THE HELM

Happenings and Educational Activities around Lake Michigan

Illinois-Indiana Sea Grant Program Biennial Report 1986-1988

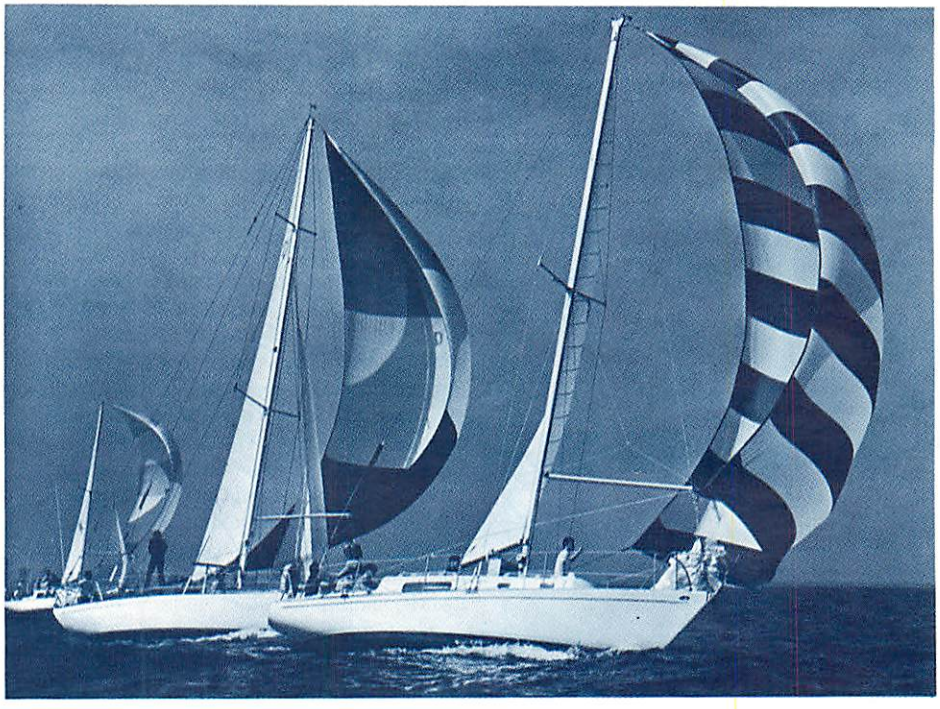
Message from the Program Coordinators

The Illinois-Indiana Sea Grant Program has completed six years of operation. During the past two years the Program has added new areas of research to increase the potential for solving the marine-related problems faced by these two states and the Great Lakes region.

Through the Great Lakes Sea Grant Network we have played a role in regional activities relating to the economic development of coastal recreation areas, marina development, and increased tourism potential. Our staff has also provided updated information on high water levels, shoreline erosion problems, water quality, and fisheries research.

The Program has been providing quick response funds for preliminary research and special Extension activities through mini-grants. During this biennium, applications for these mini-grants have increased dramatically due to improved promotional efforts and greater ties with both the research community and local organizations. In 1986-88, nine of these grants were awarded by our Program to projects which related to Sea Grant goals and for which other money was not readily available. Several of these projects are highlighted in this report.

The appointment of Dr. Glenn E. Stout as the Sea Grant research coordinator has added leadership and broader experience to the research component of our Program. Dr. Stout, who is also director of the Water Resources Center at the University of Illinois, has been very prominent at the state, national, and international levels in the planning and management of water resources and water-related issues and research.



Sea Grant's success continues to be enhanced by the efforts of the Marine Extension and communications staff. Our small but efficient staff has made significant contributions with limited resources. Members of the Marine Extension staff develop their own valuable projects and programs, in addition to explaining research results to the public. The communications staff has made a considerable effort to make Sea Grant endeavors more visible through news releases and well-produced publications.

The Illinois-Indiana Sea Grant Program has requested consideration for institutional status by the National Sea Grant College Program. This designation would be conferred in recognition of the maturation of the youngest Sea Grant Program in the nation and would reflect its significant achievements.

The future holds many opportunities and challenges related to the economic and environmental aspects of Lake Michigan and the surrounding area. The Illinois-Indiana Sea Grant Program looks forward to working with government agencies, community groups, and individuals toward the goals of economic and environmental revitalization of the world's greatest freshwater resource.

Robert D. Espeseth
Coordinator

Burnell C. Fischer
Co-coordinator

Marine Extension

An apt metaphor for Marine Extension might be seen in the masthead of the Program's newsletter. The "helm," or captain's wheel, suggests leadership, but it is also composed of spokes coming from diverse directions. Linking knowledge to concerns of many different groups, from government agencies to marine enterprises, the Marine Extension staff has helped the public gain a better understanding of Lake Michigan issues and problems.

The Extension staff is composed of Chris Pennisi, Marine Extension adviser; Burnell Fischer, Marine Extension program leader; and Robert Espeseth, Coordinator. Guided by an advisory committee of 20 people, all with an interest in Lake Michigan, the staff focused its activities in 1986-88 on tourism and recreation, boating access, waterfront revitalization, fish contaminants, aquaculture, and general marine education.

Through public workshops, presentations, mass media information, and organizational assistance, the Sea Grant Extension staff has interpreted technical information and encouraged self education.

Tourism and Recreation

As former centers of shipping and heavy industry, the communities along southern Lake Michigan now rely on the several billion dollars brought in each year by tourists and local travellers. Built around the natural beauty and recreational opportunities of southern Lake Michigan, this growing tourism trade has had a major impact on the area's depressed economy.

In a brainstorming session with other members of the Lake Michigan Corridor Council, Chris Pennisi provides ideas for a visitor's guide to the attractions of Illinois' Lake Michigan shoreline.

Sea Grant's support to this industry ranges from providing information on the bed and breakfast business and Lake Michigan recreational facilities to getting new tourism organizations, such as the Illinois Bed and Breakfast Association and the Lake Michigan Corridor Council, off the ground. In an effort to extend boating access for those who do not own a boat, the Extension adviser was active in efforts to establish a community boating center along southern Lake Michigan.

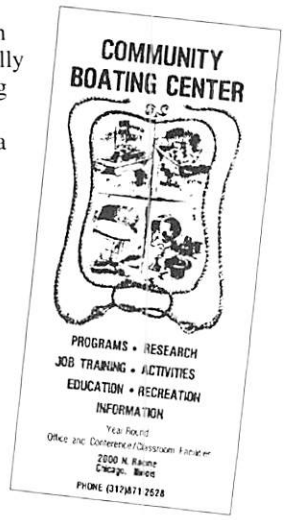
Since early 1986 the Illinois-Indiana Sea Grant Program has actively encouraged the development of bed and breakfast establishments, a growing tourism industry in the midwest. By obtaining materials from other states, preparing and reviewing legislative drafts, and participating in legislative hearings, Sea Grant had a major impact on the passage of the Illinois Bed and Breakfast Act. Staff also assisted in the formation of the Illinois Bed and Breakfast Association by helping draft a constitution and by-laws, arranging for meetings, and recommending future educational programs.

The Lake Michigan Corridor Council (LMCC) was formed in 1987 to market a tourism corridor along the Illinois Lake Michigan shoreline. This corridor includes the Lake Michigan Circle Tour, an auto trail highlighting scenic and recreational areas. By organizing a tourism marketing workshop, frequent council meetings, and large mailings, Sea Grant was key to LMCC's success in gaining commitments from four groups to provide financial support or active aid to the organization. Sears Roebuck and Company and the Cook County Office of Economic Development were among these new supporters. In addition to this administrative assistance, Sea Grant also contributed much-needed information about Lake Michigan recreational opportunities toward the development of an LMMC shoreline visitors guide.

Sea Grant Extension cooperated with the Wisconsin Sea Grant Institute and the Cooperative Extension Services of Wisconsin and Indiana on eight bed and breakfast workshops attended by over 500 participants. Robert Espeseth also responded to the need for information about getting into the bed and breakfast business, by co-authoring *Developing a Bed and Breakfast Business Plan.*

Boating Access

Most of the Illinois-Indiana 105-mile Lake Michigan shoreline provides little access for people who wish to go boating but do not own power boats or sailboats. So Don Glasell, a nationally recognized sailing instructor, and Lionel Eubanks, a marina operator and boat builder, came up with the idea of a "Community Boating Center" (CBC) which would provide inexpensive rental boats. The Center will operate using a fleet of donated boats and be funded by fees from boating safety and repair classes and private/government grants.



Working with Glasell and Eubanks, the Extension adviser publicized the idea by producing materials for mailings and organizing meetings. Sea Grant also supported the CBC by awarding two mini-grants to Glasell (1988) and Eubanks (1987) to attend national conferences on community sailing programs.

In response to Sea Grant's request for support of the "Community Boating Center," the Chicago Commons Association offered to help develop vocational classes in boat repair. Lowell Seida, an individual active in boating education organizations, donated $1,000 to the CBC, which was used to develop 2,000 educational brochures and to procure a telephone answering service.

Sea Grant rallied additional support during the Chicago Shoreline Protection Commission's eight public hearings held to elicit reaction about proposed erosion protection and recreation revitalization measures for the lakefront. Along with the Sea Grant Extension adviser, CBC supporters, from the Lake Michigan Yachting Association and the U.S. Yacht Racing Association, testified on behalf of the Center and small boating access at each hearing. An immediate result is that Chicago Park District officials are renovating their current small boating program at Burnham Harbor and have added a program near Rainbow Beach on Chicago's south side.

Waterfront Revitalization

The Edgewater Community Council came to the Sea Grant Program for assistance in planning the development of Edgewater's lakefront. A mini-grant was awarded to the Council and to the Association of Sheridan Condo-Coop owners to develop designs to address shoreline erosion problems, lack of

recreation space, and traffic congestion. The end product was a publication including the eight designs which influenced the Chicago Shoreline Protection Commission's final recommendations for the Edgewater shoreline.

Another example of Sea Grant's waterfront redevelopment efforts was encouraging attendance of the area's boating and fishing organizations at the Chicago Shoreline Protection Commission's hearings. This enabled the Commission's final report to reflect their concerns. The report outlines plans for new erosion protection that also enhance the public's shoreline access. Sea Grant was also active in the Commission's planning process, persuading it to include a small boat harbor in its final plans and to form a subcommittee to investigate funding sources.

Fish Contaminants

Certain fish contaminated with toxic chemicals pose the most immediate human health threats from Lake Michigan. Consequently, Illinois-Indiana Sea Grant has continued reporting the most current factual material on this subject through feature HELM articles. In language understandable by the public, these articles sought to alleviate people's fears and educate them about the latest fish consumption advisory for the four states bordering Lake Michigan.

Sea Grant also gave eight presentations to such groups as the Lake Michigan Interleague Group of the League of Women Voters and to 70 local environmentalists. One of these presentations was given to other Cooperative Extension advisers during a charterboat fishing trip, a natural setting for the discussion of fish cleaning methods and the recent fish advisory.

Sea Grant's Extension adviser educated the public on the health impacts of eating toxic contaminated fish through mass media in the following ways:

•Informing the Association of Great Lakes Outdoor Writers about the *HELM* articles on this subject; the Association then helped publicize the *HELM* articles in sixteen newspapers reaching over 400,000 readers throughout Illinois and Indiana.

• Appearing in two interviews on Chicago's WFLD-TV. The programs had an estimated viewership of 85,000 people.

• Participating in a Chicago public radio interview on WBEZ about Lake Michigan toxic contaminants, reaching an estimated 14,000 listeners.

These media broadcasts brought attention to Illinois-Indiana Sea Grant and resulted in numerous calls and letters from concerned citizens requesting additional information.

Aquaculture

Aquaculture has received greater recognition in the midwest as a supplement to agriculture as the farm economy has declined. In addition to funding several research projects relating to aquaculture, Sea Grant's support to this industry has included: 1) working with other interested groups and individuals to facilitate passage of the Illinois Aquaculture Act by the General Assembly; 2) assisting in the completion of an Illinois Aquaculture Plan; and 3) helping establish the Illinois Aquaculture Industries Association. The Association is vital to the aquaculture industry's growth, as it offers excellent opportunities for continuing education and training in aquaculture.

Marine Extension personnel were directly involved in the process of writing, reviewing, and editing material for the feasibility study of aquaculture in Illinois conducted by the Illinois Department of Agriculture. As a result of this study the legislature in 1987 passed the Illinois Aquaculture Act, which, according to Program Coordinator Espeseth, will have a major impact on the growth of the aquaculture industry. As this fledgling industry develops, Espeseth says it will be important to provide expertise through Sea Grant's Marine Extension program and the Cooperative Extension Service.

4-H/Youth and Marine Education

Traditionally 4-H is thought of as a primarily rural, farm centered youth organization. Through Marine Extension efforts in 1986-88, Sea Grant educated 4-H and school groups around the country about wetlands conservation and the Great Lakes.

Through the 4-H urban program, Sea Grant has led wetlands workshops for Chicago school teachers. Marine Extension adviser Pennisi provided hands-on training to 77 teachers from 1986-88. The teachers used the Illinois-Indiana Sea Grant publication, *Wetlands are Wonderlands*, to teach the wetlands curriculum to about 2300 students.

Additional requests for the guides from Illinois and Indiana 4-H advisers and teachers outside of Chicago and from educators around the country resulted in distribution of nearly 400 sets of booklets. Some of the national publicity was due to recognition in publications such as National Wildlife Federation's *Nature Scope* magazine *and Conserving America's Wetlands Resource Guide.*

Appreciating Your Great Lakes, the Program's second 4-H project guide, can be used by young people from grades 6-12. Sea Grant Extension staff members believe it will be useful to 4-H leaders and youth educators around the Great Lakes. The general public should also find it a helpful Great Lakes reference guide.

The Sea Grant staff also serves as an important resource for educators seeking information about marine issues. Through mini-grant funding the Program helped a Waukegan school teacher implement a field trip to the Waukegan Harbor, where students learned about the harbor's expansion plans and water quality problems.

Through its activities "in the field" the Extension staff also works to raise public awareness of Lake Michigan issues and Sea Grant Program activities. During the biennium, Pennisi spoke to groups such as the Northwest Indiana Economic Development Association and the Gary, Indiana Rotary Club. By arranging for WDCB public radio to broadcast Wisconsin Sea Grant's "Earthwatch" program, Pennisi ensured that the station's several million listeners have learned of regional Sea Grant efforts daily since 1987. The Illinois-Indiana Sea Grant Extension staff has also reached thousands of people through Sea Grant displays at three major events: the Chicago International Sailboat Show, the Chicago Maritime Folk Festival, and the Michigan City In-Water Boat Show. ☼

These students from St. Agnes School in Chicago Heights, Illinois are doing an experiment to see how different soils are affected by Lake Michigan erosion forces.

This wetlands learning activity is part of the "Wetlands are Wonderlands" curriculum.

Research

Illinois-Indiana Sea Grant's Research Program has made great strides during the biennium. By formalizing the request-for-proposal process and by increasing interaction with the Sea Grant Research Advisory Committee, the research component has become an integral part of the Program.

The Research Advisory Committee, made up of researchers from Illinois and Indiana universities, colleges, and agencies, plays an important role by developing policy and reviewing proposals. It also makes final selections of research proposals which merit consideration by the National Sea Grant College Program.

The use of mini-grants to foster preliminary research that might lead to full proposals has also been a recent Sea Grant activity. David Borst, recipient of a mini-grant to do preliminary studies for his research, is now being funded as one of the Sea Grant Program's research projects.

The following seven research investigations, which received Sea Grant funding during the biennium, are categorized under their subject areas—fisheries, coastal management, and aquaculture.

Fisheries

Food Habits of Lake Michigan Salmonids in Illinois Waters;
Food Habits of Salmonids in Indiana Waters of Lake Michigan

Salmonids, a family of fish species including the popular lake trout, rainbow trout, chinook salmon and coho salmon, were introduced to Lake Michigan in the sixties. They are now a key factor in the economic and environmental balance of the lake. Salmonids provide a high quality sportfishery of tremendous economic value, but the continued success and perpetuation of these salmonids depends on wise management of the fishery resource.

Thomas McComish, professor of fisheries biology at Indiana's Ball State University, along with associate professor of biology John Janssen and professor of biology Jan Savitz at Loyola University in Illinois, continued studies from 1984 to 1987 to help resource managers by monitoring the feeding habits of Lake Michigan salmonids. This Great Lakes Sea Grant Network research project, coordinated by the University of Wisconsin Sea Grant Institute, was especially concerned with the decreasing alewife population. Unless the salmonids switch from this traditional forage food to other food sources, McComish believes that excessive salmonid stocking could actually result in high mortality or poor growth of the stocked fish.

Results of the Indiana study indicated that the alewife had dropped from nearly 100% of the salmonids' diet in 1970 to 33-58% in 1984, depending on salmonid species. Illinois researcher Janssen found that while there has been a shift in the diet of the Lake Michigan salmonids away from alewives as prey, the salmonids in general still utilize alewives more than any other prey species. According to Janssen, other fish species, such as yellow perch and bloater, only become important as alternate forage for salmonids in the late summer and early fall.

Although the salmonids have a more diverse diet today than they had 28 years ago, research indicates that their continued preference for alewife is beginning to affect the salmonids' growth. There is evidence that chinook salmon are growing less in the waters of southern Lake Michigan because they simply aren't getting enough food. In the face of the high demand for salmonid sportfishing, the researchers recommend that fishery managers stock salmonid types such as lake trout and rainbow trout which are less dependent on alewife.

Analyses of the Behavioral Bases for Changes in Salmonid Diets

Spurred by the results of the Sea Grant-sponsored salmonid diet survey reported above, researchers Jan Savitz and John Janssen of Loyola University investigated why Lake Michigan salmonids continue to forage so heavily on alewives, in spite of the increased scarcity of the prey. Savitz and Janssen examined the possibility that the salmonids' prey-foraging behavior could be the cause by studying the eating behavior of these fish in a 21,500-liter aquarium at Chicago's John G. Shedd Aquarium with the aid of a video camera.

Savitz discovered that prey selection was determined by the habitat the prey chose. The salmonids only foraged in open water and at the mid-water levels and usually did not attempt to capture prey on the bottom or sides of the aquarium. Not surprisingly, alewives inhabited these popular hunting areas, while bloaters, a fish eaten less often by salmonids, stayed close to the bottom of the aquarium.

The study also found that high escape swimming speeds of yellow perch and shiners might account for their underutilization as prey species by the salmonids. Also, the stiff spines found on the fins of yellow perch caused them to be attacked less frequently.

Savitz believes this project will lead to a better understanding of the salmonids' available prey and will allow for adjustments in salmonid stocking programs.

Light, Water and the Photo Induced Toxicity of Complex Mixtures of Hydrocarbon Pollutants

Researchers Anne Spacie, Purdue University, and Richard Davenport, University of Illinois, have discovered a potential environmental hazard in southern Lake Michigan which previously had gone unnoticed. Their work has centered on the Grand Calumet River and associated waterways, an area of high traffic and heavy industrialization which makes it an important source of sediment-borne pollutants. Spacie, associate professor of fisheries biology, and Davenport, associate professor of genetics and development, were concerned about what happened when the hydrocarbon pollutants in the sediment were stirred by dredging or traffic and then exposed to sunlight.

In the past, standard tests of water and sediment quality have failed to consider the toxicity of pollutants activated by light, i.e., their phototoxicity. Davenport and Spacie collected samples from the Grand Calumet River and the Indiana Harbor Canal and exposed them to near ultra-violet light, discovering that many sediment samples were phototoxic. In several cases, the surface water above the sediments was also phototoxic. The most acutely phototoxic sediment samples also proved to be photomutagenic, capable of inducing mutations when exposed to light.

Researcher uses Ponar dredge to collect bottom sediment in the Grand Calumet River

Spacie explained that the results they have obtained are not shown indoors, under typical laboratory test conditions, but are relevant to natural environments. It appears that natural sunlight, even in December, is most effective in producing toxicity. Surprisingly, the researchers found no toxic activity or mutagenicity in samples without light exposure. Findings from this Sea Grant study show that sunlight contributes to environmental damage caused by the hydrocarbon pollution of bottom sediments.

As a result of this cooperative research project, Davenport and Spacie urge that tests for phototoxicity and photomutagenecity be included in future studies of water and sediment quality. They are currently investigating the long term effects of phototoxic

pollutants on aquatic populations in Lake Michigan. Fish populations may be harmed as well since they breed in river areas (sites of frequent dredging and sediment disturbances) and in water shallow enough to be affected by sunlight.

These findings should be of special concern to area residents since the sediments of southern Lake Michigan have been found by other scientists to contain some of the highest concentrations of polyaromatic hydrocarbons in the Great Lakes system.

Efficient Protection of Fish Habitat in Great Lakes Tributaries from Agricultural Pollutants

University of Illinois researchers John Braden and Edwin Herricks have linked economic and environmental concerns in their study of how farm practices affect fish in Lake Michigan tributaries. Cropland pollutants, such as runoff sediment and pesticides used by farmers, threaten important fish species in the tributaries and are major impediments to sportfisheries in the region.

In their two-year study Braden, associate professor of natural resource economics, and Herricks, associate professor of environmental biology, are working to identify farming practices which reduce the danger to aquatic life, but which are also least disruptive to farm activities.

Using case study sites in southwestern Michigan, Braden and Herricks are linking what they have discovered about the delivery and environmental impact of agricultural pollutants in that area to information about different farm practices and their cost. The researchers are developing a computer model which depicts how, for different farm operations, the pollutants will be carried over cropland and into the water.

According to Braden, the ultimate goal will be a model that will identify the complex relations among land uses, associated profits, and fish habitat and hazard characteristics. The program will be able to suggest the farm management practices for the case study locations which will be the most profitable while protecting fish habitat.

Because Indiana and Michigan are committed to improving the salmon fishery habitat in the tributaries to Lake Michigan, Braden and Herricks are confident that their research will suggest possible land use changes which will help preserve the habitat in that area. Ultimately, they hope their innovative consideration of both economic and environmental concerns will influence agricultural pollution control measures in other areas as well.

Sediment and pesticides transported in agricultural runoff can have damaging effects on fish in nearby tributaries.

Production, Identification, and Characterization of the Multiple Toxins Responsible for Ciguatera in the Caribbean and South Atlantic

People who consume certain tropical or subtropical fishes associated with coral reefs may become severely ill or even die if the fish they have eaten contain the ciguatera toxin. Therefore, Donald Tindall, professor of botany, and Donald Miller, professor of physiology, at Southern Illinois University, were funded by The National Sea Grant College Program through Illinois-Indiana Sea Grant to study these toxins with the hope of reducing or eliminating the dangers of ciguatera poisoning.

Public reports of ciguatera have enormous adverse effects on local seafood industries, noted Tindall. "These problems are compounded when toxic fishes are transported throughout the United States. Since fishes from tropical and subtropical waters have become important in interstate commerce, ciguatera has become a national public health concern."

In trying to resolve the ciguatera problem, researchers must find the sources of ciguatera toxins. A major obstacle to this problem is the shortage of toxins for research. Tindall and Miller have developed a more precise method for detecting toxins in commercial fish tissue in order to collect toxins for research. The standard method of detection requires interpretation of mouse symptoms to distinguish between different toxins. Tindall and Miller's alternative to this assay is less expensive, detects lower levels of toxin, and distinguishes better among toxins, according to Tindall.

Other benefits of this ciguatera research have included an improved understanding of toxic dinoflagellates in the natural environment; development of techniques and procedures for isolation, purification, and culture of Caribbean dinoflagellates; identification of five dinoflagellate species which are originators of seven different ciguatera toxins; and development of procedures to characterize ciguatera toxins.

Findings from this Sea Grant study have provided a starting point for developing practical marketplace tests that will safeguard individuals against ciguatera and will provide incentives for expansion of the seafood industry. The study will also provide a basis for clinical treatment of persons afflicted with ciguatera.

Coastal Management

Factors Affecting Participation in Indiana-Based Recreation on Southern Lake Michigan

The scenic and recreational attributes of southern Lake Michigan lead to millions of dollars being brought into Indiana's economy from shoreline tourism and recreation. Information about what influences people's choices of recreation places was needed for more effective policies to be made about Indiana's role in water-based recreation.

The Indiana Dunes National Lakeshore and the Indiana Dunes State Park are the largest and most frequented of Indiana's eight shoreline parks. Neither park can meet the visitor demand during the peak summer season, and both are often forced to limit visitor entry on summer weekends. At the same time, nearby municipal parks are underused as a result of poor access, inadequate facilities, or lack of public awareness.

With Sea Grant funding, Joseph O'Leary, associate professor of forest recreation, and graduate student Susan Wallace of Purdue University investigated the factors affecting participation in Indiana's lakeshore recreation using a random sampling of residents from the state's shoreline counties and from Cook County, Illinois.

Because they live near major recreation sites, most survey respondents frequented the shoreline parks during the day on weekends. Survey results showed that the majority of park users come with friends and family.

This family focus can be seen in many of the respondents' rankings of important park attributes. From a scale of thirty park characteristics, respondents gave high priority to cleanliness, feeling of safety, ample parking, beach area, lifeguards, and the enforcement of rules and regulations. O'Leary points out that the majority of these factors may be controlled by the facility's management and can be easily changed to meet visitors' needs.

The survey also provided useful information for park promoters wishing to reach a specific audience. Results indicated that women highly valued safety, food concessions, lifeguards, playgrounds, and proximity. Men, on the other hand, tended to be more fishing oriented, placing importance on boat launch ramps and bait and tackle shops. Younger respondents valued activity-related attributes, such as athletic facilities, while older respondents placed more emphasis on enforcement of rules and regulations.

It is clear that overcrowding presents a problem for these facilities. O'Leary and Wallace recommend reduction or redistribution of the many weekend visitors, which would improve site cleanliness, feelings of safety, and the management's ability to enforce rules. By highlighting key attributes in their advertising, the researchers suggest that site managers may be able to target appropriate clientele and encourage more visits to low-use areas.

Aquaculture

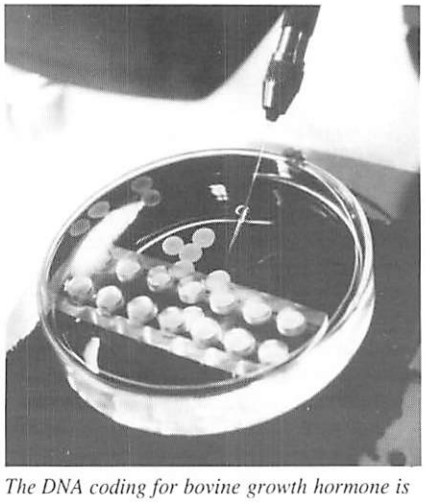
Development of Gene Transfer Technology for Aquaculture

In a two-year Sea Grant-sponsored study, Southern Illinois University researchers Chris Kohler, Jack Parker, Bill Muhlach, and Peter Phillips worked to develop a way to genetically transfer bovine growth hormone (extracted from cows) into fish eggs, producing fish with enhanced growth rates.

In the past, selective breeding for desirable traits has been the traditional solution to the need for profitable fish species. Kohler, assistant professor of zoology, points out that this method has proved to be time-consuming, expensive, and variable in success rates. New technology in gene cloning and gene transfer allows researchers to complement traditional breeding strategies by changing the genetic makeup of the fish.

In the first stage of their study, the researchers perfected procedures for microinjecting foreign DNA into fertilized fish eggs. "What is injected into the egg is not the bovine growth hormone itself," Kohler explained, "but more precisely it is the genetic code for that hormone."

If, at a future stage of their study, researchers are able to inject this code into the egg while it is still a single cell, there is a good chance that the growth hormone will integrate



The DNA coding for bovine growth hormone is microinjected into fertilized coho salmon eggs.

with the fish's own DNA and be replicated in all cells of the fish, making the fish grow larger.

After spending a year perfecting the fertilizing and injecting techniques, Kohler indicated that the research team now has a number of fish who seem to have integrated the bovine growth hormone code, but will have to raise them longer before they will know if the hormone is expressed.

The investigators have adhered to strict controls to avoid accidental release of fish with mutated genes into public waters. Genetically altered fish developed for commercial aquaculture will be sterilized.

Communications

When the Illinois-Indiana Sea Grant Program was established six years ago, a typical response from the public might have been, "What sea?" Since 1983, an active communications staff has alerted midwesterners to the "ocean" of economic and recreational opportunities found in our own Lake Michigan.

With over eight million people depending on the lake's resources, issues such as toxic contaminants or waterfront development can have a tremendous impact. Because these issues have stirred up great public concern, Sea Grant's Research and Extension components have been put to the task of finding solutions to these problems. Using print, broadcast, and visual tools to get the word out, the communications section, composed of Robin Goettel and an editorial assistant, ensures that interested people among these eight million learn about the Program's efforts.

Tourism and Recreation

As the industrial southern Lake Michigan waterfront is becoming revitalized, tourism is a dynamic force in improving the area's economy. In support of this growing tourism industry, Illinois-Indiana Sea Grant has developed a number of publications.

Developing a Bed and Breakfast Business Plan was written in response to new Illinois legislation, an increased demand for bed and breakfast operations, and a need for information on starting a business of this type. The manual received local and national distribution and was supplemented with Sea Grant workshops in Illinois, Indiana, and Wisconsin; through *HELM* articles; and by a feature in the national magazine *Extension Review*. A Great Lakes Sea Grant Network publication, *Courtesy is Contagious*, continues to be popular with business people who want to broaden their tourism base by adding a "personal touch" to their hospitality skills.

Articles on recreation and tourism are frequently reported in *The HELM*, Illinois-Indiana Sea Grant's quarterly newsletter. The newsletter serves a diverse state and regional readership, ranging from legislators, planners, and educators to boaters and citizens. For example, to provide insight into why some beaches are too crowded while others are underused, findings from a Sea Grant research study were reported in *The HELM's* "Research in Review" section. This column was added in 1986 to summarize Sea Grant funded research in language useful to the public.

Sportfishing draws thousands of visitors to the southern Lake Michigan area and has been featured in many Sea Grant publications. In addition to frequent coverage in *The HELM* and in news releases, sportfishing has been examined in the *1987 Survey of Charterboat Operators on Southern Lake Michigan*. This Extension report used responses from charterboat captains to assess the impact of the charter industry on local economies.

A Sea Grant research study on southern Lake Michigan anglers examined responses from local fishing enthusiasts to help fishery resource managers better understand their clientele. The salmonid diet study, another research project, has also been publicized by the communications staff through fact sheets, newsletters, and a comprehensive display exhibited at many of the research sites and at major Chicago exhibitions.

Toxic Contaminants

In addition to promotion of the region's economic potential, Sea Grant has alerted its audience to environmental problems. For example, the effects of toxic contaminants in Lake Michigan has been the goal of many communications activities during the last two years. Proper fish cleaning techniques to use before eating certain Lake Michigan fish has been the subject of several radio and television broadcasts. Articles about the fish consumption advisory have appeared in *The HELM*, and Sea Grant has provided seafood nutrition facts in response to a strong health interest expressed by area residents.

The objectives of three Sea Grant-sponsored research projects focusing on pollution problems were communicated to the public through fact sheets and are summarized in this report. The preliminary findings of one project which examined a toxin in fish causing serious human health effects were reported by Sea Grant through a press release, a fact sheet, and a journal article. Toxic contaminants were also the focus of a recent *HELM* article which alerted over 1,000 people to the remedial action plans to clean up Waukegan Harbor and the Grand Calumet River, two heavily polluted areas of southern Lake Michigan.

Aquaculture

Sea Grant has a strong commitment to create greater awareness of the emerging aquaculture industry in the two states. *Aquaculture: A New Industry for Illinois and Indiana*, one of this Program's first and most popular publications, promotes the innovative use of water resources for growing fish, seafood, and aquatic plants. With increased public interest in seafood's health advantages, it has been noted that fish farming can make an important contribution to the midwest economy. Sea Grant has also provided information on seafood nutrition through radio broadcasts heard on 50 stations in Illinois and surrounding states.

The Program's aquaculture display, "Seafood from the Prairie," was shown at many

conferences and at events including the popular Illinois State Fair. The communications staff developed posters and placed an announcement in the local public broadcast magazine to promote the aquaculture film "Farmers of the Sea." This National Sea Grant College Program production was broadcast as a *NOVA* feature on public television stations, including Champaign-Urbana's WILL-TV. ☼

Sea Grant has produced several displays to communicate information about the program and its projects. These exhibits have been particularly effective at large conferences and trade shows.

Publications from the Illinois-Indiana Sea Grant Program (1986-88)

Appreciating Your Great Lakes Single copies free, additional copies $1.00

Intended for grades 6 through 12, this guidebook includes suggestions for learning activities and an extensive list of references and resources about the Great Lakes, by Chris Pennisi and Robin Goettel, 1988.

Courtesy is Contagious—Guidelines for improving your tourism hospitality skills Single copies free; additional copies $1.00

This publication discusses the importance of hospitality and explains the tourist's needs and methods to meet these needs, by Chad P. Dawson and the Great Lakes Sea Grant Network Committee, 1986. 11pp.

The HELM Free

The Program's quarterly newsletter highlighting the latest in Extension and Research activities and important marine issues and events.

Illinois-Indiana Sea Grant Program Fact Sheets
Program Overview; Research Projects 1988-1989 ; and Regional and National Sea Grant Network Free

These three fact sheets, updated annually, report on both the planned activities for the current year and accomplishments and anticipated benefits of new and continuing Sea Grant Research and Extension projects. 1988. 2pp. each.

Illinois-Indiana Sea Grant Program Call for Proposals Free

The Program solicits new and continuing research proposals for funding consideration. Updated annually. 16pp.

Southern Lake Michigan Sportfishery: Angler Profiles and Specialization Index for Illinois and Indiana $3.00

This technical report helps resource managers to better understand the social and biological aspects of sportfishing, by James Absher, University of Illinois, 1987. 130pp.

1987 Survey of Charterboat Operators on Southern Lake Michigan $1.00

Through information about the cost and income of charterboat operation, operator and customer makeup, this publication demonstrates the importance of charterboat fishing to the region, by Diane M. Samdahl, University of Illinois, 1988. 34pp.

Wetlands Are Wonderlands (Leader/Teacher guide and Member/Youth guide) Single copies free; additional copies $1.00

These two 4-H marine education guides, intended for students in grades 6 through 8 and their leader/teachers, stress the importance of conserving wetlands, by Chris Pennisi. Revised 1986. 23pp and 27pp, respectively.

(For further information on the Program's publications, contact Robin Goettel.)

Great Lakes Sea Grant Network

The Illinois-Indiana Sea Grant Program is a member of the Great Lakes Sea Grant Network, made up of six programs collaborating on issues common to the five Great Lakes. In the last two years, several of the program's Research, Extension, and Communications activities were carried out in conjunction with the other Great Lakes Sea Grant Network Programs. The human and information resources made available through this network enable members to avoid duplicative efforts and to provide more thorough information to local communities and individuals.

Every 18 months, Marine Extension personnel from each of the Great Lakes Sea Grant programs meet to share information and ideas. Illinois-Indiana Sea Grant has taken a leadership role in these Network conferences by hosting the May 1986 Marine Extension Workshop in Michigan City, Indiana and by chairing sessions at other locations. At the 1986 meeting Chris Pennisi was installed as president of the professional Sea Grant advisory agents organization. At the 1987 Extension workshop in Duluth, Minnesota Pennisi co-coordinated speakers for a session on toxic contaminants and human health.

As part of a network project Burnell Fischer surveyed charter sailboat operations in Illinois and Indiana to document the magnitude and educational needs of the charter sailing industry. The results are being compiled into a Network publication.

Robin Goettel maintains close contact with other Network communicators to keep current on other Sea Grant activities which may be relevant to the Illinois-Indiana Program and to take advantage of the Network's added marketing potential. Publications relevant to this bi-state area produced by other Network programs are listed in *The HELM*. ☼

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Illinois-Indiana Sea Grant Program Budget

	1986-87		1987-88	
	Sea Grant	Grantee Share	Sea Grant	Grantee Share
Research	$150,801	$145,127 (6 projects)	$149,800	$147,541 (4 projects)
Marine Extension	78,246	37,011	80,798	36,968
Communications	21,116	10,655	13,600	17,037
Program Development and Management	17,837	29,409	23,802	29,258
Totals	$268,000	$222,202	$268,000	$230,804