and stimulate economic growth in coastal communities. Furthermore, reuse of existing developed shoreline could conserve undeveloped areas which may otherwise face increasing development pressures. New York City, Buffalo and Rochester have made great strides in this area, but further work is still needed in these and other major urban coastal areas.

Waterfront revitalization is also occurring in rural sections of the coast. These efforts have been aided by the 1981 Waterfront Revitalization and Coastal Resources Act which provides for voluntary local waterfront revitalization programs. Since 1983, 115 of the state's 255 eligible waterfront communities have prepared (or are preparing) local waterfront plans addressing topics from tourism and recreation to historical preservation and environmental enhancement.

The continued improvement and protection of the environmental quality of New York's coasts is of statewide concern. The negative impacts of overfishing, of filling important coastal wetlands, of careless discharge of toxic and sanitary wastes, of disturbing highly erosive soils, and of removing valuable agricultural land from production in order to allow for other forms of development are well documented.

Current federal support to environmental impact mitigation programs is declining, yet funding and expertise continue to be needed to ensure improvements in waste treatment, dredging and dredge spoil disposal, erosion control, runoff mitigation, and other resource management functions in order to meet the need for clean water and air, healthy fish and wildlife populations, agricultural land preservation, and an aesthetically-pleasing shoreline.

Problems

New York's coastal zone encompasses 28 counties, 112 towns, 103 villages, 25 cities, and 4 Indian Reservations, and 84 per cent of the state's population. New York City alone contains 50 community planning boards and more than 20 other agencies with coastal jurisdiction. In addition, there are well over 40 state and federal programs or departments actively involved in coastal decision-making. Authorities at various governmental levels often overlap. Private citizens , community groups, local governments and coastal businesses often have difficulty understanding and dealing with this multitude of agencies when planning for and making decisions relating to complex coastal issues.

The New York Coastal Management Program is one of the most complex pieces of legislation with which local governments will have to deal. Since some elements of the program are voluntary and others mandatory, it's essential that local officials understand the full ramifications of their decisions. Staff with a range of coastal expertise are often not found at local levels.

Communication, public participation and a thorough understanding of issues are key elements in devising plans, decisions and inputs. Yet, education is often missing, or only superficially used, when agencies and groups attempt to develop community consensus on important coastal issues. Breaking down barriers of self-interest and lack of information with factual presentations is not easily done and often requires a neutral, trusted information source. Community leaders are often inexperienced in using community involvement mechanisms in coastal decision making

Technical information on coastal issues is often not available in a form readily understandable to community leaders or the general public. Assistance frequently is needed to translate available data into a useful product.

Approach

Sea Grant can help develop and strengthen local leadership capacity in coastal resource management. It is important that leaders be aware of coastal resource problems and understand the need for effective planning. Greater community input can be fostered by educating community leaders on various aspects of public participation. Sea Grant can facilitate communication and

cooperation among coastal resource users and decision makers and facilitate the decision-making process in the coastal zone.

By being a credible, neutral, trusted information and education source, Sea Grant can help bring coastal decision makers together with information available on resource management topics. Sea Grant can help gather and analyze existing information to make projections of what coastal resource issues of the future might be, what opportunities and conflicts might need to be faced, and what alternatives might be considered to make the most of opportunities while minimizing conflicts. In this way, Sea Grant can influence change in public and private perceptions about, and decisions on, coastal resource utilization and conservation.

Sea Grant can assist decision makers in review of alternative coastal development strategies, land and resource use analysis and economic return theory. At the same time, Sea Grant can assist communities and special interest groups by working in concert with other appropriate groups and agencies to identify and interpret coastal research projects.

Objectives

- To have state and local government agencies, community and business leaders, special interest groups, educators, the media, youth, Cooperative Extension agents, entrepreneurs, and concerned individuals consider and utilize technical analyses, based on state-of-the-art research, to fully plan or evaluate proposed coastal resource management activities including land use planning, local waterfront revitalization, tourism support facilities, shoreline access, water surface use, and related topics.

- To have community leaders, decision makers and investors gain an increased awareness of the current and potential uses of the coastal zone, and the actual or potential impacts of such uses.

- To have community leaders and user groups better understand resource issues, and thus more positively involved in identifying trends and opportunities affecting their communities and in making resource use and development decisions.

- To have local government, special interests and concerned citizens identify and strengthen communication channels and linkages on coastal resource topics.

- To increase and strengthen the pool of local leadership and its capabilities in coastal resource management (policy, planning, use, conservation, restoration) programs.

- To have local governments and special interest groups more fully explore the potential benefits and restrictions which

participation in New York's Coastal Management Program could bring, helping them to mold the program to best suit their needs.

- To have diverse and competing interest groups minimize unproductive conflicts through cooperation and coordination, while enhancing their abilities to represent and articulate their own viewpoints.

- To have public and private developers and investors more readily reorganize economic development opportunities in underutilized and underdeveloped coastal areas.

COASTAL EROSION

Background

Coastal erosion in New York is as varied, complex and extensive as its 2400 miles of coastline. New York's coastline is characterized by a wide variety of water types and shoreline forms. Between the extremes of the Atlantic Ocean and the Great Lakes, there are numerous bays and sounds of all sizes and descriptions, and three major rivers -- the Hudson, the Niagara and the St. Lawrence. Barrier islands, beaches wide and narrow, high and low bluffs, coastal plains, wetlands, and tidal inlets all are found. Along most of this coastline, erosion rates are moderate to high, with long term (100 year) rates of 1 to 4.5 feet per year and short term (15 year) rates as high as 10 to 12 feet per year.

The social and economic losses created by erosion are directly proportional to coastal use, developmental density and property values. Long Island, New York City and the Lower Hudson Valley, with a combined population of over 12 million, has one of the most highly developed coastlines in the nation. Nassau and Suffolk Counties on Long Island, with a population of almost 3 million, account for only 0.6 percent of the nation's shoreline, but 10 percent of its critical erosion areas. Total annual erosion costs for Nassau and Suffolk are estimated at $14 million (1970 price levels). On the south shore of Long Island alone, residential, commercial, and industrial structures valued at over $3 billion (1984 price level) are at risk from flooding and erosion damage. In the event of the standard project hurricane (100 year storm), it is estimated that for the shoreline from Fire Island Inlet to Montauk alone, $672.6 million in damages (1973 price levels) would result.

Along most of the south shore of Long Island, Coney Island and Staten Island, the U.S. Army Corps of Engineers has had congressionally authorized hurricane flooding, erosion control, and inlet dredging projects in the planning stage since the early 1960's. However, due to local concerns over environmental impacts, project design and high cost to state, county and city governments, only small sections of these projects have been implemented. With recent changes in the cost-sharing formula between the various levels of government, financial support of these multimillion dollar erosion control and dredging projects falls increasingly upon local government and private property owners.

Although development along the Lake Erie and Lake Ontario coastlines is less dense than the state's marine coastline, erosion losses are high. This is due, in large part, to periodic high water levels. Along Lake Ontario, short term erosion rates of up to 12 feet per year have been correlated with higher water

levels. In 1973, approximately $25 million in damages were incurred along the coast of Lake Ontario and the St. Lawrence River during a period of near-record high water levels. Damages which occurred during the spring of 1976 were estimated to be over $2 million. In a recent study, it was found that New York residents along the Great Lakes spent nearly $60 million on protective structures during the 1972-76 period, while incurring nearly $45 million in damages. Because of special design requirements, less than half of 470 protective structures examined in the Eastern Ontario region were of more than limited effectiveness. With near-record high lake levels predicted for the near future, expenditures for structural erosion protection and erosion losses are almost certain to increase dramatically.

Lake Erie shoreowners have not been spared from the lake's erosive forces. In December 1985, a severe early winter storm blowing from the southwest caused an 8-foot seiche on the lake, resulting in a lake level differential of 16 feet between Toledo, Ohio and Buffalo, NY. Major storm waves on top of this seiche triggered flood and erosion damages estimated in the millions of dollars along a 20-mile stretch of shore. Three towns in two counties were declared federal disaster areas.

In an effort to help assure effective coastal erosion planning and management, and to reduce the long-term social, economic and environmental costs of erosion and erosion control, the New York State Legislature enacted in 1981, the "Coastal Erosion Hazard Act." This Act requires local governments to develop and implement erosion management plans and regulations requiring setbacks and control over the application of erosion control methods, both structural and non-structural. If local government does not carry out responsibilities, the State has authority to do so. Since the regulations are scheduled to go into effect in 1987, local governments that decide to assume these responsibilities will have to develop a framework for handling these tasks.

Recently, state agencies with regulatory authority have begun to modify policies regarding erosion control. The permit process now requires more detailed analysis of alternate erosion control measures and their relative impacts. Emphasis is placed on less traditional non-structural techniques with minimal environmental effects.

Problems

A wide variety of audiences in the private and public sectors require reliable information upon which to base decisions regarding coastal erosion and process planning and management, the use of and investment in eroding coastal property, and the selection, design, implementation and maintenance of erosion control measure and projects. Specific problems include:

- Improper selection of erosion control and dredging methods, which often leads to full or partial failure, continued or

increased erosion, environmental degradation and higher costs. Some examples are: (1) failure to recognize and control bluff or upland drainage problems, (2) failure to utilize vegetative erosion control measures, (3) building an expensive erosion control structure where a non-structural control such as moving an upland facility would be less expensive, (4) constructing groins and breakwaters without regard for accelerated downdrift erosion, (5) constructing types of shoreline hardening structures that result in loss of desirable beach in front of the structure, and (6) stabilizing inlets without providing for sand bypassing or downdrift beach nourishment.

- Improper design and construction of structural and non-structural erosion control devices that result in premature failure, incomplete protection and higher initial or long term costs. Some examples are: (1) inadequate toe protection, (2) excessive overdesign, (3) improper material selection and specifications, (4) poor understanding of processes and environmental conditions at the site, and (5) improper selection, planting and care of stabilizing vegetation.

- Purchasers of coastal property often buy without knowledge or awareness of the erosion situation, the condition of existing erosion control structures and the high cost of erosion control. This often results in financial losses through: (1) having to resell the property, or (2) having to invest unanticipated large sums of money in erosion control.

- Poor coastal land use and development practices often initiate or aggravate erosion conditions. Some examples are: (1) devegetation of upland and bluffs for aesthetic, scenic or access purposes, (2) destruction of sand dunes to obtain better view and larger building area, (3) regrading of upland that directs runoff towards bluff, (4) placing septic systems and heavy loads such as swimming pools too near the bluff edge, and (5) locating permanent structures with inadequate floodproofing in the flood plain.

- Overemphasis on shoreline stabilization, especially by structural means, in coastal areas where significant amounts of littoral sediment is derived through erosion of the shoreline and adjacent uplands, is leading to accelerated erosion and a loss of beaches. This, in turn, leads to increased structural failures, due to loss of protective beaches, and the need for more substantial and costly structures.

- Local government, generally, has insufficient knowledge and understanding of coastal erosion, processes, erosion control methods and management options to maximize the effectiveness of erosion and dredging management planning required by the New York State Coastal Erosion Hazard Area Act.

- Property owners are not often able to recognize the need for the methods of structural repair and maintenance, nor are they able to diagnose impending structural failures.

Approach

Educational programs to solve coastal erosion problems should focus on:

- Techniques for aiding property owners and government entities to analyze the causes, severity and extent of coastal erosion problems.

- Techniques for having property owners able to evaluate and select structural and non-structural erosion control methods, within the framework of erosion assessment, economics, environmental impacts, and governmental regulations.

- Management alternatives for use by local government in implementing the "Coastal Erosion Hazard Areas Act."

- Techniques for expediting permits for coastal construction.

- Proven low-cost erosion control methods.

- Techniques for evaluating the condition of existing structures.

- Providing available, practical coastal information in a form that will facilitate its use in the decision make process.

Objectives

- To have property owners, prospective property owners, contractors and local governments able to conduct erosion assessments on which to base erosion mitigation and dredging decisions, plans and investments.

- To have property owners, engineers and contractors evaluate nonstructural vs. structural means of erosion control.

- To have engineers, contractors and individuals maximize the effectiveness of structures through proper design and materials selection.

- To have property owners, engineers, contractors and local government evaluate the environmental impacts of erosion control and dredging decisions.

- To have local governments consider alternate management strategies for coastal erosion hazard area planning.

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U.S. Army Corps of Engineers. Draft Environmental Impact Statement, Hurricane Flooding and Erosion Control Plan - Fire Island to Montauk, NY. 1973.

COMMERCIAL FISH HARVESTING

Background

Harvest of marine species in New York in 1985 was valued at $37.5 million dollars comprising some 38.5 million pounds of fisheries products. Harvesting techniques used by commercial fishermen vary widely in New York State from simply pushing one's feet into the bottom to collect shellfish, to operating highly sophisticated and investment-intensive processor/harvester ships at sea. Harvesting can most conveniently be broken down into two categories; inshore and offshore. The inshore fisheries are comprised mainly of baymen and clammers who use hand-operated tools to gather their catches. Also included are lobstermen, pot fishermen, hook and line harvesters, fish trap operators, gill netters, fyke netters and dredgers. The offshore fishery is mainly comprised of deep-sea trawlers ranging in size from 35' to 90', and longline vessels fishing for tuna and tile fish.

Problems

Contamination of fish has become an increasing problem in the marine coastal fisheries of New York. In 1986, a complete ban on harvest of striped bass was put into effect by the New York State Department of Environmental Conservation. Additionally, large acreages of public shellfisheries have been closed due to bacterial survey tests conducted by the Department that identify waters unsuitable for shellfish harvest. These two events have combined to put stress on the inshore fishery by eliminating harvest outright and to put additional pressure on available yet already heavily-fished stocks by displaced harvesters.

A second prevalent problem in fisheries is declining stocks of all species. Offshore and inshore species are under heavy exploitation. This fact, coupled with declining water quality in important spawning areas, has resulted in declining standing stocks of fish available for harvest. The general deterioration in environmental quality does not have a specific point-source, but is associated with large-scale shoreside development and population growth in rural areas of Eastern Long Island. Despite millions of dollars of investment in research, little improvement in either standing stock or general environmental quality has been seen.

Extensive stocks of offshore, underutilized species are available to New York fishermen. However, only modest market development for these species has occurred to date and the transfer of harvesting, holding and processing technologies to capture them is needed.

Concern also exists for the urbanization and development of important commercial marine waterfront property. Curiously, it is estimated that the world is consuming almost twice as much seafood as it did twenty years ago, and the prices paid for that seafood have risen sharply. Yet, fishermen are generally hard pressed to survive. In New York, contamination and diminishing stocks contribute to the increasing pressure on fish processors and dock operators to convert docks and processing facilities into condominiums, restaurants and marinas.

Commercial fishermen's interest in certain species is shared in common by recreational interests. Finfish are a common property resource until captured. Since fish are held in common, competing interests often conflict, particularly when it involves inshore finfish stocks. To date, resolution of these conflicts often involves legislation relative to gear restrictions or harvest limitations, further restricting commercial catches.

Approach and Objectives

Through educational techniques such as workshops, demonstration projects, literature development and personal contact, it is planned:

- To have fishermen become more aware of the techniques required for mid-water trawl harvesting of offshore underutilized species in New York, while having marketers and processors further develop markets for Illex squid.

- To assist in a regional effort within Long Island to have planners become more aware of the implication of shoreside development to commercial fisheries.

- To have inshore fishermen identify, understand and adopt innovative and improved pot methods and qualitative information on fish behavior in trap nets.

- To have fishermen become more aware and active in legislation and developments that effect their current and future livelihood.

- To have fishermen reference and utilize a periodically printed service letter that carries information on agency programs and regulation, new techniques, and fisheries development.

- To have key industry members receive training and information in conflict resolution and leadership development.

SEAFOOD MARKETING

Background

The paths followed by the estimated 500,000 metric tons of fish and shellfish marketed through the Greater New York Region annually are as varied and diverse as the numerous products which flow from them. In 1985, approximately 39,000,000 pounds of fish and shellfish landed by New York commercial fishermen contributed to the New York market. About one-third of this product was sold for processing purposes while the remainder was immediately sold via fresh-market retail trade or consigned to the wholesale market for distribution. Processing and fresh seafood sales are likely to continue as the major market channels.

New York fisheries products not sold fresh are either processed for other domestic markets or exported. Most of this product is processed by out-of-state companies. Both foreign and domestic seafood imports are also important sources for the New York consumer market.

U.S. per capita consumption of seafood is continuing to grow, and it is estimated that the world is consuming almost twice as much seafood as it did twenty years ago. Prices paid by consumers are continually rising. Seafood purchased for home consumption represents less than half of the total market. An estimated 60 percent of seafood consumed in New York is sold in restaurants or as institutional offerings.

Problems

Fresh seafood products are highly perishable. Without processing, harvests must be sold as landed regardless of market supply and price. Further growth of the processed product market is necessary to maximize the fisherman's dockside profits during peak seasonal production periods. High product handling costs, estimated to be over 10 cents per pound of product sold, suggests that the opportunity to increase profitability through more efficient and cost-effective handling practices may exist.

Overall, U.S. domestic seafood demand, expected to increase because of changing dietary and taste preferences, is presently low when compared to demand for other meat products. Since seafood demand has been found to be relatively insensitive to price changes, it appears that greater consumption will result from creating changes in attitudes and perceptions of seafoods, which to a great extent will require broad-based, long-term educational and promotional efforts. This situation is further exacerbated in New York due to environmental contamination of potential inshore fish and shellfish products. Domestic market consumption of undermarketed species (whiting, squid, dogfish,

butterfish) has shown minimal growth.

Export demand for U.S.-harvested, undermarketed species has grown slightly with the extension of fisheries jurisdiction to 200 miles. It is believed that significant growth in exports will ultimately depend on eliminating obstacles such as import duties, various foreign trade barriers and strategies, and the lack of consistent harvesting efforts, adequate processing facilities, proper handling procedures and quality standards.

Supply of a given species, seasonally and year-to-year, is difficult to control because of biological, environmental and fishery management factors, coupled with the fragmented and fiercely independent nature of the harvesting sector of the industry.

The relative lack of mass marketing of domestically harvested fish through supermarkets and fast-food outlets is perhaps the single most important problem and, at the same time, represents the greatest opportunity for future growth.

Approach

Educational activities to enhance seafood marketing should:

- Stimulate and facilitate educational programs for commercial fishermen, seafood processors, wholesalers and retailers that can broaden their views on marketing alternatives and strategies.

- Initiate and coordinate agency efforts with seafood industries, state agencies, local government and regional fisheries development foundations that provide the necessary linkages for growth and development of New York's fishing industry and for expanding seafood markets.

- Explore and coordinate the development of innovative seafood marketing educational programs that aid seafood harvesters, processors, wholesalers and retailers to channel their products to consumers.

- Identify educational and research needs of the seafood industry, counties, region and state, and communicate such needs to the Sea Grant Institute, Cooperative Extension, the SUNY/Cornell University Seafood Technical program and fishery development foundations.

- Assist the existing seafood industry in identifying seafood marketing problems, setting objectives and outlining plans of action.

- Facilitate the regional resolution of conflicts between commercial and recreational fishing interests through an educational approach designed to underscore their common interests in fish stocks, dockside facilities, access to

marine water, dock development, improved species management information, and resource enhancement programs.

Objectives

- To have fishermen, processors, wholesalers and retailers understand and adopt quality standards that ensure that products meet market acceptance.

- To assist private and public entities in developing and in penetrating domestic markets for such underutilized species as dogfish, whiting, squid, etc.

- To have harvesters evaluate the feasibility of various methods of marketing strategies that include forward integration and marketing cooperatives to achieve greater marketing ability.

- To have private and public investors understand the need and advantages for in-state facilities to process under-marketed species.

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The Port Authority of New York/New Jersey. The Commercial Fishing Industry. 1982.

Earl R. Combs Consultants, Inc. 1979.

SEAFOOD TECHNOLOGY

Background

The seafood industry is an important economic enterprise in New York state. In 1985, approximately 98 million pounds of fresh and frozen seafoods were handled at Fulton Fish Market alone. Fresh fish and shellfish accounted for the majority of the products that moved through Fulton Market. In addition, over 38 million pounds of seafood products were imported through the NY Customs District in 1985 . It has been estimated that the annual retail value of the fish trade in New York is over one billion dollars.

Wholesale firms and firms engaged in combination wholesale and processing operations are predominate in New York's seafood finfish packing and processing industry. Shellfish processing operations, located mainly on Long Island in close proximity to the resource, primarily shuck and package products such as bay and sea scallops, surf clams, hard clams, oysters, squid, conch and crab. A smaller number of firms are engaged in further processing operations which include fish smoking, salting, pickling and the production of fresh and frozen entrees. The majority of seafood processing businesses are modest in size, reflecting closely held corporations or sole proprietorships.

To take full advantage of both domestic and export market opportunities, the processing sector in New York must be flexible and adapt its operations to take advantage of products from local fisheries. New processing technologies that allow flexibility and maximum return on investments must be utilized.

Cornell University's nationally recognized seafood program is continuing a research effort that includes new product development, shelf-life extension techniques, seafood quality evaluation and maintenance technology, the role of omega-3 fatty acids in human health, and methodologies for recovering valuable products from seafood wastes. In addition, program links are maintained with efforts at other institutions such as the Center for Marine Research and Operations at Kingsborough Community College, which is developing a two-year Associate's Degree program in Seafood Business Management, and refrigeration technology faculty at SUNY Farmingdale. Other program links to regional projects, such as the development of the Fishport processing facility at Erie Basin in Brooklyn, provide opportunities to integrate new technology into plans for expansion of the seafood processing sector in New York.

Problems

The majority of seafood plants in New York must be more

adaptable to new developing fisheries. Antiquated methods that continue to be used by many packers and processors must change in order to stabilize the market and prices for fresh fish landed in good quality condition. While some processing firms are beginning to take advantage of new opportunities created by extended jurisdiction, New York is still primarily oriented to the fresh fish market.

Seafood businesses in the state are not readily adopting cost-saving technologies that can extend the shelf-life and preserve seafood quality. Many seafood businesses operate on the margin and information on cost and benefits of new technology and equipment must be carefully analyzed. New innovations that can be effectively used for poorly marketed species such as squid, mackerel, shad, whiting, hake and dogfish can provide opportunities for increased profits. Processing companies must re-evaluate their energy, waste management, and business management strategies in order to take advantage of new market opportunities, and develop the flexibility to respond to fluctuations in product supplies.

Approach

Seafood technology initiatives should provide leadership for educational programs for seafood processors, packers and wholesale-distribution enterprises. Educational programs appropriate for all sectors of the shore-based industry that focus on product quality maintenance and seafood handling for all sectors of the seafood industry. Expert advice and consultations with specific businesses are also needed to protect individual businesses' proprietary interests while stimulating new technological innovations. Networking and regular exchanges with government leaders, state agencies, community groups and other specialists can also be used to stimulate new opportunities for seafood businesses.

Maintaining good working relationships and stimulating the exchange of expertise among the NMFS Seafood Laboratories in Gloucester and Charleston, faculty at universities in the region, and private fisheries development organizations can help to stimulate creative changes in industry practices. At the same time, seafood technology program linkages can be utilized to identify critical information and technology needs. These needs can be relayed in turn to researchers and others interested in investigating new opportunities and answering questions of critical importance to the shore-side seafood industry. In this way, the seafood technology program serves as the catalyst to stimulate seafood businesses to evaluate and make decisions on the use of new equipment and technology in their operations.

Objectives

- To have packers, processors and distributors test and adopt new and different techniques and equipment.

- To have processors, packers and distributors evaluate and begin the effective marketing of non-traditional species and new seafood products.

- To have processors, wholesalers, and the business community become aware of the potential and need for expanded processing capacity and facilities, such as refrigerated and frozen storage warehouses.

- To have all sectors of the seafood industry consider and adopt appropriate handling techniques to maintain the quality of all seafood products.

- To help educational programs and institutions establish new training and educational opportunities for all types of seafood businesses.

- To have retail market outlets utilize current information on effective seafood handling, preservation and merchandising.

- To have all sectors of the seafood industry become aware of new methods for extending product shelf-life throughout the distribution system.

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National Marine Fisheries Service. Fulton Market News Report, January-December 1985 Summary. Market News Division, New York.

National Marine Fisheries Service. Imports of Fishery Products Through the New York Customs District-1984 & 1985.

AQUACULTURE

Background, Problems and Opportunities

Aquaculture in New York State is at a crossroads. State, local and federal entities have recognized the economic possibilities of successful aquaculture ventures, and have responded with grant-in-aid programs supporting research, "seed" activities, and demonstration projects. Large amounts of public and private dollars have been channeled to research institutes in an effort to increase the knowledge base for culture of marine and freshwater organisms and for development of the equipment needed for rearing them. Despite these actions, little has been accomplished in terms of new company formation and development, or in the adoption of new, innovative, "break-through" techniques within the aquaculture industry.

One of the most critical barriers to expansion of the industry is one faced by all coastal industries enterprises -- competition for and lack of space. New York State waters are already heavily used by many different groups for a variety of purposes. To significantly increase private aquacultural use of these crowded waters will undoubtedly bring conflict. For aquaculture to expand and grow along the state's coast, techniques and arrangements to more fully utilize private bottom lands and littoral zones that exist in coastal embayments must be developed. Deteriorating water quality and the contamination of bottom sediments pose a major problem for aquacultural enterprises in many of New York's coastal areas.

Public efforts in support of aquaculture are being carried forth or beginning along the state's marine and Great Lake shores. On Long Island, for example, state and county programs to reseed certain bay bottom areas for bay scallop production have occurred in response to drastic mortalities of this shellfish caused by brown (algae) tide. Programs of this kind can assist in bolstering fishery development and aquacultural enterprise. Development and refinement of cost-effective, public aquacultural techniques and activities are thus worthy of pursuit.

On Lake Ontario, private organizations and the state conservation department are showing increased interest in pond culture of walleye as a source for stocking embayments where this native species was once abundant. In 1986, for example, the Niagara River Anglers Association raised over 20,000 fingerling walleye (from state-supplied fry) that were then stocked in the Lower Niagara River. At present, the state conservation department is formulating a statewide walleye production program and plan, which includes identification of lake embayments for stocking. Sea Grant research and extension activities related to walleye pond culture may thus be of use to both private and

public entities.

Research activities conducted by faculty at SUNY (bullhead, walleye, bio-assay and bait fish) and at Cornell (closed-system culture of trout) may stimulate private involvement for commercial sale or uses, subsistence rearing, or stocking purposes. In addition, such projects may serve as excellent teaching and experiential activities for youth audiences.

Objectives

- To have public and private interests understand the benefits, costs and impacts of bay scallop restocking in the Peconic region.

- To have public and private entities consider and field test bay scallop nursery system construction and operation.

- To have harvesters/culturists become aware of techniques for culturing shellfish in conjunction with finfish trap harvesting activities.

- To have culturists become more aware of water quality and shoreline development trends/issues that can effect their operations' production, expansion and future viability.

- To have 100 fishery interest organizations consider the feasibility, costs and benefits of raising walleye, bullhead, salmonid or other species for stocking in Great Lake waters.

- To have government agencies, community leaders, and potential private entrepreneurs along the Great Lakes understand the potential and the biologic and economic feasibility of raising finfish for subsistence, commercial bait sale, or research/educational purposes.

TOURISM/SMALL BUSINESS DEVELOPMENT

Background

The recreation/travel/tourism industry is one of the largest service industries in New York State and employs one out of ten private sector workers. This industry is mainly composed of small businesses which make significant economic contributions to coastal counties. In 1984, the N.Y.S. Dept. of Commerce reported that the private sector included 53,450 businesses statewide providing recreation, travel, and tourism facilities and employed 632,530 with a payroll of $7.8 million. This represents a 17.8% increase in employment between 1976 and 1984.

The public and private sectors provide land, facilities, and services to coastal recreationists and tourists. The public sector provides parks, historic sites, public access facilities, fish and wildlife resources, trail systems, navigation and boating safety facilities, and other services. The private sector offers commercial enterprises such as marinas, charterboats, bait and tackle shops, theme parks, resorts, motels, restaurants, retail stores, and other services. For example, the N.Y.S. Dept. of Commerce reported in 1984 that 2,280 lodging businesses covered by unemployment insurance employed 64,530 with a payroll of $818 million. Similarly, the N.Y.S. Dept. of Commerce reported in 1984 that 440 boat liveries, marinas, and yacht businesses (covered by unemployment insurance) employed 2,440 with a payroll of $41.9 million. These reports are underestimates since it excludes family-operated businesses, sole proprietorships, and partnerships which do not employ persons covered by unemployment insurance.

The coastal areas of the state offer a variety of opportunities for recreation and tourism activities. The most popular activities statewide are viewing scenery, sightseeing, visiting parks and recreational sites, swimming, fishing, and boating. In 1975, an estimated 229 million swimming days, 44 million angler days, and 10.5 million boating days took place in New York State.

The marine coast of New York City and Long Island provides residents and visitors with public and private sector services and facilities. Each year over 17 million people travel to state parks and historic sites. About 1.3 million sportfishermen use the coast to catch saltwater fish such as bluefish, flounder, and striped bass. This region includes 30 percent of the 327,700 motorboat registrations in the state.

The Great Lakes/Inland Seaway provides residents and visitors with a freshwater recreation/tourism environment. In 1984, sport fishermen took more than 1.25 million fishing trips

on the Great Lakes and contributed over $41.5 million to the state's economy. This coastal region includes 24 percent of the motorboat registrations in the state.

Problems, Concerns and Opportunities

The prospects for the next 5 years are promising for recreation and tourism business. The coastal areas of the state include some of the most valuable natural and man-made attractions for year-round recreation and travel activities. While the recreation/travel/tourism industry has taken advantage of the natural resources and recreational sites, there is the potential for further development and improved marketing of existing opportunities.

Many of the privately-owned facilities and services in the coastal region are small businesses that are predominantly operated on a seasonal basis. Investments are being made by the private sector to open new businesses or to update and expand existing services and facilities. Existing businesses require improvements in business planning and management related to financial considerations, the physical facility, and marketing/customer relations. The owners and operators of small recreation and tourism businesses (e.g., resorts, motels, charterboats, marinas) need information, technical assistance, and educational programs to retain viability, expand, or create new businesses/services.

State, county, and local governments are planning for and developing additional recreational facilities in the coastal region. Tourism and coastal recreation plans are needed but often not created to coordinate development strategies. Tourism development and marketing plans can aid decisions on the type, amount, and location of facilities and services to provide while minimizing user conflicts or degradation of the resource and providing public access/services at a reasonable cost. The viability of tourism and coastal recreation is also dependent upon the effective management of the natural and man-made resources.

Coastal residents and visitors need to be aware of recreation and tourism opportunities and knowledgeable about how, when, and where to participate. Coastal tourism associations and chambers of commerce spend substantial funds each year to manage, market, and promote their destination areas in a competitive and cost effective manner.

Approach

Educational activities to assist small businesses should:

- Assist coastal tourism businesses which have a very critical business cycle. During active months, maximizing profits requires a well-trained staff and smoothly functioning business procedures. During off months, cost saving

techniques are critical to survival. The business management component of programs should bring businessmen information on financial management, including financial ratio, market, and product analysis. Also, the feasibility of extending business to additional seasons should be explored. Data processing and human resource management are important topics for many businesses. New data processing techniques enable more efficient recording and extrapolation of business data, but have implications for necessary support staff skills. New business development needs should focus programs on training in market analysis, economic development planning and forecasting economic development impacts.

- Leadership training is needed to develop the abilities of tourism businessmen to successfully organize and lead a trade association. This training should include programs to help leaders set goals. It should also include procedural and legal guidelines as well as examples of both successful and unsuccessful endeavors of similar organizations. For established trade associations, many benefits can be realized by networking with other groups with similar interests. This can cut duplicative efforts. Efforts should be focused here on identifying the appropriate linkages and facilitating their establishment.

Educational activities to assist county and local governmental agencies should:

- Help county/community decision makers understand the reasons why tourism and coastal recreation assets and liabilities need to be reviewed. Assist in the planning process, provide the tools which will help analyze assets and liabilities, assess future prospects, and weight alternative courses of action. The sportfishery, lack of public access, economic development, and waterfront decay are some of the issues around which programming will evolve.

- Help equip resource managers or those concerned with resource management with information on the principles of coastal resource management techniques. The carrying capacity of tourism and recreation areas and the potential impact of new coastal development options (e.g., second home development) also are worthy of attention.

- Show tourism organizations how other coastal tourism destination areas are managed plus explain marketing and promotion techniques and evaluation methods. Example program areas which could be emphasized include vacation packaging, tourism marketing systems, and marketing evaluation.

Objectives

For small business:

- To have recreation/tourism businesses and trade associations increase their skills in evaluating their marketing approaches and efforts, and increase their networking and cooperative ventures for marketing and public relations.

- To have recreation/tourism businesses and trade associations identify, understand and use research data and information on user demand, supply and financial trends in the recreation/tourism industry.

- To have recreation/tourism businesses improve their financial planning/management skills, including the use of computers and computer software for business management decision-making, pricing strategy-setting, financial statement/ratio analysis, tax and insurance decision making, bookkeeping, accounting, investing and financial decision-making.

- To have recreation/tourism businesses and trade groups better understand, appreciate and develop their human personnel resources via programs on stress management, employee productivity and loyalty, and on overcoming seasonal employment problems.

- To have recreation/tourism businesses adopt positive changes on facility operation, efficiency, planning and energy conservation.

For consumers:

- To have residents and coastal visitors receive coastal recreation information on where and when opportunities exist and how to partake of those opportunities safely.

For county/local government agencies:

- To have communities and counties review their tourism and coastal recreation assets and liabilities, assess future prospects, and make a conscious decision on whether or not to proceed with tourism and coastal recreation development.

- To have county and community tourism organizations develop a tourism management strategy for their area and evaluate their tourism marketing and promotion techniques.

- To have trade groups and communities develop and/or expand their visitor information systems.

- To have public and private sector personnel and businesses and community leaders realize the importance of tourism in

economic development and the need for and benefits of hospitality training programs.

- To have resource management groups and coastal land owners, public and private, identify existing and potential coastal resource issues which affect tourism and coastal recreation and develop a strategy on how to address the issue.

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SPORTFISHING

Background

Sportfishing in the U.S. is big business. In 1980, the economic impact of marine recreational fishing was $7.5 billion, including multiplier effects. A total of 119,538 person-years of employment was generated. On freshwater, 36.4 million anglers spent an estimated $7.8 billion dollars in 1980, of which almost $400 million was spent on Great Lakes sportfishing.

In April 1982, a U.S. Bureau of Census manufacturer survey listed 137 firms which primarily produce fishing tackle and equipment valued at $342 million and employ 6,000 manufacturing working who received $72 million in payroll.

Among adults (18 years and older) sportfishing is the second favorite recreational activity in the U.S. The Sport Fishing Institute estimates that some 60 million Americans fished in 1985. The 1985 Gallup Poll reported that 34 percent of adults sampled fished. Sportfishing was the single most popular leisure activity among adult men and number five among adult women. The popularity of sportfishing resulted in an estimated 1985 sportcatch of 789,000,000 pounds of fish worth $1,413,600,000 at commercial prices being consumed. In New York State, an estimated 3 million people currently participate in sportfishing.

New York State offers a unique mix of opportunities for sportfishing found no where else in the United States. Within state borders, three nationally-acclaimed fisheries exist. Trophy trout and salmon are pursued in New York's Great Lake waters. Anglers fish for such species as bass, northern pike, walleye, and muskellunge in the St. Lawrence and Niagara Rivers. From the marine waters of New York, 68 current world record fish have been landed. World class offshore fishing for tuna, marlin, and sharks and productive inshore fishing for species such as bluefish, summer flounder, striped bass, and sea bass attract numerous anglers each year.

In 1984, an estimated 706,000 state residents and 59,000 out of state visitors fished New York's marine waters. Also in 1984, 1.25 million trips were made by anglers along the state's Great Lakes shore, accounting for $41 million in direct trip expenditures and a harvest of almost 4 million fish. Some 200,000 trips were made by out-of-state tourists to the Great Lake waters of the state that same year.

Problems

Businesses that cater to sportfishing are often operated by individuals who enjoy sportfishing but have limited knowledge in

small business management techniques. Consequently, many such businesses are not operated in an efficient manner which can result in limited economic growth and business failure. Additionally, sportfishing businesses are often unaware of new issues and management decisions that impact fisheries resources so appropriate business decisions can be made.

Many coastal communities experience economic effects from sportfishing activities that occur in local waters. However, many of these communities often do not realize the importance of sportfishing to the local economy, and consequently do not maximize efforts to attract anglers or attempt to minimize negative impact from angler activities. Other communities would like to develop sportfishing opportunities as a component of the local economy, but do not possess the understanding or expertise to appropriately develop those resources necessary to support a sportfishing economy.

Organized sport angler groups are interested in being a part of the decision making process on issues and management decision that affect the sportfishing resource. Although these groups would like to be a voice for organized sport anglers, leaders within the organizations often lack the skills necessary to be effective agents in the process. The lack of input from sportfishing organizations frequently results in frustration -- on the part of sportfishing groups who want to be heard or consulted , and on the part of decision-making agencies that would like to gain constructive input.

Within the coastal environment, specific fishery resources are sought in common by both commercial and recreational fishermen. For certain species, limited stocks of fish have created problems in resource allocation between the two groups. User conflicts need to be resolved to insure that future management decisions are based more upon biological resource data, and less upon lobbying pressure.

Approach

Educational efforts designed to assist sportfishing interests should:

- Develop and coordinate programs that provide educational information on marine and freshwater fisheries, biology and population dynamics.

- Stimulate development and adoption of new alternative recreational fishing techniques and technology.

- Assist in the development, understanding, and involvement in fisheries management options, policy, and the decision-making process.

- Initiate programs that focus on sportfishing-related community problems and issues and their possible resolution.

- Encourage fish habitat conservation.

- Provide educational information on sportfishing, support facility development and design.

- Provide educational information on sportfishing support service/business development and marketing.

- Development and dissemination of information on the economic and social values and impacts of sportfishing.

- Develop projects and goals that both commercial and recreational fishermen see value in and agree to work toward cooperatively.

Objectives

- To have sportfishing enthusiasts and businesses understand and adopt innovative and alternative angling technologies and techniques.

- To have sportfishing-related businesses learn and use new business management practices.

- To have communities that are presently or potentially impacted by sportfishing understand the benefits, costs, impacts and consequences of sportfishing activity.

- To have businesses and communities learn and develop appropriate facilities and services to support sportfishing activity and optimize full and wiser use of fishery resources.

- To have users and decision-makers understand the ramifications of their actions, and to work towards better communication linkages to minimize conflicts between these groups.

- To have commercial and recreational fishermen cooperatively realize common uses and goals that will insure the health and stability of future fisheries resources.

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RECREATIONAL FACILITY DESIGN, DEVELOPMENT AND OPERATION

Background

The business of providing services and facilities for the nearly 4,000,000 boaters and close to 3,000,000 sportfishermen in New York has grown to become a major component of New York's recreation/tourism industry. Nearly 2000 private sector businesses catering to these recreational users are located on the state's marine and Great Lake waters. Boat building and repair enterprises, marinas, boatyards, liveries, yacht clubs and marine supply dealers are confronting operational and development problems and concerns common to many small businesses in general, and to waterfront enterprises in particular. Design and operation problems are also faced by the 1,500 publicly-operated facilities (i.e. coastal parks, beaches, piers, and marinas) which are run by local, county, state and federal agencies.

In 1983, New York was ranked eighth in the number of registered boats [327,000], with 54% registered in the Great Lakes and marine area. In 1984, over $300 million was spent statewide on the purchase of boats and related equipment. It is projected that boating-related recreation will increase by over 28% by the year 2000. Both public and private sector marine facilities development can be positively or negatively effected by changing economic and environmental trends and conditions, and by governmental regulations. With demand far exceeding supply, new approaches are needed to increase facility effectiveness, efficiency and availability. Improved practices in marine business management and marine facility management will help meet future needs and assist in improving industry profits.

Problems

Developers, owners and managers of marine recreation facilities need reliable decision-making information on options to assist in reducing operating costs; economically improve client services; maintain safe facilities; manage facilities for highest capacity utilization and develop facilities to meet needs in a cost-efficient manner. Specific problems/challenges include:

- The need for public/private developer/operator options for cost-saving facility improvements and new developments.
- Erosion of beach and bluff areas causing expensive damage to facilities.
- Wave and ice damage, siltation and corrosion reducing the usable life of marine facilities.

- The lack of area-specific design information for developing efficient boat launch ramps, parking areas, floating docks, fuel and electric systems, storage facilities and moorings area.

- The need for improved marketing and hospitality training skills.

- Regulatory agencies and zoning boards limiting recreation facility development and expansions.

- Collaborative development and management between public and private sector being overlooked.

- The need for facility operators to be aware of effective alternate facility maintenance/operation procedures.

Approach

Educational initiatives to enhance coastal recreation facility development/operation should emphasize:

- Cost-efficient development of new facilities and efficient maintenance of existing facilities. Projects might focus on site analysis, facility and equipment alternatives, creative funding sources and alternate management techniques.

- Overhead cost reduction alternatives and techniques.

- Options for preventive measures to protect from potential damage caused by natural processes.

- Business marketing techniques and hospitality skills.

- Long-term planning techniques for facility improvements.

- Collaborative opportunities for public/private facility development and management when appropriate.

- Appropriate facility development/maintenance procedures.

Objectives

- To have potential and existing marine facility developers/operators evaluate alternate facility financing and designs.

- To have developers construct waterfront facilities that are well-sited, well-designed and well-built.

- To have managers better maintain and operate their facilities.

- To have landowners and recreationists collaborate to

minimize conflicts resulting from access to coastal waters.

- To have planners and developers recognize recreation access as a revenue-generating coastal waterfront development.

- To assist community planners to maximize coastal recreation opportunities while minimizing attendant difficulties from such.

- To have coastal communities, businesses and public agencies evaluate access needs, and possibilities for collaboration between public and private entities to meet such needs.

- To have community groups and public officials aware of alternate state and federal financial assistance available for developing waterfront recreation facilities.

- Stimulate community groups, businesses and public officials to cooperatively assess, plan and, when appropriate, finance coastal recreation facilities.

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SEAFOOD UTILIZATION

Background

In 1985, approximately 3.3 billion pounds of edible finfish and shellfish (total weight) were landed in the U.S., and another 2.8 billion pounds of edible fishery products (product weight) were imported from other countries. Per capita consumption of seafoods has steadily increased since 1982 reaching a record 14.5 pounds per capita in 1985. Increased seafood consumption appears to reflect an increasing interest in the relationships between diet and health. In particular, the significant role that seafoods can play within the framework for good nutrition which is outlined in the Dietary Guidelines for Americans distributed by the U.S. Departments of Agriculture and Health and Human Services.

Seafoods offer many nutritional benefits that meet both the current dietary recommendations and consumer preferences. A 1984 Better Homes and Gardens survey reported that 82 percent of those polled indicated that maintaining proper weight was their primary health and nutrition concern. Seafoods are one low-calorie, high protein food that is being used to meet this important dietary goal. The same survey reported that 62 percent of the consumers polled had already changed their cooking and food selection habits to reduce calories. This survey goes on to report that the sugar, salt, vitamin, cholesterol, and total fat content in the foods that they eat are of greatest general concern to consumers. Seafoods are widely recognized as one food that can be used to help individuals meet dietary goals directed towards reducing total fat, saturated fat, cholesterol and sodium intake. It seems evident that consumer concerns about health and nutrition have affected seafood consumption. Record per capita consumption figures, and surveys such as the Better Homes and Gardens study which reported that 49 percent of those polled serve more fish and shellfish than they did two years ago, clearly indicates that considerable consumer interest in seafoods exists and is likely to continue in the future.

Seafoods are purchased either for consumption in the home or are eaten away from the home in restaurants or other food-service establishments. Studies have shown that 60 percent or more of all seafoods consumed are purchased at restaurants. A 1981 National Marine Fisheries Service study reported that 37 percent of the total seafood consumed per capita was purchased from retail outlets such as supermarkets and fish markets. In the metropolitan New York City area alone, over 850 independent retail fish markets have been identified. In addition to these outlets most of the major supermarket chains have added seafood departments to their stores or are planning to do so. This substantial consumer - retailer interface provides one opportunity for consumer seafood education efforts designed to

enhance consumers' effective utilization of seafoods at home to meet dietary goals.

In addition to seafoods that are purchased for home consumption, many coastal residents catch fish which are utilized for food. A 1985 National Marine Fisheries Service study reported that an estimated 44.9 million fish were caught by marine anglers in New York in 1984. Over 12 million winter flounder and 9 million summer flounder (fluke) were caught in 1984 by marine anglers in NY. Both species are in high demand in the commercial marketplace which would seem to indicate that a large percentage of these fish are likely to be used for food. Other important species caught by recreational anglers in NY include bluefish, porgies, sea robins, black sea bass and tautog. While accurate data indicating what percentage of the recreational catch is wasted because of improper handling or unfamiliarity with certain species is unavailable, it seems likely that a considerable portion of the recreational catch is wasted due to improper handling practices. Consumer education efforts that target anglers and their families can improve both the quality and quantity of rod-and-reel caught fish used for food.

Sea Grant specialists have developed seafood utilization programs designed to help consumers effectively select and use the seafoods available from both the commercial and recreational fisheries in New York. To accomplish this, programs have targeted multiplier audiences that include consumer educators, retail establishments and sportfishing organizations and programs. There are over 2700 teachers of home economics, 180 Cooperative Extension home economists, 450 nutrition paraprofessionals, and countless other food and nutrition professionals who serve as consumer educators in some capacity. Other estimates indicate that there are in New York at least 30,000 retail outlets for seafoods and approximately 3 million sport anglers, many of whom belong to organized groups.

Problems

As consumer demand for seafoods increases, so does the need for reliable information on seafood selection, handling, storage, preparation and nutrition. There are at least 200 species of edible finfish and shellfish available either in the commercial market place or from recreational fishing in the U.S. Because of this diversity and the variation that naturally occurs in seafood products, there is considerable confusion and questions concerning specific species and products among the general public. Food and nutrition educators, as well as the general public, are seeking reliable information to help them respond to individual or professional needs.

In addition to this situation, several issues relating to both the positive nutritional attributes of seafoods as well as potential health risks have become increasingly important. A considerable nationwide research effort is currently examining

the role that omega-3 fatty acids in seafoods can play in chronic diseases such as coronary heart disease, cancer and inflammatory diseases. Research has shown that omega-3 fatty acids may help to reduce an individual's risk for developing diseases which are among the leading causes of death in the U.S. Several national conferences were held in 1985 to examine the latest research findings, and some researchers have recommended eating 2 to 3 seafood meals per week to reduce one's risk of coronary heart disease. As would be expected, considerable interest has been aroused both among food and nutrition professionals and the general public.

At the same time that the positive nutritional benefits of seafoods are being widely discussed, considerable consumer attention has been focused on potential safety concerns in certain seafoods. In 1985, most of the commercial striped bass fishery in New York was closed due to the detection of elevated levels of PCB's in this species. The New York Department of Health issued an advisory recommending that consumers eat no more than one meal of striped bass per month and that high risk individuals eat no striped bass. In 1986, both the commercial and recreational striped bass fisheries were closed. Outbreaks of raw shellfish-related illness have resulted in repeated Department of Health advisories against consuming raw shellfish. Two individuals died in the past year of botulism traced to a salted fish product, and several newspaper articles have focused on the health risks associated with raw fish consumption.

The result? Consumers want both to have their seafood and know that they can eat it too. Many individuals have made a decision to increase their frequency of seafood consumption in response to information on the beneficial effects of omega-3 fatty acids on health, a desire to lose weight or a general perception that seafoods can be an important element in a healthy diet. However, many important questions must be addressed such as: Which species or products are safe, or how can potential safety concerns be minimized? Which seafoods can be utilized to meet specific dietary needs or goals such as lowering blood cholesterol or reducing sodium intake? What affects the price of seafood, and how can alternatives for certain species or products be used? How can the fish caught by anglers be handled and stored to prevent waste? Reliable information that allows individuals to objectively answer these questions for themselves is needed.

Approach

The key to an effective seafood utilization program is a continuum approach directed at all levels of the commercial seafood distribution chain as well as individual consumers who either purchase seafood from others or use fish that they have harvested themselves. Within the seafood distribution chain, retail outlets that interact directly with seafood consumers provide an effective educational link that benefits both the retail establishment and their customers. Direct consumer

education efforts requires effective use of information multipliers such as food and nutrition educators, consumer groups or special interest groups such as sportfishing clubs, the media and other organizations such as Cooperative Extension which provides educational resources for their members or users.

Continuing research efforts directed towards developing proper seafood handling and storage techniques must be adapted to meet the needs of a wide range of target audiences including both commercial seafood business and individuals to stimulate full utilization of seafood resources. Other research developments, such as those being reported by many investigators across the country relating the role of omega-3 fatty acids and health, are important both to seafood businesses and consumers. Equally important are research results from studies designed to assess environmental and other safety concerns and appropriate responses to minimize health risks. Objective translation and integration of these diverse research initiatives is an important role for both the Seafood Technology and Seafood Utilization programs.

An effective consumer education program requires an integrated effort that addresses the latest seafood issues and trends within an existing framework of traditional consumer education efforts. To achieve this, new information and training efforts will be developed for food and nutrition educators and the medical community when appropriate, the consumer/retail interface (which includes retail markets, supermarkets and restaurants), media professionals, and consumers directly both as seafood purchasers or as individuals who catch their own fish.

Objectives

- To have food and nutrition professionals better able to objectively evaluate and continue effective outreach efforts on seafood availability, and storage.

- To have seafood retail market owners and supermarket seafood department managers become better informed about seafood quality, shelf-life, safety, nutrition, handling and storage, so that they in turn can help to educate consumers.

- To have restaurant and other food-service personnel become more aware of the proper handling and storage of seafood, as well as new information on seafood safety and nutrition.

- To have consumers become knowledgeable and skilled in choosing, purchasing, handling and preparing seafoods.

- To have consumers become more aware of the benefits that seafood can provide in their diet, and enhance their ability to select seafoods to meet individual dietary needs.

- To have consumers become informed of new foods or products that become available from new processing technologies that utilize non-traditional species or by-products.

- To have sport anglers understand how to properly handle and store their catch to minimize waste and maximize the eating quality of the fish that are harvested.

- To have anglers and consumers recognize and understand the potential health risks of consuming certain seafoods that may be contaminated and use appropriate techniques to reduce risks.

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COASTAL YOUTH EDUCATION

Background and Challenge

Representing 20 percent of the state's total population, our 3.8 million youth aged 5 to 19 represent an important coastal audience and resource. Youth are a significant coastal user group. Recent figures released by the New York State Department of Environmental Conservation indicate that 647,800 youths, age 6-15, fish. In addition, about 80% of youth aged 5-19 swim, and 30% boat. Much of this activity takes place in coastal waters. Many youth groups or school systems either have facilities or conduct activities on the coasts. There are more than 460 public school districts in New York's coastal areas. Statewide, more than one-half million youth participate in Cooperative Extension 4-H programs, and there are more than 4,000 other recreation or education-oriented youth groups. Involving youth in coastal programs represents a challenge and an investment in the future of coastal resources, as well as a commitment to a major and current coastal user-group. Given limitations on Sea Grant staff size and resources, it is clear that any attempt to reach a significant portion of New York youth must be firmly based in a "teach the teachers" or "multiplier" mode.

The last few years has brought a progressive increase in enrollment in youth programs in natural resources during a period when overall enrollment in 4-H declined. Coastal youth education has been a major reason behind that increase. Figures show that, over the past four years, youth enrollment in coastal 4-H projects has tripled. This is due, no doubt, to increased commitment of county associations in the form of agents assigned to coastal education.

Approach

All youth programs should be firmly based in the technical competencies of Sea Grant. There are numerous other organizations which conduct natural resource-oriented educational programs. Our unique attribute is coastal expertise. To the extent possible, programs will be framed to include meaningful involvement in real coastal problems to develop decision-making capabilities. The role of youth as coastal recreationists serves as a mechanism for introducing them to coastal issues. For example, coastal recreation safety programs can easily include sportfisheries development considerations and shoreline use conflicts. School systems and 4-H programs are primary channels for our efforts.

Objectives

- To have 4-H agents organize coastal education committees in

the marine and Great Lakes district.

- To have 20 coastal county extension programs recognize coastal education components within their 4-H program.

- To have 5 new coastal county 4-H programs, accounting for 1500 youth, use "packaged" coastal education projects.

- To have Sea Grant specialists produce at least four activities for use in 4-H sportfishing or tourism projects.

- To have 100 coastal county school systems adopt recognizable coastal education components into their science curriculum.

- To have 125 youth organizations conduct coastal education activities.

- To have 60 volunteers trained to assist Sea Grant specialists and 4-H agents in conducting coastal youth programming.

- To have 4-H natural resource agents provided with technical marine subject area expertise and backstopping.

- To have seven county extension associations show commitment to coastal youth education via designation of a percentage of agent plan-of-work effort.

- To have 14 counties maintain and continue coastal education activities, reaching at least 7500 youth annually.

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