ILLINOIS-INDIANA SEA GRANT COLLEGE PROGRAM

Annual Report 2001

Sea Grant
ILLINOIS - INDIANA

This publication was produced by the Illinois-Indiana Sea Grant College Program, Richard E. Warner, Interim Director.

Funding is provided by the National Sea Grant College Program, National Oceanic and Atmospheric Administration, U.S. Department of Commerce under Grant No. NA16RG1149.

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Sea Grant Publication Number: IISG-02-04

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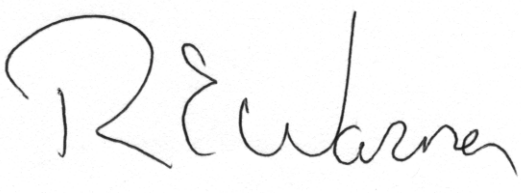
Introduction

This report describes important developments and accomplishments associated with the Illinois-Indiana Sea Grant College Program from January 1, 2001 through December 31, 2001. Given the funding cycle of the National Sea Grant College Program (NSGCP), the programmatic achievements listed in the Appendices are for August 1, 2000 through December 31, 2001. Emphasis is given to selected measurable impacts of the program in the bi-state area, the region, and the nation.

The Illinois-Indiana Sea Grant College Program continues to mature and expand in terms of funding, staffing, and partnerships. Building on this foundation, we look forward to the strategic collaborations, opportunities, and impacts that lie ahead for the benefit of Illinois, Indiana, the Great Lakes region, and the coastal areas of our nation.



Richard E. Warner,
Interim Director

Illinois-Indiana Sea Grant College Program 2001 Annual Report

Reorganization

The Illinois-Indiana Sea Grant (IISG) directorship and related administrative functions relocated from Purdue University in West Lafayette, Indiana to the University of Illinois at Urbana-Champaign in July 2001. The director position, previously a 50 percent-time appointment, will become full-time when the new director is recruited. As these changes have unfolded, the host institutions also have elevated the reporting lines of IISG. Administration of the outreach functions of the program will remain at Purdue under the supervision of the director of the Purdue University Cooperative Extension Service. At the University of Illinois, IISG is now positioned in the Office of the Vice Chancellor for Research (OVCR) under the vice chancellor for research.

Selected Accomplishments—2001

Coastal Communities and Economies

Dr. Phil Pope served as co-chair of National Sea Grant's Coastal Communities and Economies (CCE) Theme Team. The Committee developed a whitepaper describing the importance of balancing economic growth and coastal resource quality. It describes Sea Grant's role in providing information and techniques that help coastal communities make progress toward sustainable development. The Team's charge is to improve leadership and planning capacities by evaluating natural capital, educating coastal planners, constructing indicators of sustainable development, developing decision support systems, and revitalizing communities.

Theme Team members distributed the whitepaper nationally to community leaders, decision-makers, user groups, and governmental partners. The members met regularly via conference calls and face-to-face interactions throughout the year and were instrumental in working with the Coastal Community Development Initiative that started this past year. IISG maintains last year's financial resources for the theme team, continues to support the Web site, and provides clerical assistance and conference call support for the theme team as deliberations continue.

Fellowships and Student Involvement in Research

IISG funds graduate students directly through its fellowship program, through special projects funded via program development, and as components of competitively awarded research projects. The reporting period 2000-2001marks the continuing success of IISG to support educational and training efforts for graduate students. The number of students supported by these programs, both at the undergraduate and graduate level, has increased dramatically. Currently, 42 undergraduate, 48 Master's / Ph.D., and 2 post-doctoral students receive support through funded projects.

Illinois State Comprehensive Management Plan for Aquatic Nuisance Species

Recently, the State of Illinois received $80,000 from the U.S. Fish and Wildlife Service to begin implementing its Comprehensive Management Plan for Aquatic Nuisance Species (ANS). IISG's biological resources (BR) specialist and research coordinator served on the committee that drafted the plan. In addition, the BR specialist has served on the internal Great Lakes Panel on Aquatic Nuisance Species formed by the Great Lakes Commission. Recently, Illinois Governor George Ryan approved and signed the Great Lakes Action Plan that is a non-binding, "good faith" agreement presenting goals and principles to guide prevention and control efforts in the Great Lakes region. The Illinois-Indiana Sea Grant biological resources specialist responded to an RFP and was granted the responsibility to coordinate this project. Funds were granted to hire a full-time person to coordinate these efforts statewide under her supervision.

Leveraged Funding

Sea Grant-funded projects have leveraged additional funding that has helped continue or enhance the ongoing research of its principal investigators. Three of IISG's thematic areas: biological resources (aquatic nuisance species and fisheries), coastal business and environment (*Planning with POWER*), and water quality have benefited from the additional funding.

One researcher was able to leverage an industrial partner to donate expensive specialized equipment to further his research. Researchers involved with the *Planning with POWER* project funded by the Coastal Communities Development initiative, banded together to develop an integrated proposal to enhance their research and to tie all the individual efforts together. In addition, the Purdue University Cooperative Extension Service matched Sea Grant funds to support the continuation of this successful statewide program. Researchers and outreach staff, developing simplified fisheries advisory information for anglers and food preparers, obtained a research grant to conduct critical applied research necessary to further the project.

Outreach

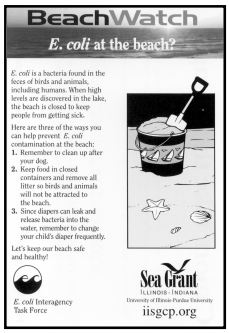
The outreach functional area had many notable achievements in information campaigns, media relations efforts, improved marketing, and enhanced internet access to program materials.

About Us

A new Outreach Guide, *Making Waves*, informs Sea Grant clientele of available programs and information. It is organized as loose fact sheets in a folder so it can be easily updated with new projects and information products. Staff biographies are also provided. This guide was distributed to numerous user groups in southern Lake Michigan, academic institutions, administrators at the University of Illinois and Purdue University and to Sea Grant program directors and outreach coordinators. It was disseminated to water resource management agencies in Illinois and Indiana, to attendees of Sea Grant workshops, and to the interested public at major events.

Public Information Series

The *BeachWatch* series of public service announcements were distributed as postcards and posters to public marinas, several City of Chicago departments, major museums, and to visitor centers at the Dunes State Park and Indiana Dunes National Lakeshore. The series includes information about *E. coli* contamination, marine sanitation devices, combined sewer overflows, and other beach-related topics. *BeachWatch* also informs the public about how individual behavior can impact the environment. Through the media, Web and direct distribution *BeachWatch* information will reach at least one million Lake Michigan residents and businesses in Illinois and Indiana, and has provided IISG with valuable data through a Web-based survey advertised on the postcards. The *BeachWatch* series earned a Bronze Award in the 2000 Agricultural Communicators in Education Critique and Awards Competition based on its effectiveness in providing information in a creative format.



Media Effort

In another success story, our fishhook flea press release received widespread coverage–in at least 38 newspapers, magazines, and newsletters. This release informed the public of the potential threats to the Lake Michigan food web, and alerted anglers and recreationalists to lookout for this newest invader to southern Lake Michigan.

Internet Access

The Illinois-Indiana Sea Grant College Program Web site was redesigned to improve efficiency of information retrieval through improved navigation and a more user-friendly Web page structure. The new graphic design provides a more appealing look to capture the attention of visitors, and creates a better environment to locate information. Program Web sites reached scientists, students, aquaculture producers and natural resource managers around the world; there were 937,742 visitors from over 159 countries.

Exhibits and Events

Three thousand people learned about exotic aquatic species—identification, impacts, and preventative measures—through Sea Grant exhibits at major events. These include the Field Museum in Chicago, "It's Wild in Chicago, 2001," the 2001 Illinois State Fair, and the 2001 Farm Progress Show in Indiana.

Interagency Collaboration

In the past year, Sea Grant outreach staff members have been invited and / or continued to serve on a number of key committees that influence public policy. (See Table 1.)

Aquaculture

The program has pioneered the use of distance-learning technologies to deliver scientific information to aquaculture producers. AquaNIC, an Internet World

Selected Interagency Collaborations

Table 1. Committee Involvement

Committee Name	Purpose	Staff Member	Position
E.Coli Task Force	17 Governemental agencies working together to solve the *E.coli* problem in southern Lake Michigan	Water quality specialist	Chair, Outreach Commitee
Water Supply Task Force, Northeastern Illinois Regional Planning Commission	Identify key water supply problems facing the region and recommend solutions	Coastal business and environment specialist	Task Force Member
The Great Lakes Panel on ANS (Aquatic Nuisance Species)	Works to prevent and control the occurrence of aquatic nuisance species in the Great Lakes	Biological resources specialist	Vice Chair
Education and Communications Organizing Committee, Chicago Wilderness Consortium	Develop plans and programs that increase understanding of the region's biodiversity, create a sense of regional pride, and motivate citizens to take part in local nature activities and conservation efforts.	Communications Coordinator	Communications Liason

Wide Web site, provides comprehensive, computer-based educational materials for starting and refining production systems, economic information for business planning, as well as marketing and pricing information to maximize profit to aquaculture producers. AquaNIC is a one-stop source of information that is available to producers, extension educators and scientists 24-hours a day. This site has been in operation for over six years and is now regularly accessed by users and scientists from over 150 countries and produces over three million file transfers annually.

AquaNIC

http://aquanic.org

Gateway to the world's electronic resources for aquaculture information and education.

A memorandum of agreement between the National Oceanic and Atmosphere Administration and the United States Department of Agriculture Libraries was signed in 1999 making AquaNIC the primary aquaculture Web site for both agencies. Under this agreement, the AquaNIC site comprises the aquaculture portion of the AgNIC network. Formal partnership agreements have been made with 14 other universities to provide coordinated aquaculture information over the WWW to users in North America and abroad. The growth of this site and the contributions of the many partners make AquaNIC more useful to clients in Illinois and Indiana, and to users around the world.

Biological Resources

Illinois-Indiana Sea Grant outreach staff continued to serve as unbiased, non-advocacy brokers of scientific information sought by agencies and resource users. Such status often allows outreach staff to bridge the gap that exists between management agencies and resource users. As an example, in spring 2000 and again in 2001, IISG was sought by management agencies in both states to lead a conference on the status of fisheries in southern Lake Michigan. The latest findings were presented by researchers and personnel with Illinois Department of Natural Resources, Indiana Department of Natural Resources, United States Geological Survey, and National Oceanic and Atmosphere Administration—Great Lakes Environmental Research Laboratory. These events brought together agency personnel, the region's scientists, and anglers and charter captains for a day of learning about the latest status of the dynamic Lake Michigan food web and to discuss management options.

The biological resources specialist has devoted the majority of her time and resources to preventing the introduction and spread of aquatic nuisance species (ANS). She developed educational resources (e.g., a

round goby identification display, boat landing signs, bait bucket stickers, displays at major fairs and sporting events) designed to educate recreational water users about exotic species and to encourage these users to take action to limit ANS spread. She has coauthored the *Illinois State Management Plan on ANS*, which has allowed Illinois to receive federal money for work on ANS.

Efforts in this area have resulted in significant improvements in knowledge and practice. Initial results of a survey of anglers in the Chicago metropolitan area indicate that 96 percent of anglers surveyed can correctly identify the round goby with the aid of an IISG identification display. Another survey of both boaters and anglers indicates that the majority (73 percent) of these recreational water users take steps to prevent the spread of ANS.

In addition, a model by Schneider et al. (1998) suggests that ANS educational efforts have resulted in a lower number of zebra mussel-infested lakes in Illinois than lake suitability and boat traffic patterns would predict. Actions by boaters now delay zebra mussel infestation of inland lakes by several decades, according to the model. This buys time to develop control methods and may save native mussels in hundreds of miles of streams and rivers.

Economic impacts of exotic species on industry and recreational water users have been reduced for two reasons. Industries have changed their zebra mussel control practices to be more effective and cost efficient; and 25,000 boaters have learned how to protect their boats and boat engines from zebra mussels using information provided by Sea Grant.

The biological resources specialist has also co-developed a program to control purple loosestrife through the release of *Galerucella* beetles with the assistance of 4-H groups. She partnered with 4-H faculty at Purdue University and with Illinois Natural History Survey staff to develop this program. This program received approval as a statewide 4-H project in Indiana, and is being evaluated for incorporation as a national project. This past year in Indiana, four leaders in the northern half of the state worked with 49 young people to release 6,400 beetles at 10 release sites. In Illinois, three leaders managed the project.

Coastal Business and Environment (CBE)

Water Quantity Accomplishments

- Established an Internet site for disseminating findings from the project, "Water Supply Manage ment Options for Northeastern Illinois."
- Circulated information about the Web site to water supply decision-makers in the region (Northeastern Illinois Planning Commission, the U.S. Environmental Protection Agency, Region V, and the Illinois Department of Natural Resources, Office of Water Resources and Illinois State Water Survey).
- Disseminated research findings at the Coastal Zone '01 Conference in Cleveland and at the 2nd Annual Conference on Great Lakes Water Law in Chicago.

The Northeastern Illinois Planning Commission has already incorporated portions of the report in its presentations to local officials and the general public about the agency's draft Strategic Plan for Water Resources Management. This information helps the agency build a stronger public constituency for its water resources plan. These research findings will help the interim CBE specialist garner the necessary funding to expand the scope of inquiry into the use of economic incentives for more sustainable water resource use.

Through his service on numerous boards and task forces, the interim CBE specialist encourages the consideration and integration of environmental and economic concerns into ongoing local and regional planning initiatives. (See appendix for a listing of committee affiliations.)

The CBE specialist will be involved in a new planning initiative currently being undertaken by the Northeastern Illinois Planning Commission to develop a regional comprehensive plan by 2004. These advisory and public service appointments also enhance the IISG program exposure and outreach to the CBE thematic area's constituency, encouraging more and higher-quality research proposal submissions to the Illinois-Indiana Sea Grant College Program.

Balancing Land Use Change and Natural Resources

Outreach staff are developing educational programs for decision-makers to assist them in considering water quality and coastal environmental issues in land use decisions. A grant entitled "Reducing non-point source impacts through land-use planning in developing watersheds: educational and technical support for local officials," was funded through the Indiana Department of Environmental Management's 319 program and began in July 2000.

This collaborative effort between Purdue University Extension and Illinois-Indiana Sea Grant builds on the

program "Non-point Education for Municipal Officials" (NEMO, initiated by the University of Connecticut). It expands educational programming beyond non-point source pollution to include protection of all natural resources while accommodating land use change. The IISG project, *Planning with POWER*, involves scientists, decision-makers, professionals, and citizens, and links watershed planning with land use planning at the local level. IISG Coastal Community Development Funds and Purdue University Cooperative Extension Service will provide funding beyond July 2002.

For the past year, the *Planning with POWER* staff has been developing and providing information about the impacts of increased development on watersheds. A program brochure and five peer-reviewed Extension publications have been created, along with a professionally designed display explaining the program. A Web site has been established at www.planningwithpower.org. Outreach staff created a 25-minute PowerPoint presentation in cooperation with the advisory committee, Indiana Conservation Partnership, and Purdue University

CES Land Use Team. Technical input from experts in all of these groups was incorporated into this cohesive presentation that will serve as the first educational program delivered to county commissioners, planning and zoning officials, local officials, and the public. The same program will be used in follow-up presentations to larger stakeholder groups in counties desiring to move forward with the program.

The *Planning with POWER* program has staffed displays at four events around the state reaching over 700 people. The program has been presented in seven counties and to 90 local officials at the Purdue Road School and to the Indiana Land Resource Council. Additional counties are continually expressing interest in the *Planning with POWER* presentation, averaging two to three per month.

Advisory committee meetings are held regularly for guidance on the development of *Planning with POWER* products and input on the structure of the project. In November 2000, a two-day training workshop was held for all project partners, which was attended by more than 50 natural resource professionals, representing over seven agencies in Indiana.

Planning with POWER received an additional grant of $25,000 from the NOAA Coastal Services Center to develop GIS build-out analysis for three counties in Indiana. These analyses are being used as examples and training aids for programming in other counties around the state. A build-out analysis has been completed for one county and the data and maps produced have been incorporated into the initial PowerPoint presentation. Additional support, exceeding $72,000, has been contributed to the project from the Purdue University Cooperative Extension Service and Illinois-Indiana Sea Grant College Program for staff salaries, supplies and expenses, travel, workshop expenses, and publication printing and development. In addition, the Illinois-Indiana Sea Grant College Program has provided clerical support for the project.

Staff with the *Planning With POWER* project has begun working closely with seven communities in Indiana on *POWER* goals and objectives. The *Planning With POWER* project is also working closely with the recently formed Indiana Land Resources Council (composed of appointees by the governor and chaired by the lieutenant governor of Indiana) as they work with local communities to balance growth and development with natural resource protection. The Indiana Land Resources Council asked *Planning With POWER* to provide assistance and guidance to their pilot community to assess the needs of local land use decision-makers. *Planning With POWER* will develop resources and provide assistance to these communities facing the challenge of balancing growth and the protection of their vital and critical natural resource base. This program will be expanded to Illinois within the next two years.

Planning for Regional Natural Resources into the Future

The land surrounding southern Lake Michigan is highly developed and continues to be a very fast-growing area. It includes three counties in northwest Indiana, six counties in northeastern Illinois, and seven counties in southeastern Wisconsin, with an estimated 2000 Census population of 11 million people. Existing development and future growth in this area will have impacts on Great Lakes environmental and coastal resources.

If environmental resources are to be managed sustainably in this region, they must be included in the region's developing growth plans. Planning for this multi-state area is conducted by four regional planning organizations serving the Gary-Chicago-Milwaukee corridor: the Chicago Area Transportation Study, the Northeastern Illinois Planning Commission, the Northwestern Indiana Regional Planning Commission, and the Southeastern Wisconsin Regional Planning Commission. Prior to this project, these four organizations operated independently, did not plan for the region as a whole, and made few provisions for natural resources in future growth plans.

Funding was provided to the Northeastern Illinois Regional Planning Commission to convene these four planning agencies to initiate a process to improve communication and coordination of planning activities. Initial meetings were held with the executive directors of the four regional planning organizations to plan a course of action. This was the first dialog established between these four agencies.

In July 2001, a conference was convened to bring together the agencies' leaders. Significant interstate issues were presented, ranging in scope from economic global competitiveness to infrastructure limitations on growth. Illinois-Indiana Sea Grant was asked to identify environmental issues of interstate concern and necessary considerations in future growth plans. Sea Grant's associate director raised the issues of environmental carrying capacity and limited groundwater supplies as important to future sustainability. Regional authorities agreed that water supply and natural resource concerns should be incorporated into future regional growth plans.

This project has already resulted in several significant outcomes. Leaders of the four major planning bodies in the tri-state region now have an improved understanding of growth and development issues affecting all of their jurisdictions, as well as Lake Michigan. Preliminary agreement was reached on the Wingspread Regional Accord, in which the organizations have committed to increased communication, cooperation, and collaboration on interstate planning issues. The four agencies have developed and initiated a work plan to undertake short- and long-term initiatives to accomplish regional planning coordination on topics of common concern, including sustainability of water and other natural resources.

Water Quality

E. coli Task Force. Illinois-Indiana Sea Grant participated in planning the spring 2001 "Great Lakes Beach Conference" held in Chicago, Illinois. As well as participating in the planning, Sea Grant presented a poster at the conference, that displayed some beach outreach activities in northwest Indiana, and included *BeachWatch* posters, mini beach balls marked with "Keep our beaches healthy," and a survey.

Illinois-Indiana Sea Grant continued as chair of the *E. coli* Task Force's Outreach Committee. The committee created a series of public service announcements in the summer of 2000. These postcards and posters were distributed to public marinas in the area, at visitor centers at the Dunes State Park and Indiana Dunes National Lakeshore, and to major Chicago museums in 2001. The *BeachWatch* series informs the public about beach issues and how their behavior can impact the environment. The posters were also displayed at the "Great Lakes Beach Conference" in February 2001 and at the "Illinois Lake Management" meeting in March 2001. Four surveys based on postcard information were created and placed on Illinois-Indiana Sea Grant's Web site to measure whether the postcard or Web information impacts individual behavior. Thus far, 65 percent of survey respondents reported that they did not know or needed to be reminded that individual actions (related to specific postcard topics) can contribute to water quality concerns.

Illinois-Indiana Sea Grant co-sponsored a conference on septic problems in Indiana led by Don Jones and Natalie Carroll of Purdue University. The Sea Grant aquatic ecology specialist worked in collaboration with the *E. coli* Task Force to develop the presentation "*E. coli* problems in northwest Indiana: An overview." She developed a notebook of conference notes for participants, which addressed "Septic Systems and Water Quality in Indiana." At the same conference, a Sea Grant

funded researcher presented his research on *E. coli* DNA fingerprinting (Tseng and Ting, R/PS-01-99).

Congress approved the passage of the BEACH Act, which provides states with federal funding to develop standards for beach monitoring and public notification. Illinois-Indiana Sea Grant partnered with Indiana University Northwest and the Save the Dunes Conservation Fund and received funding to develop the "Beach Monitoring and Notification Plan for Indiana."

"River Restoration: Practices and Concepts" (A hands-on workshop on the latest techniques for stream restoration), was coordinated by Illinois-Indiana Sea Grant and the Chicago Wilderness Consortium. Various federal, state and local entities, such as Chicago Wilderness and the U.S. Army Corps of Engineers, participated in planning the conference. Over 100 participants were provided with information, in auditorium and field settings, which covered state-of-the-art techniques currently employed in river restoration for an urban environment. Attendees requested more information on dam removal and dam modification, and also on stream bank stabilization would be useful. Thus, a dam modification and removal conference is planned for April 2002.

Education

The Zebra Mussel Mania Traveling Trunk Project continues to receive high praise from educators who use it to teach about aquatic exotic species and their impacts. This highly interactive resource was commended by reviewers and was recently selected for inclusion into the Eisenhower National Clearinghouse of Educational Materials. A network of 30 lending sites in the U.S. and Canada, established by Illinois-Indiana Sea Grant, has offered the curriculum to over 1,500 teachers who have educated 37,000 students about biology, spread, impact, and the human role in addressing the issue of aquatic exotic species.

The Exotic Species Day Camp project's compendium of 36 teacher-developed lesson plans, titled *ESCAPE*, has been completed and is being distributed nationally. This education resource informs students and encourages responsible actions with respect to the spread and transport of nonindigenous species. Its experiments, games and ecosystem simulations are being widely promoted throughout the U.S. and Canada and distributed through the efforts of the project's five co-PI's in Illinois-Indiana, New York, Ohio, Minnesota, and Michigan Sea Grant programs. Established educator networks, including scientific reviewers and teacher pilot testers are also providing excellent channels of distribution.

Two popular interactive games from *ESCAPE* are being marketed separately as a spin-off from this project. *ESCAPE* received two national awards—Blue Ribbon Award and the People's Choice Award— from the National Sea Grant Network's Product Competition in April 2001. This recognition was based on the quality of the extensive lessons contained in the compendium for classroom teachers, environmental educators, and students.

Exotic Aquatics on the Move is a project serving geography/social studies educators and students. Sea Grant-sponsored workshops were held in Indiana, Louisiana, New York and Washington. Geographic Alliances in Louisiana, Indiana, and Illinois all played an active role in the planning and presentation of the workshops, and Alliance Coordinators also served in an advisory capacity ensuring that the workshop content aligned well with National Geography Education Standards.

Two exciting outcomes of this project are the 42 teacher-developed geography activities and student-developed community stewardship projects. Students in these four states used bumper stickers, videotaped programs, t-shirts, large school displays and events, artwork, murals, posters, and flyers to inform the public. They met with the public at boat shows, marinas, and educational events such as the Great Lakes Student Summit.

Some young people met with community groups such as a city council, the Kiwanis Club, and high school academic boosters who were interested in learning more about exotic aquatics. They reached out to the Hispanic community with a play in Spanish about purple loosestrife and a merengue dance that demonstrated how native plants are "bumped out" of their habitat by purple loosestrife. They placed flyers in doctor and dental offices and exhibited student projects at community educational facilities, such as the Center for Great Lakes Environmental Education and the Aquarium of Niagara.

A new education Web site—an exceptional resource for teachers and students seeking information on Great Lakes and marine exotic species—is continually updated with new information.

Teachers are always looking for interesting ways to engage students in the areas of ecology, food webs, and biodiversity. Communications staff developed an

exhibit, "Fishing for Information," for teachers and students to learn about the characteristics of non-native exotic species and what happens when they invade new bodies of water. This interactive exhibit:

- Taught visitors how to identify non-native aquatic species and facts about their biology.
- Provided a hands-on learning experience that sparks the curiosity of young people.
- Explained actions both young and old can take to help prevent the spread of exotic species into new bodies of water.
- Informed educators about the availability of educational resources through Illinois-Indiana Sea Grant, including the new *ESCAPE* Compendium of 36 classroom activities.

Although the primary audience was youth, adults enjoyed the exhibit and participated as well. What's

more, boaters and anglers found it helpful to learn about exotic aquatic species and how to control their spread. The exhibit attracted over 3,000 visitors at:

- "It's Wild in Chicago," a huge 3-day event in the Field Museum showcasing organizations and agencies that make up the Chicago Wilderness Consortium. This organization focuses on preserving biodiversity in the Chicago region.
- University of Illinois College of ACES Open House.
- The Illinois State Fair in Springfield; the exhibit was available for 3 days and was a popular stop in the University of Illinois tent.

Research-Outreach Linkage

A formal procedure to integrate research with outreach activities was instituted in spring 2000. As a result, extension specialists have input in the development of program RFPs. They provide analysis of the compatibility of pre-proposals with thematic area objectives and potential for impact. After projects are selected, Extension specialists and the media specialist meet with the researcher(s) on selected projects, the research coordinator and the associate director prior to project initiation. They identify the outreach actions required for the research to result in positive impacts for clients. The Extension specialist contacts the researcher quarterly to stay abreast of progress and ongoing research results. Consequently, the Extension specialist can relay research progress or difficulties to program administration and can also work with the media specialist to initiate press releases or public information activities.

This coordinated research and outreach effort focuses on impacts from the start. A closer working relationship with researchers enables outreach personnel to better include the researchers into outreach efforts such as workshops, conferences and events. It ensures that outreach efforts provide the means for research findings to be used by or to have an impact on clients. All research projects initiated on March 1, 2000, have followed this process. Formal meetings between researchers and outreach staff have been conducted. This same procedure will be followed on all projects beginning in March 2002, and for all new projects funded through National Strategic Initiatives. In addition, all new research proposals beginning in FY 2000 are required to have a specific discussion connecting research results to users. As a result of this process, two new development projects have been identified that translate existing research results into impact.

Research and science were linked again at the Illinois-Indiana Sea Grant College Program Research Symposium held in Chicago in 2001. This symposium brought Sea Grant researchers together with agency officials, university administrators, and the media. It publicized the results of Sea Grant funded research and provided a venue for networking among the Sea Grant staff, the researchers, and staff from interested agencies. The published proceedings of research findings presented that day are receiving wide distribution.

Research

IISG developed a research directory, *Catching the Current*, to build awareness of our research findings and to encourage scientific collaboration. It has been distributed to academic institutions, administrators at the University of Illinois and Purdue University and to Sea Grant program directors and research coordinators.

Aquaculture

Although Chicago is one of the five largest U.S. seafood markets, most of the consumed seafood is produced outside the Midwest. At the same time, Asian consumers desire a Midwestern species, live largemouth bass, above all other freshwater fish. Demand for this fish has been identified in excess of 700,000 pounds per year at over $4.00 per pound live weight. The demand for largemouth bass for stocking as a sport fish has also grown dramatically and far exceeds availability. Yellow perch is another native Midwestern species for which there is high demand. There is a limited commercial supply, however, because wild stocks are declining and restrictions have been placed on commercial harvest.

Fish farming of these species might be a solution, but the adoption of high-value native species in aquaculture is dependent on improving their growth rates to increase the return on one's investment. Researchers currently lack the tools to measure the levels of growth hormone in fishes such as yellow perch. Without reliable measures of growth hormone, it is difficult to develop methods to enhance the growth rates of the high-value native species.

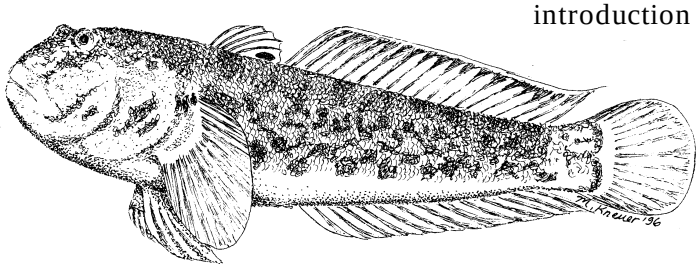
Researcher Frederick Goetz (RA-05-99) successfully cloned the yellow perch growth hormone as a first step in developing reliable assays for a growth hormone. The method was indirect, using the messenger RNA, which directs the synthesis of the growth hormone protein in perch, to produce an artificial perch growth hormone ("recombinant" protein). The artificial growth hormone provided an antigen to produce an antibody in rabbits. Goetz is currently testing the antibody to see if it can be used to measure the natural perch growth hormone.

To facilitate the dissemination of information from this project to other researchers, Goetz developed a Web page (www.nd.edu/~srobert4/perca.htm). The page lists the reagents that are available for distribution and chronicles research progress.

In separate research, James Tidwell (R/A-03-00) found that the optimal temperature for weight gain and feed conversion in largemouth bass is 26° C. The nutritional value of bass fillets is maintained at this temperature. Effects on bass liver composition and fatty acid profiles of different bass tissues are currently being analyzed.

Biological Resources – Invasive Species

The biological resources of the Great Lakes are under stress not only from toxic contaminants in sediment and water, but also from "biological pollution"—the introduction



of nonindigenous ANS. Several projects improved the capability of predicting effects of invasive species and two others addressed possible control techniques.

Martin Berg and John Janssen (R/ANS/03-99) point out that repeated introduction of non-native species has caused frequent restructuring of lake food webs, the demise of economically important fisheries, and an increase in management costs associated with attempts to control these nonindigenous species. A recent threat to the Great Lakes has been the invasion of the round goby. The addition of this fish to the Lake Michigan nearshore food web, combined with the apparent elimination of mottled sculpins (a benthic fish native to the Great Lakes) raised concerns about impact of gobies on sculpin poulations. The gobies may have caused changes in the food web that could affect other species, including game and non-game fishes.

Berg and Janssen used cage experiments to assess the differential impacts of round gobies and mottled sculpins on benthic invertebrate community structure in nearshore Lake Michigan. In addition, the researchers have examined the diet overlap of round gobies and mottled sculpins and differences in prey behavior in areas where the two species co-occur and where they occur in isolation from one another.

In a related study, Janssen and Berg (R/ANS-04-98) demonstrated that mottled sculpins are severely affected by introduced round gobies and the mechanism

is likely to be nesting interference. Male round gobies may evict defending mottled sculpins to take over a spawning shelter. The round gobies also consume the mottled sculpin eggs.

It may be feasible to anticipate where round gobies are most likely to nest. It may also be possible to alter habitat to minimize round goby nesting or to design artificial shelters for mottled sculpins that round gobies are unlikely to utilize. In some places it may be feasible to design "hyper-attractive" round goby nests that can be harvested for egg destruction or impregnated with a pathogen or chemical specific to goby eggs.

Gary Lamberti and Martin Berg collaborated to assess and predict interactions among three invading aquatic species and native species, including highly valued native sport fishes such as yellow perch (R/ANS-06-99). The ultimate objective of the research is to develop a predictive model that will assist in the management of exotic and native aquatic species in Lake Michigan and elsewhere in the Great Lakes. Lamberti and Berg found that ruffe will compete with native yellow perch for food and habitat, and that the growth of both species declines during coexistence. However, they also found that yellow perch have a greater ability to withstand periodic hypoxia at summer water temperatures than do ruffe. The research also suggests that where food resources are limiting in the Great Lakes, introduced gobies will have a competitive advantage over introduced ruffe, which could impede the invasion of ruffe into areas where gobies are firmly established.

The history of species invasions in the Great Lakes and the Illinois River, historical water quality data and life history data were used to determine 1) what makes some species more invasive than others, and 2) what makes some ecosystems more vulnerable to invasions than others (Lodge, Sparks, Schneider, and Marsden, R/ANS-05-97). Movement of non-native fishes between Lake Michigan and the Illinois River correlates strongly with water quality conditions in the connecting canal system. Most of the non-native species moved either before the 1920s or since the 1980s. In between, the poor water quality acted as a pollution barrier to fish movement.

Published papers from a separate project (Lodge, R/ES-05-98) document the environmental impacts of continued invasions by crayfishes and describe policies to prevent future introductions. Crayfish are one of the most threatened and endangered taxa in the world and the U.S. has the greatest biodiversity with over 300 species. However, the biodiversity of crayfishes in the Great Lakes has been relatively unknown. This research has produced the best documentation to date, of crayfish species occurring in Lake Michigan (rather than in the tributary rivers). Introductions of the invasive rusty crayfish can have dramatic effects on food webs. Although rusty crayfish look similar to other species of crayfishes, they are better competitors for food and shelter and are less susceptible to predation by fishes. Results suggest that the primary pathway of rusty crayfish introduction has been anglers using live crayfish as bait. Both regulations and public education of anglers and bait dealers are needed.

The destructive and expensive effects of zebra mussels on water users, as well as on native species, might be reduced by determining how they are transported in rivers and estuaries and then impeding transport with various types of barriers (Daniel Schneider and co-investigators, A/SE (ANS)-07-99) or disrupting transformation and settlement of the larvae with structures that create turbulence. An integral part of the analysis involves hydraulic modeling (Rehmann, Sparks and Stoeckel, R/ANS-07-99). Both of the latter projects involve collaboration with New York Sea Grant.

The weak link in the life cycle of the zebra mussel may be the larval phase, particularly during transitions from one stage to the next, when mortality rates in both the field and the lab are high. This phase is responsible for dispersal of the mussel to new habitats and the maintenance of populations. River ecosystems, where larvae disperse downstream, may be particularly suitable for implementing control. The investigators are determining the role of dispersal and settlement of larvae in maintaining adult populations in the Hudson and Illinois Rivers. By combining models of water transport and larval biology, they will evaluate the potential for controlling the mussel in rivers with different flow characteristics by manipulating larval dispersal and abundance.

Biological Resources – Yellow Perch

Yellow perch is a highly valued sport and food fish that has experienced recruitment failures in Lake Michigan since 1988. It appears that year-class strength is determined during a one-month period after hatching.

John Janssen (R/ANS-03-98 and R/CF-02-99) has cooperated with investigators at other institutions around Lake Michigan to find young-of-the-year perch and determine where they have been and what they have eaten by analysis of stable isotope ratios in their ear bones (otoliths) and muscle tissue. Shortly after hatching in shallow water, the young yellow perch drift great

distances with wind-driven currents, sometimes well offshore—to at least 20 miles.

The working hypothesis is that wind-driven water movements affect survival (e.g., by moving the larval fish into or out of concentrations of food). Janssen's findings indicate that larval yellow perch are more abundant where downwelling (sinking of surface water) occurs rather than where upwelling (rising of deep water to the surface) occurs in the lake. The concentration of larvae may be due to the combined effects of transport to nearshore areas, and the warm water and turbulence associated with downwelling may stimulate hatching.

From analysis of the daily growth rings in the otoliths of juvenile yellow perch, it appears that the juvenile yellow perch caught in Illinois originated elsewhere. The peak abundance of newborn larvae in Illinois has been early June, but the older, larger juveniles appear to have been born in late June, indicating they were probably transported from much farther north. It is evident that many yellow perch drift great distances. This means that there is a challenge for the juveniles to find their way back to shallow water, the location of most of their food for the rest of their lives.

This research helps determine what spawning grounds are most important for the yellow perch and what factors affect survival during their critical early life. One practical application will be the development of a reliable sampling method to assess reproductive success well before the fish reach a legally harvestable size, so that harvest regulations can be adjusted precisely to the expected population size.

Coastal Business and Environment

Water supplies for coastal communities can limit growth, even when the communities are on the shore of one of the largest bodies of freshwater in the world. The Chicago Metro region is projected to grow by 1.8 million people by 2020, but the region's water supply may be inadequate because the use of Lake Michigan is constrained under U.S. Supreme Court decrees and municipalities have historically withdrawn groundwater from a deep aquifer at unsustainable rates.

Martin Jaffe (C/ED-04-99) collected base-line water use data and assessed the institutional and legal mechanisms needed for market-based strategies to manage the region's water supplies. This research contributed to the narrative and policies of the Northeastern Illinois Planning Commission's (NIPC) forthcoming *Strategic Plan for Water Resource Management*. This plan is intended to establish regional consensus on water supply, storm water management, and water quality policies for the Chicago metro region and to guide water resources management policies through 2020.

The final report will be posted on the Internet, with its URL linked to the Illinois-Indiana Sea Grant College Program and to the Great Lakes Commission's Great Lakes Information Network websites. The Web document will hyperlink the project's research to original reference source materials on Great Lakes water litigation and legislation, thus providing a useful research resource for others examining management of regional water resources.

Water and Sediment Quality

Water and sediment quality affect the environmental and economic health of the communities surrounding lakes, rivers and canals in northeastern Illinois. Many waterways and sediments are contaminated by heavy metals, organic chemicals, and high levels of *E. coli* bacteria.

IISG researchers are developing ways to trace *E. coli* back to their sources and to use fish as indicators of sediment contamination. Investigators Charles Tseng and Evert Ting (R/PS-01-99) developed a DNA "fingerprinting" technique that can identify *E. coli* bacteria according to

their source (the human or animal species that hosts them). Researchers and public health agencies might access a library of such fingerprints to detect and mitigate sources of bacterial contamination of public beaches.

A library of over 400 *E. coli* isolates from human and nonhumans has been constructed. The library also includes "fingerprints" of more than 50 environmental *E. coli* isolates from beach, sand and lake water. The investigators initiated a new approach: use of an automated RiboPrinter for tracking the source of *E. coli*. The goal is to use both databases (RAPD and ribotyping) for consensus identification.

Gene Rhodes (R/EC-01-97) has developed and field-tested sensitive markers in fish that indicate exposure to toxic contaminants in water and sediments. The markers can be used to assess whether dredging of contaminated sediments is an effective remediation technique or instead mobilizes the contaminants, perhaps making them more biologically available. Brown bullheads were maintained in cages in the Grand Calumet Lagoons (GCL) near Gary, Indiana for two years. Fish from locations with high concentrations of PAHs in the sediments show more DNA damage than fish from non-contaminated locations. Elevated levels of DNA damage were detected after only 4 weeks of exposure to contaminants.

Staff Update

Dr. Phillip E. Pope stepped down as director of the Illinois-Indiana Sea Grant College Program in July 2001. Since then, the director's position and administrative oversight responsibilities have transferred to the University of Illinois. Dr. Richard E. Warner served as interim director. Dr. Warner was also assistant dean of the College of Agricultural, Consumer and Environmental at the University of Illinois at Urbana-Champaign. A search for a full time director is currently underway. Interviews are being conducted in November and December of 2001, and a director will be selected and be in place by summer 2002. After the director is recruited, several part-time positions will also be filled in the director's office at the University of Illinois at Urbana-Champaign, including a secretary, fiscal and policy analyst, and program assistant.

Other staffing changes include the following:

Brian K. Miller was named associate director and outreach coordinator and will continue to serve as extension program leader.

Patrice M. Charlebois (biological resources specialist) and Leslie Dorworth (aquatic ecologist) both were on maternity leave during part of the reporting period.

Michele Browna (program manager) left the program in September 2001. Program management responsibilities will now reside at the University of Illinois.

Martin Jaffe has been named interim coastal business and environment extension specialist. He replaces Dr. Daniel McGrath (coastal business and environment specialist) who left his position in spring 2001 to pursue other opportunities at his host institution. Jaffe is an associate professor within the College of Urban Planning and Public Administration at the University of Illinois at Chicago. He is also a Sea Grant researcher and has recently completed a study on policy alternatives to efficiently allocate groundwater in the growing Chicago area where groundwater is now in short supply and surface water allocations have reached maximum allowable levels. Professor Jaffe is an expert in policy and planning issues as they relate to natural resources.

Irene Miles, a writer in the University of Illinois College of Agriculture, Consumer and Environmental Sciences, became the new visiting media / communications specialist in June 2001. She succeeds Debra Levey Larson. Miles is the editor of The HELM and is responsible for Sea Grant media campaigns.

Angela Archer assumed the responsibilities of graphic designer, Joy Wheeler, in July, 2001. Angela has been an employee of Illinois-Indiana Sea Grant for several years, working in support of the AquaNIC (Aquaculture Network Information Center) Web site. In December 2001, she moved into an administrative / professional position at Purdue University in the Department of Forestry and Natural Resources as the multi media Web specialist. Her responsibilities will include both the SGNIS (Sea Grant Nonindigenous Species) Web site and the program Web site.

Dr. LaDon Swann left IISG in May 2000 after serving as the aquaculture extension specialist. This position was upgraded to a tenure-track faculty position and funded by the Department of Animal Sciences at Purdue, Department of Animal Sciences at University of Illinois, and Illinois-Indiana Sea Grant College Program. Following the first search, the position was upgraded again and a second search is in progress.

Extramural Funds

August 1, 2000 - December 31, 2001

Principal Investigator	Co-PI(s)	Title of Project	Agency/Source	Start	End	Amount
Armstrong, Jeff		NCRAC Extension Project	Michigan State University/USDA	09/01/00	08/31/01	$7,200
Charlebois, Patrice	J. Schwartz, M. Klepinger, R. Wiedenmann, D. Voegtlin, N. Carroll, D. Jensen	Aquatic Nuisance Species Research and Outreach: Biological Control of Purple Loosestrife by 4-H Field Volunteers	National Sea Grant	10/01/99	09/30/01	$140,891
Charlebois, Patrice	M. Berg, J. Janssen, D. Jude, M. Simmons	Trophic Transfer of PCBs: Zebra Mussels and Round Gobies	U. S. EPA, GLNPO	07/01/98	09/30/02	$112,422
Charlebois, Patrice		Illinois State Comprehensive Management Plan for Aquatic Nuisance Species	Illinois DNR	03/01/01	02/28/03	$160,000
Charlebois, Patrice	M. Klepinger, J. Schwartz, J. Gunderson, D. Jensen, R. Kinnunen, E. Obert, F. Snyder, R. Pitman	Aquatic Nuisance Species - A National ANS-HACCP Training Initiative to Prevent the Spread of Aquatic Nuisance Species in Baitfish and Fish for Stocking	National Sea Grant	10/01/01	08/30/03	$4,200 (IISG portion)
Charlebois, Patrice	H. Crawford, D. Jensen, S. Kay, S. Grantham, B. Doll	Research and Outreach to Prevent and Control Aquatic Nuisance Species Invasions: A National Invasive Aquatic Plant Outreach Initiative.	National Sea Grant	10/01/99	09/30/02	$292,119
Charlebois, Patrice	J. Gunderson, M. Klepinger, R. Kinnunen, F. Snyder, D. Jensen, E. Obert, S. Curcio	Aquatic Nuisance Species Research and Outreach: Sustaining Wild Harvest and Aquaculture of Bait Fish in ANS Infested Waters and Reducing Risk of ANS Spread	National Sea Grant	10/01/99	09/30/99	$218,658
Goettel, Robin	P. Blanchard, A. Danielski, H. Domske, R. Fortner, D. Jensen, M. Klepinger, K. Ricker, M. Zhuikov	ESCAPE From Exotics: Break Out of Your Classroom by Exploring the Interesting World of Exotic Aqautic Species	NOAA/Sea Grant	10/01/01	09/30/03	$57,914
Goettel, Robin	H. Domske, R. Fortner, P. Blanchard, A.Copping	Exotic Aquatics on the Move	NOAA/Sea Grant	10/01/99	9/30/01	$48,186

Extramural Funds continued

August 1, 2000 - December 31, 2001

Principal Investigator	Co-PI(s)	Title of Project	Agency/Source	Start	End	Amount
Miller, Brian	R. Goettel, P. Moy	Transferring Sea Grant Aquatic Nuisance Species Research and Outreach Results to the Nation Using a World Wide Web Server	NOAA/Sea Grant	10/01/01	09/30/03	$135,000
Warner, Richard	B. Miller	Illinois-Indiana Sea Grant Omnibus Proposal	National Sea Grant	03/01/01	02/28/02	$887,000

Workshops, Seminars, Short Courses, Field Tours, Conferences, etc.

August 1, 2000 - December 31, 2001

Presenter(s)	Co-Presenter(s)	Date	Location	Subject	Number of Attendees
Charlebois, Patrice		08/17/00	Apple River, IL	Take Action Against Aquatic Exotics. Workshop	30
Charlebois, Patrice		08/21/00	LaGrange, IL	Take Action Against Aquatic Exotics. Workshop	20
Charlebois, Patrice		08/22/00	Grayslake, IL	Take Action Against Aquatic Exotics. Workshop	15
Charlebois, Patrice		08/28/00	Bloomington, IN	Take Action Against Aquatic Exotics. Workshop	8
Charlebois, Patrice		02/03/01	Chicago, IL	Southern Lake Michigan Fisheries Forum. Conference	70
Charlebois, Patrice		02/24/01	Angola, IN	4-H Purple Loosestrife Project. Workshop	8
Charlebois, Patrice		03/24/01	LaPorte, IN	4-H Purple Loosestrife Project. Workshop	8
Charlebois, Patrice		04/18/01	Chicago Conservation Police. Chicago, IL	Identification of Exotic Aquatics. Workshop	40
Dorworth, Leslie	B. Miller	03/09/01	Merrillville, IN	Septic Systems and Water Quality in Indiana	160
Dorworth, Leslie		06/12/01 – 06/13/01	Elgin, IL	River Restoration: Practices and Concepts. A Hands-On Workshop on the Latest Techniques for Stream Restoration.	118
Goettel, Robin	P. Blanchard	07/21/01	Victoria, British Columbia, CANADA	The Odyssey of Exotic Aquatics, Part I and Part II	15
Goettel, Robin	H. Domske, P. Blanchard	10/19/00	S. Padre Island, TX	The Effect of Exotic Species on Biodiversity	35
Goettel, Robin	V. Eichman	11/11/00	West Lafayette, IN	Exotic Aquatics on the Move	10

Program Awards

August 1, 2000 - December 31, 2001

Awardee	Co-Awardee(s)	Award Name	Awarding Organization
Levey Larson, Debra	L. Dorworth	2000 Bronze—Promotional Writing (BeachWatch Series)	Agricultural Communicators in Education
Goettel, Robin	S. White, V. Eichman	People's Choice Award - Curriculum / Classroom Products Exotic Species Compendium of Activities to Protect the Ecosystem	National Sea Grant College Program
Goettel, Robin	S. White, V. Eichman	Blue Ribbon Award - Curriculum / Classroom Products Exotic Species Compendium of Activities to Protect the Ecosystem	National Sea Grant College Program

Posters / Presentations to Scientific and Professional Audiences

August 1, 2000 - December 31, 2001

Presenter	Co-Presenter(s)	Date	Location / Venue	Title / Event	Number of Attendees
Charlebois, Patrice		11 / 02 / 00	Lake Michigan Federation	Threats From Exotic Species. Urban Aquatic Habitat Recovery Summit. Presentation	70
Charlebois, Patrice	J. Stoeckel	12 / 06 / 00	Minneapolis, MN	2000 Exotic Zooplankton in the Mississippi River Basin: A Two-way Street. 62nd Midwest Fish and Wildlife Conference.	500
Charlebois, Patrice		03 / 08 / 01	Peoria, IL	Fostering Stewardship Through Education: Illinois-Indiana Sea Grant's Exotic Species Outreach Programming. Illinois Renewable Natural Resources Conference. Presentation	150
Charlebois, Patrice	K. TePas, J. Ryan,	06 / 4 / 01 – 06 / 8 / 01	La Crosse, WI 49th Annual Meeting of the North American Benthological Society	An Angler Survey on the Nonindigenous Round Goby (*Neogobius melanostomus*): Highlighting the Need for Outreach Assessment. Poster	800
Dorworth, Leslie	S. White, R. Goettel	6 / 12 / 10 – 6 / 13 / 01		Stream Restoration Concepts and Practices. Postcard	120
Dorworth, Leslie		2 / 6 - 8 / 01	Chicago, IN	Raising Public Awareness of Beach Closures Due to Bacterial Contamination / Great Lakes Beach Conference: Beach Public Health, Protection, and Management	225
Dorworth, Leslie	K. Luther	3 / 23 / 10 – 3 / 24 / 01	Peoria, IL	Raising the Public's Awareness of Beach Closures due to Bacterial Contamination / Illinois Lake Management Meeting	150
Dorworth, Leslie		3 / 09 / 01	Merrillville, IN	*E. coli* Problems in Northwest Indiana: An Overview / Septic Systems and Water Quality in Indiana	125
Dorworth, Leslie		10 / 2 / 01 – 10 / 4 / 01	Peoria, IL	River Restoration: Practices and Concepts. The Illinois River: Partnerships for Progress, Restoration and Preservation	250
Goettel, Robin	S. White, V. Eichman, J. Ha	7 / 14 / 01 – 7 / 20 / 01	Victoria, BC - National Marine Educators Association Conference	Community Stewardship Projects on Exotic Aquatic Species	48

Posters / Presentations to Scientific and Professional Audiences continued

August 1, 2000 - December 31, 2001

Presenter	Co-Presenter(s)	Date	Location / Venue	Title / Event	Number of Attendees
Goettel, Robin	S. White, V. Eichman	7/29/01 – 8/4/01	Vancouver, BC – NCGE University of British Columbia	Community Stewardship Projects on Exotic Aquatic Species	39
White, Susan	L. Merrifield, D. Larson	3/26/01	Urbana, IL Environmental Horizons 2001	Jobs, Internships and Exhibits Fair	12
Goettel, Robin	S. White, D. Larson	4/12/01	Chicago, IL Illinois Research Symposium	Illinois-Indiana Sea Grant Disply	105
Goettel, Robin	S. White, V. Eichman	3/26/01 – 3/28/01	Hilton Head, SC – Sea Grant Week	Exotic Species Compendium of Activities to Protect the Ecosystem (ESCAPE) project	200
Goettel, Robin		10/26/01	West Lafayette, IN Purdue High School Science Teacher Symposium	ESCAPE with Exotic Aquatic Teaching Materials	25
McCormick, Robert		11/15/01	Lebanon, IN Indiana Rural Development Council Annual Conference	Planning with POWER	
McCormick, Robert		11/14/01	West Lafayette, IN Planning with POWER Advisory Committee	Planning with POWER	
McCormick, Robert		10/23/01 – 10/24/01	Indianapolis, IN Gaining Ground Conference	Planning with POWER	200
McCormick, Robert 09/12/01		09/09/01 –	Erie, PA Great Lakes Sea Grant Network Conference	Planning with POWER	100
McCormick, Robert		08/04/01	West Lafayette, IN Indiana SWCD Supervisor Summer Splash Training	Planning with POWER	60
McCormick, Robert		07/31/01	Indianapolis, IN Indiana Land Resources Council	Planning with POWER	25
McCormick, Robert		07/19/01	Hastings, MI Michigan State Land Use Team	Planning with POWER	20
McCormick, Robert		07/18/01	Indianapolis, IN Indiana Land Resources Council	Planning with POWER	15
McCormick, Robert		05/23/01	West Lafayette, IN U.S. Environmental Protection Agency Site Visit	Planning with POWER	8
McCormick, Robert		05/09/01	West Lafayette, IN Extension Water Quality Common Interest Group	Planning with POWER	18

Posters / Presentations to Scientific and Professional Audiences continued

August 1, 2000 - December 31, 2001

Presenter	Co-Presenter(s)	Date	Location / Venue	Title / Event	Number of Attendees
McCormick, Robert		04 / 19 / 01 – 04 / 20 / 01	Pokagon State Park, IN Multi-State Land Use Workshop	Planning with POWER	16
McCormick, Robert		03 / 14 / 01 – 03 / 15 / 01	Indianapolis, IN Purdue Extension Land Use Team Conference	Planning with POWER	15
McCormick, Robert		02 / 28 / 01	Turkey Run State Park, IN Purdue Extension Land Use Training	Planning with POWER	50
McCormick, Robert		01 / 30 / 01	West Lafayette, IN Purdue Extension Land Use Training	Planning with POWER	13
McCormick, Robert		01 / 24 / 01	North Vernon, IN USDA Field Office, Watershed Technician Meeting	Planning with POWER	7
McCormick, Robert		01 / 18 / 01	West Lafayette, IN Extension Conservation Regional Planning with POWER Specialists Staff Meeting	Planning with POWER	6
McCormick, Robert		12 / 12 / 00	West Lafayette, IN Purdue Forestry Watershed Class	Planning with POWER	25
McCormick, Robert		11 / 27 / 00	Indianapolis, IN Natural Resources Conser-vation Services Meeting	Planning with POWER	6
McCormick, Robert		11 / 13 / 00	Indianapolis, IN Indiana Land Resources Council Meeting	Planning with POWER	15
McCormick, Robert		11 / 08 / 01 – 11 / 09 / 01	Indianapolis, IN	Planning with POWER Training	45
McCormick, Robert		10 / 17 / 00	Haddam, CT National NEMO University-Conference	Planning with POWER	35
McCormick, Robert		09 / 09 / 00	Lebanon, IN Purdue Extension Agriculture Training	Planning with POWER	90
Miller, Brian	S. White, R. Goettel, V. Eichman	02 / 07 / 01 – 02 / 10 / 01	Indianapolis, IN – HASTI Conference	Exotic Species Compendium of Activities to Protect the Ecosystem (poster)	250

Posters / Presentations to Scientific and Professional Audiences continued

August 1, 2000 - December 31, 2001

Presenter	Co-Presenter(s)	Date	Location / Venue	Title / Event	Number of Attendees
Miller, Brian	M. Einstein	04 / 09 / 01 – 04 / 11 / 01	New Orleans, LA - Second International Conference on Marine Bioinvasions	SGNIS web site presentation	
Miller, Brian			Indianapolis, IN Hoosier Association of Science teacher's annual convention.	Curriculums for Aquatic Nuisance Species in the Classroom.	
Sparks, Richard	S. White, R. Goettel, L. Merrifield, F. Lambert	11 / 13 / 00	Urbana, IL - Illinois Water 2000	Closing the Gates on Invasive Species	200

Formal Presentations to Landowners and Other Audiences

August 1, 2000 - December 31, 2001

Presenter	Co-Presenter(s)	Date	Location / Venue	Title	Number of Attendees
Charlebois, Patrice		11/28/00	Zion, IL Zion-Benton Harbor Kiwanis Club	Aquatic Exotics Threaten Lake Michigan. Presentation	30
McCormick, Robert		11/26/01	Danville, IN Hendricks County Planning with POWER Committee	Planning with POWER	15
McCormick, Robert		11/01/01	Rossville, IN Wildcat Creek Alliance-Land Use Committee	Planning with POWER	8
McCormick, Robert		10/31/01	Danville, IN Hendricks Planning with POWER Committee	Planning with POWER	10
McCormick, Robert		10/30/01	Elkhart, IN Elkhart Planning with POWER Committee	Planning with POWER	15
McCormick, Robert		07/12/01	Kokomo, IN Local Land Use Decision-makers and Watershed Coordinators	Planning with POWER	12
McCormick, Robert		06/26/01	Enos, IN Newton County Plan Commission and Staff	Planning with POWER	18
McCormick, Robert		06/13/01	Elkhart, IN Site Visit with Indiana Land Resources Council	Planning with POWER	50
McCormick, Robert		06/11/01	Greencastle, IN Local Land Use Profes-sionals and Decision-makers	Planning with POWER	8
McCormick, Robert		05/15/01	Valparaiso, IN Planning with POWER Commission Porter, Lake, Elkhart, and Starke Extension Educators, Regional Planning Commis-sion, IDEM, and NRCS	Planning with POWER	17
McCormick, Robert		03/22/01	Elkhart, IN Elkhart County Plan Commissioners, Plan Staff, Health Department Officials, NRCS, SWCD and Others	Planning with POWER	35
McCormick, Robert		03/20/01	West Lafayette, IN State of Indiana Purdue Road School	Planning with POWER	1,500
McCormick, Robert		03/19/01	Danville, IN Hendricks County Officials	Planning with POWER	10

Poster Displays / Exhibits

August 1, 2000 - December 31, 2001

Presenter	Co-Presenter(s)	Date	Location / Venue	Subject	Number of Attendees
Charlebois, Patrice		2001	Peoria, IL Illinois Lake Management Association 16th Annual Conference	Inland Lake Invaders. Display	100
Goettel, Robin	V. Eichman, D. Larson, M. Browna, S. White, L. Dorworth, L. Merrifield	4 / 08 / 01	Chicago, IL It's Wild in Chicago, Field Museum	Invader ID Game – Fish and learn about exotic species problems in our lakes and rivers	500
Goettel, Robin	S. White, D. Larson	09 / 27 / 00 – 09 / 28 / 00	Cantrall, IL Farm Progress Show	Getting Started in Freshwater Aquaculture	500
Goettel, Robin	Susan White, D. Larson, V. Eichman, R. Sparks, J. Wheeler, J. Schaaf	03 / 02 / 01 – 03 / 03 / 01	Urbana, IL College of Agricultural, Consumer and Environmental Sciences (ACES) Openhouse	Invader ID Game	300
Goettel, Robin	S. White, I. Miles, V. Eichman	08 / 16 / 01	Springfield, IL Illinois State Fair	Fishing for Information About Exotics	300
McCormick, Robert	C. Salazar, B. Miller	09 / 25 / 01 – 09 / 27 / 01	Lafayette, IN 2001 Farm Progress Show	Planning with POWER	50,000
McCormick, Robert		12 / 15 / 01	Indianapolis, IN Indiana Farm Bureau Convention	Planning with POWER	
McCormick, Robert		11 / 13 / 01	Indianapolis, IN Communities at the Crossroads-Land Use in the New Economy	Planning with POWER	
McCormick, Robert		10 / 23 / 01– 10 / 24 / 01	Indianapolis, IN Gaining Ground Conference	Planning with POWER	200
McCormick, Robert		10 / 15 / 01 –	West Lafayette, IN Annual Purdue Extension Conference	Planning with POWER	300
McCormick, Robert		10 / 04 / 01 – 10 / 05 / 01	Clarksville, IN	Indiana Planning Association	125
McCormick, Robert		08 / 01	Indianapolis, IN Indiana State Fair	POWER Display	200,000
McCormick, Robert		08 / 27 / 01 – 08 / 30 / 01	Indianapolis, IN National Nonpoint Source Monitoring Workshop	Planning with POWER	200
McCormick, Robert		05 / 12 / 01	Corydon, IN Governor's Conference on the Environment		200

Poster Displays / Exhibits continued

August 1, 2000 - December 31, 2001

Presenter	Co-Presenter(s)	Date	Location / Venue	Subject	Number of Attendees
McCormick, Robert		03 / 09 / 01	Merrillville, IN Illinois-Indiana Sea Grant Septic Conference	Planning with POWER	160
McCormick, Robert		02 / 08 / 01	Pokagon State Park, IN Indiana Dept. of Natural Resources-Div. ofWildlife Annual Conference	Planning with POWER	200
McCormick, Robert		01 / 08 / 01 – 01 / 09 / 01	Indianapolis, IN Soil and Water Conservation Districts Annual Conference	Planning with POWER	600
McCormick, Robert		10 / 26 / 00 – 10 / 27 / 00	Kokomo, IN Septic / IOWPA Conference	Planning with POWER	250
Miller, Brian	S. White, R. Goettel, V. Eichman	02 / 07 / 01- 02 / 09 / 01	HASTI Conference, Indianapolis, IN	Exotic Species Compendium of Activities to Protect the Ecosystem poster	
Miller, Brian	Robin Goettel, Susan White, Angie Archer, Mark Einstein, Cindy Salazar	09 / 25 / 01 – 09 / 27 / 01	Lafayette, IN 2001 Farm Progress Show	Opportunities in Aquaculture	1,500
Miller, Brian	Robin Goettel, Susan White, Angie Archer, Mark Einstein, Cindy Salazar	09 / 25 / 01– 09 / 27 / 01	Lafayette, IN 2001 Farm Progress Show	Prevent the Spread of Aquatic Nuisance Species	1,500
Miller, Brian	Mark Einstein		Washington, D.C. International Aquatic Nuisance Species Conference	Sea Grant's Nonindigenous Species Web site and Web of Webs.	
Miller, Brian	Mark Einstein		Baton Rouge, LA Second International Marine Bioinvasions Conference.	Sea Grant's Nonindigenous Species Web site and Web of Webs	
Sparks, Richard	Susan White, Robin Goettel	11 / 13 / 00	Urbana, IL Illinois Water 2000	Closing the Gates on Invasive Species	200

Research and Outreach Projects

August 1, 2000 - December 31, 2001

Project #	Title	Principal Investigator	Affiliation
Completed during the year			
A / SE-03-01	Workshop: Septic Systems and Water Quality in Indiana	Natalie Carroll	Purdue University
A / SE (ANS)-11-99	Sustaining Wild Harvest and Aquaculture of Bait Fish in ANS Infested Waters and Reducing Risk of ANS Spread	Patrice Charlebois	Illinois Natural History Survey
A / SE (ANS)-10-99	Biological Control of Purple Loosestrife by 4-H Field Volunteers	Patrice Charlebois	Illinois Natural History Survey
A / SE (ANS)-06-99	Exotic Aquatics on the Move: Building a Web of Awareness for Geography Educators and Students	Robin Goettel	University of Illinois at Urbana-Champaign
C / ED-04-99	Development of Water Markets for Northeastern Illinois	Martin Jaffe	University of Illinois at Chicago
R / ANS-04-98	Round Goby and Mottled Sculpin Spawning Interactions	John Janssen	University of Wisconsin-Milwaukee
R / CF-03-98	Recruitment Failure of Yellow Perch in Lake Michigan: Evaluation of the Starvation and Predation Hypotheses	John Janssen	University of Wisconsin-Milwaukee
R / ES-05-98	Dispersal of Exotic Species in the Great Lakes: Crayfish as a Model System for Benthic Species	David Lodge	University of Notre Dame
R / PS-01-98	Natural Photochemically Mediated Destruction of Contaminants in Rivers and Lakes of the Calumet Area	Gary Peyton	University of Illinois at Urbana-Champaign / Illinois State Water Survey
R / PS-01-97	A Genotoxilogical Approach to Biomonitoring: Biomarkers for Carcinogens in Bullhead Catfish	Olin “Gene” Rhodes	Purdue University
A / SE (ANS)-07-99	The Role of Larval Growth, Mortality and Transport in Metapopulation Dynamics and Control of the Zebra Mussel in Freshwater and Estuarine Systems	Daniel Schneider	Illinois Natural History Survey / University of Illinois at Urbana-Champaign
R / A-09-99	Electronic Information and Education for the Aquaculture Industry through a Web-Based Network of Aquaculture Information Services	LaDon Swann / Mark Einstein	Purdue University
C / ED-08-99	Interstate Coordination of Regional Planning	John Swanson	Northeastern Illinois Planning Commission

Research and Outreach Projects continued

August 1, 2000 - December 31, 2001

Project #	Title	Principal Investigator	Affiliation
R/A-03-00	Determination of the Effects of Culture Temperature on Growth, Survival and Biochemical Composition of Largemouth Bass (*Micropterus salmoides*)	James Tidwell	Kentucky State University
A/SE-06-01	Stream Restoration Concepts & Practices	Diane Trgovcich-Zacok	Purdue University Calumet
On-going at time of omnibus submission			
R/ANS-03-99	Consequences of Round Goby Invasion for Littoral Zone Communities: Effects on Sculpins and Benthic Invertebrates	Martin Berg	Loyola University Chicago
A/SE(ANS)-07-01	Ecology of Zebra Mussels and Effects of Low Frequency Electromagnetic Waves on Zebra Mussels in Southern Lake Michigan	Joseph Camp	Purdue University North Central
A/SE(ANS)-09-99	A National Invasive Aquatic Plant Outreach Initiative	Patrice Charlebois	Illinois Natural History Survey
R/A-05-99	The Development of Molecular and Biochemical Tools to Assess Changes in Yellow Perch	Frederick Goetz	University of Notre Dame
R/CF-02-99	Influence of Upwelling Events on Larval and Juvenile Yellow Perch	John Janssen	University of Wisconsin-Milwaukee
R/ANS-06-99	Zebra Mussels, Round Gobies, and Eurasian Ruffe: Predicting Ecological Impacts of the 'Exotic Triad' to Improve Control	Gary Lamberti	University of Notre Dame
A/SE(ANS)-08-99	Transferring Sea Grant Zebra Mussel Research and Outreach Results to the Nation Using a WWW Server: A Continuing Project 1999-2001	Brian Miller	Purdue University
R/ANS-07-99	Predicting Zebra Mussel Transport in Rivers and Estuaries	Chris Rehmann	University of Illinois at Urbana-Champaign
R/PS-01-99	DNA fingerprinting as a means for determining the source of *E. coli* contamination	Charles Tseng	Purdue University Calumet

Collaborators, Partners and Affiliates of Illinois-Indiana Sea Grant

August 1, 2000 - December 31, 2001

Universities

Kentucky State University
- Aquaculture Research Program

Loyola University Chicago
- Department of Biology

Northwestern University
- Department of Civil Engineering

Purdue University Calumet
- School of Engineering, Mathematics & Science
  - Department of Biological Sciences
  - Department of Chemistry

Purdue University North Central
- Department of Biological Sciences

Purdue University
- Environmental Sciences and Engineering Institute
- School of Agriculture
  - Agricultural Research Programs
  - Cooperative Extension Service
  - Department of Forestry and Natural Resources
  - Department of Animal Sciences
  - Department of Food Science
  - Department of Agricultural Economics
  - Agricultural Communications Service
- Animal Disease Diagnostic Laboratory

University of Georgia
- Savannah River Ecology Laboratory

University of Illinois at Chicago
- College of Urban Planning and Public Affairs
- The Great Cities Institute

University of Illinois at Urbana-Champaign
- Department of Civil and Environmental Engineering
- Environmental Council
- Illinois Natural History Survey
- School of Agriculture, Consumer, Environmental Sciences
  - Agricultural Experiment Station
  - Cooperative Extension Service
  - Department of Natural Resources and Environmental Sciences
  - Information Technology and Communications Services
- Water Resources Research Center
- Department of Urban and Regional Planning

University of Minnesota-Duluth
- National Resources Research Institute

University of Notre Dame
- Department of Biological Sciences
- Center for Environmental Science and Technology

University of Wisconsin-Madison
- Aquaculture Program

University of Wisconsin-Milwaukee
- Great Lakes WATER Institute

Sea Grant Insititutions

Great Lakes Sea Grant Program Network (GLSGN)
National Sea Grant College Program (NSGCP)
Sea Grant Association (SGA)
Connecticut Sea Grant College Program
Florida Sea Grant College Program
Louisiana Sea Grant College Program
Michigan Sea Grant College Program
Minnesota Sea Grant College Program
Mississippi-Alabama Sea Grant College Program
New York Sea Grant College Program
North Carolina Sea Grant College Program
Ohio Sea Grant College Program
Pennsylvania Sea Grant College Program
Washington Sea Grant College Program
Wisconsin Sea Grant College Program

State and Government Agencies

Great Lakes Commission
Great Lakes Fisheries Commission
Illinois Environmental Protection Agency
Illinois Department of Natural Resources
- Division of Education

Illinois Natural History Survey
Indiana Department of Environmental Management
Indiana Department of Natural Resources
- Division of Water
- Fish and Wildlife

Indiana Dunes National Lakeshore
Indiana Dunes State Park
Indiana Land Resources Council
Inter-Agency Fish Advisory Council
International Joint Commission
National Oceanic and Atmospheric Administration
Natural Resources Conservation Service
Ocean and Atmospheric Research
Soil and Water Conservation Districts
U.S. Army Corps of Engineers, Chicago District
U.S. Environmental Protection Agency
- Region 5 - Lake Michigan
- Great Lakes National Program Office

U.S. Fish and Wildlife Service - Department of the Interior
U.S. Geological Survey, Biological Resources Division
Wisconsin Department of Natural Resources

Collaborators, Partners and Affiliates of Illinois-Indiana Sea Grant continued

August 1, 2000 - December 31, 2001

Various Coastal Cities, Municipalities, Marine Resource User Groups, and Great Lakes-related Businesses and Industries

Amersham-Pharmacia Biotech, Inc.
Calumet Ecological Park Association
Chicago Area Transporation Study
Chicago Wilderness
City of Chicago, Department of Environment
DuPont Qualicon
Environmental Management Policy Committee
Geographic Educator's Network of Indiana
Grand Calumet River Taskforce
Hammond Park District
Illinis Geographic Alliance
Louisiana Geographic Alliance
Michigan Geographic Alliance
Multi-Agency Task Force on *E. coli*
Northeastern Illinois Planning Commission
NiSource
Northwest Indiana Forum (Industrial Consortium)
Northwest Indiana Regional Planning Commission
Oregon Geographic Alliance
Richardson Wildlife Sanctuary
Southeastern Wisconsin Regional Planning Commission
U.S. Steel Corporation

Partnerships

Aquaculture Information and Technology Task Force of the Joint Subcommittee on Aquaculture
Chicago Academy of Sciences
Chicago Wilderness Consortium
Cooperative Extension Service
Illinois Aquaculture Association
Indiana Aquaculture Industry Association
Inter-Agency Technical Task Force on *E. coli*.
John G. Shedd Aquarium
NASAC: National Association of State Aquaculture Coordinators
NCRAC: USDA North Central Regional Aquaculture Center
World Aquaculture

Public Information Products

August 1, 2000 – December 31, 2001

Multimedia Presentations

Planning with POWER PowerPoint presentation. McCormick, Robert, Leslie Dorworth, and Brian Miller. 2001. Purdue University, West Lafayette, IN. 25 min.

News Releases

"Workshop to Study Mercury in the Grand Calumet River." Debra Levey Larson, University of Illinois and Purdue Calumet. Print and Web.
"Predicting Urban Sprawl in Top 20 Coastal Cities." Debra Levey Larson,University of Illinois. Print and Web.
"Purple Loosestrife Workshops to Train 4-H Leaders." Debra Levey Larson, University of Illinois, Purdue West Lafayette, Purdue Calumet. Print and Web.
"2nd Annual Fisheries Forum Answers Questions About Southern Lake Michigan." Debra Levey Larson, University of Illinois, Purdue West Lafayette, Purdue Calumet. Print and Web.
"Fish of the Farm." Debra Levey Larson, University of Illinois. Print and Web.
"Illinois-Indiana Sea Grant Graduate Fellowships Awarded." Debra Levey Larson, University of Illinois. Print and Web.
"One-Hour Press Briefing Hosted by Illinois-Indiana Sea Grant." Debra Levey Larson, University of Illinois. Print, e-mail, and Telephone calls.
"New Web Site for Illinois-Indiana Sea Grant." Debra Levey Larson, University of Illinois. Print and Web.
"BeachWatch Series Available Online." Debra Levey Larson, University of Illinois. Print and Web.
"New Web Site for Illinois-Indiana Sea Grant." Debra Levey Larson, University of Illinois. Print and Web.
"HACCP Guidelines Limit Aquatic Nuisance Species in Bait." Irene Miles, University of Illinois. Print and Web—University of Illinois ACES News Web Page.
"Invasive Gobies Prevent Sculpin Spawning in the Great Lakes." Irene Miles, University of Illinois. Print and Web—University of Illinois ACES News Web Page.
"Predicting Urban Sprawl in Top 20 Coastal Cities.", www.eurekalert.org / releases / nsg-cus120700.html, Eureka Alert!. December 7, 2000.
"Predicting Urban Sprawl in Top 20 Coastal Cities." abcnews.go.com / sections / scitech / DyeHard / dyehard.html, ABC News. January 11, 2001.
"Scientists Research Farming Perch to Meet Demand." www.detnews.com / 2001 / metro / 0104 / 16 / metro-212202.htm, *The Detroit News*. February 16, 2001.
"Scientists Research Farming Perch to Meet Demand." Associated Press. April 16, 2001.
"Great Lakes Shoreline Geology—Let's go to the beach!" www.great-lakes.net / teach / geog / shoreline / shore_2.html, T.E.A.C.H. September 19, 2000.

Newspaper and Trade Journal Coverage

"Predicting Urban Sprawl in Top 20 Coastal Cities." *This is Our Land*, Urbana, IL. January 21, 2001.
"Predicting Urban Sprawl in Top 20 Coastal Cities." *Northwest Yachting*, Seattle, Washington. January 1, 2001.
"Predicting Urban Sprawl in Top 20 Coastal Cities." *Cornell Business Briefs*, Mexico, New York. January 1, 2001.
"Looking for Bigger Fish to Fry." *Chicago Tribune*, Chicago, Illinois. April 13, 2001.
"Perch Prognosis a Slippery Subject for Fish Farmers." *Chicago Tribune*, Chicago, Illinois. April 15, 2001.
"Great Lakes Perch Numbers Falling." *South Bend Tribune*, South Bend, Indiana. April 16, 2001.
"Exotic Species Upsetting Lakes." *South Bend Tribune*, South Bend, Indiana. April 23, 2001.
"Perch Farms May Meet Demand for Filet." *The News-Sun*, Waukegan, Illinois. April 14, 2001.
"Scientists Research Farming Perch to Meet Appetite for Filets," *The Courier News*, Elgin, Illinois. April 14, 2001.
"Popularity of Aquaculture is Growing." *The Blade*, Fairbury. September 27, 2001
"Aquaculture of Yellow Perch." *Detroit News*, Detroit, MI. April 14, 2001.
"Aquaculture of Yellow Perch." *Chicago Tribune*, Chicago, Illinois. April 13, 2001.
"Exotic species in the Great Lakes." *South Bend Tribune*, South Bend, IN. April 22, 2001.

Television and Radio Appearances

Illinois Radio Network, Chicago, Illinois, David Lodge, 04 / 12 / 01, Chicago, Illinois.
Illinois Radio Network, Chicago, Illinois, Richard Sparks, 04 / 12 / 01, Chicago, Illinois.
Great Lakes Radio Consortium, WBEZ, Patrice Charlebois, 09 / 12 / 00, Chicago, Illinois.
Indiana Outdoors, Filmed in Michigan City, IN. Patrice Charlebois.

Publications

August 1, 2000 – December 31, 2001

Publications developed by Illinois-Indiana Sea Grant Staff

Biological Resources

Abstracts

Charlebois, P. M. 2000. Exotic species in inland waters: coming to a lake near you? Illinois Lake Management Association Fifteenth Annual Conference. Peoria, IL.

Charlebois, P. M. Fostering stewardship through education: Illinois-Indiana Sea Grant's exotic species outreach programming. Illinois Renewable Natural Resources Conference. Peoria, IL.

Charlebois, P. M. and J. A. Stoeckel. 2000. Exotic zooplankton in the Mississippi River basin: a two-way street. Sixty-second Midwest Fish and Wildlife Conference. Minneapolis, MN.

Charlebois, P. M., J. L. Gunderson, D. A. Jensen, R. E. Kinnunen, M. Klepinger, F. L. Snyder, and P. Tucker. 2000. Role of baitfish industry in spread of aquatic nuisance species. ASLO 2000. Copenhagen, Denmark.

Charlebois, P. M., K. M. TePas, J. A. Ryan, and N. M. Haller. 2001. An angler survey on the nonindigenous round goby (*Neogobius melanostomus*): highlighting the need for outreach assessment. 49th Annual Meeting of the North American Benthological Society. La Crosse, WI.

Charlebois, P. M., M. B. Berg, J. Janssen, and D. J. Jude. 2000. The round goby: public extension and range expansion along southern Lake Michigan. Tenth International Zebra Mussel and Aquatic Nuisance Species Conference. Toronto, ONT, Canada.

Jensen, D. A., J. L. Gunderson, P. M. Charlebois, R. E. Kinnunen, M. Klepinger, F. L. Snyder, and P.Tucker. 2000. Baitfish and aquaculture industries spread ANS: fact or fallacy? Tenth International Zebra Mussel and Aquatic Nuisance Species Conference. Toronto, ONT, Canada.

Jensen, D. A., M. R. Klepinger, P. M. Charlebois, J. L. Gunderson, R. Kinnunen, and F. L. Snyder. 2002. Angler knowledge, behavior, and risk for spreading aquatic nuisance species based on surveys in five Great Lake states. Eleventh International Zebra Mussel and Aquatic Nuisance Species Conference. Washington, D. C.

Snyder, F. L., P. M. Charlebois, J. L. Gunderson, D. A. Jensen, M. Klepinger, and R. E. Kinnunen. 2002. Potential dispersal of aquatic nuisance species by live bait in the Great Lakes region. Eleventh International Zebra Mussel and Aquatic Nuisance Species Conference. Washington, D. C.

Article – not Peer-Reviewed

Caceres, C. E., J. M. Dettmers, and P. M. Charlebois. New predator invades the Great Lakes. Article. *Illinois Natural History Survey Reports*. Illinois Natural History Survey.

Caceres, C. E., P. M. Charlebois, and J. M. Dettmers. *Cercopagis* invades the Great Lakes. Article. *Aquatic Nuisance Species Digest*. Freshwater Foundation.

Article – Peer Reviewed

Charlebois, P. M., M. J. Raffenberg, and J. M. Dettmers. 2001. First occurrence of *Cercopagis pengoi* in Lake Michigan. *Journal of Great Lakes Research*. 27:258-261.

Charlebois, P. M. , L. D. Corkum, D. J. Jude, and C. Knight. 2001. The round goby (*Neogobius melanostomus*) invasion: current research and future needs. *Journal of Great Lakes Research*. 27:263-266.

Fact Sheets

Charlebois, P. M. 2001. Zebra mussels: questions and answers for inland lake managers.

TePas, K. M. and P. M. Charlebois. 2001. Invasive aquatic plants: what every plant enthusiast needs to know.

Newsletters

Caceres, C. E., J. M. Dettmers, and P. M. Charlebois. New predator invades the Great Lakes. Article. *Illinois Natural History Survey Reports*. Illinois Natural History Survey.

Products

Charlebois, P. M., Susan White, Robin Goettel, and Natalie Carroll. Help Your Local Wetlands. Brochure.

Charlebois, P. M., Susan White, and Robin Goettel. Southern Lake Michigan Fisheries Forum. Brochure.

Charlebois, P. M. and K. M. TePas. 2001. Dispose of bait on land or in the trash. Stickers.

Special Reports

Charlebois, P. M. , L. D. Corkum, D. J. Jude, and C. Knight. 2001. The round goby invasion. *Journal of Great Lakes Research*.

Publications continued

August 1, 2000 – December 31, 2001

Article – Peer Reviewed

Jaffe, Martin and Odeh Al-Jayyousi. Forthcoming. "Planning Models for Sustainable Water Resources Development," Journal of Environmental Planning and Management. Accepted for publication, December 2001.

Article - not Peer-reviewed

Levey-Larson, Debra, and Daniel McGrath. Population Growth and Land Use. Published in Topsoil, No. 431, November / December 2001.

Jaffe, Martin. 2001. "Zoning, Chicago-Style: A Commentary on Hanna v. City of Chicago" *Land Use Law and Zoning Digest*. 53:7 (July).

Proceedings

Jaffe, Martin. 2001. "Market-based Strategies for Water Supply Planning," National Oceanic and Atmospheric Administration, Coastal Services Center. Coastal Zone '01: Proceedings of the 12th Biennial Coastal Zone Conference. Cleveland, OH, July 15-19, 2001. NOAA / CSG / 20120-CD. CD-ROM.

Jaffe, Martin. 2001."Water Markets for Northeastern Illinois?" CLE, International, Conference on Great Lakes Water Law. Held, Chicago, Illinois, August 2-3, 2001.

Jaffe, Martin and Debby Mir (eds.). 2001. "Improved Decision-Making for Water Resources: The Key to Sustainable Development for Metropolitan Regions," Proceedings of the Great Cities / Illinois-Indiana Sea Grant Urban Water Resources Conference. Held September 16-17, 1999 at the University of Illinois at Chicago, Chicago, Illinois.

Jaffe, Martin. 2001. "Municipal Environmental Policy for Sustainable Development, " International Symposium on Urban Development of Xiamen City in the 21st Century. Held March 17-19, 2001 in Xiamen, Fujian Province, PRC.

Jaffe, Martin. 2001. "Market-based Strategies for Managing the Chicago Metropolitan Region's Water Supply," First Biennial Illinois-Indiana Sea Grant College Program Research Symposium. Held April 12, 2001 in Chicago, Illinois.

Technical Reports

Zhang, T, M. Jaffe and V. Thakuriah. 2001. "Strategic Study for the Combined Development of Chongming, Changxing, and Hengsha Islands in Shanghai." Chicago; Great Cities Institute, University of Illinois at Chicago.

Education

Products

Goettel, Robin, Valerie Eichman, and Susan White. Community Stewardship Projects on Exotic Aquatic Species. Booklet.

Goettel, Robin and Valerie Eichman, Eds., Susan White, Designer. Exotic Species Compendium of Activities to Protect the Ecosystem. Curriculum collection.

Marketing

Products

Browna, Michele, Susan White, and Robin Goettel. Illinois-Indiana Sea Grant Graduate Fellowships. Brochure.

Dorworth, Leslie, Diane Trgovcich-Zacok, Susan White, and Robin Goettel. Save these dates... Stream Restoration Concepts and Practices. Post card.

Goettel, Robin, Susan White, Valerie Eichman, and Debra Larson. Exotic Species Compendium of Activities to Protect the Ecosystem (ESCAPE). Publication

Goettel, Robin, Susan White, Valerie Eichman, Stacey Krejci, John Tubbs. 2001. Exotic Species Compendium of Activities to Protect the Ecosystem (ESCAPE). CD.

Goettel, Robin, Valerie Eichman, and Susan White. 2001. Exotic Species Compendium of Activities to Protect the Ecosystem. Flyers.

Goettel, Robin, Valerie, Eichman, Susan White, and Jenny Ha. Community Stewardship projects on Exotic Aquatic Species. Booklet.

Goettel, R. and B. K. Miller 2001. Sea Grant College Program Outreach Directory.

Merrifield, Lisa, Susan White, and Robin Goettel. Illinois-Indiana Sea Grant College Program Research Symposium. Brochure.

Miller, Brian, Robin Goettel, and Susan White. Exotic Species Compendium of Activities to Protect the Ecosystem. Poster.

Wheeler, Joy, Susan White, and Brian Miller. SGNIS postcard and bookmark.

White, Susan, Robin Goettel, and Debra Larson. Help Keep our Beaches Healthy. Beach balls.

White, Susan, Robin Goettel, and Debra Larson. Soak Up Knowledge on Water Issues. Sponges.

White, Susan, Robin Goettel, LaDon Swann, Tim Reid, and Mark Einstein. AquaNIC cards.

Outreach

Article – Peer-Reviewed

Miller, B. K., M. Spranger, and B. Wilkins. 2001. Planning The Extension Program: How Do We Decide What To Do? in Fundamentals of a Sea Grant Extension Program (invited).

Miller, B. K., P. Charlebois, and R. Goettel, 2000. Outreach tools Available On Nonindigenous Aquatic Nuisance Species From the Sea Grant Network. In Leading the Way Toward Sustainability: Extension in the New Millennium. Proceedings of the 9th National Extension, Wildlife, Fisheries and Aquaculture Conference. Portland, Maine. pp. 155-159.

Miller, B. K., J. Lemus, B. Malouf, J. Murray, and J. Rasmussen. 2000. Regional and National Sea Grant.Extension Programming. Issues, opportunities, and conceptual mechanisms for improving Sea Grant's Capabilities. A discussion Paper to the Assembly of Extension Program Leaders. 24 pp.

Planning with Power

Fact Sheets

Dorworth, L. R McCormick, and B. Miller. 2001. Strategies to Minimize Polluted Runoff. Purdue University, West Lafayette, IN. ID-258 (IISG-01-7).

Dorworth, L., and R. McCormick. 2001. Impacts of Development on Waterways. Purdue University, West Lafayette, IN. ID-257 (IISG-01-6).

Dorworth, L., R. McCormick, and B. Miller. 2001. Nonpoint Source Pollution: A Threat to Our Waters. Purdue University, West Lafayette, IN. ID-256 (IISG-01-5).

McCormick, R., B. Miller, and L. Dorworth. 2001. How To Get Started: Protecting Your Community From Polluted Runoff. Purdue University, West Lafayette, IN. ID-259 (IISG-01-8).

McCormick, R., B. Miller, and L. Dorworth. 2001. Planning with POWER brochure. Purdue University, West Lafayette, IN. IISG-01-3.

Miller, B. K., R. McCormick, and L. Dorworth. 2001. Protecting Our Water and Environmental Resources. Purdue University, West Lafayette, IN. ID-255 (IISG-01-4).

Public Information

Products

Goettel, Robin, Susan White, Debra Larson, Valerie Eichman, and Jamie Schaaf. What's New for the Classroom? Banner.

Water Quality

Abstracts

Dorworth, Leslie: Kathy Luther; Raising public awareness of beach closures due to bacterial contamination., Great Lakes Beach Conference, Chicago IL

Dorworth, Leslie; Kathy Luther; Beach closures due to bacterial contamination. How much does the public need to know?, Illinois Lake Management Association 16th Annual Conference, Peoria, IL.

Articles – Not Peer-Reviewed

Dorworth, Leslie; Overview of E. coli problems in northwest Indiana. Septic Systems and Water Quality in Indiana, Merrillville, IN.

Proceedings

Dorworth, L.E.. Septic Systems and Water Quality in Indiana. 2001. IISG-01-12.

Dorworth, L. E. and D. Trgovcich-Zacok. River Restoration: Practices and Concepts Conference Notes. A hands-on workshop on the latest techniques for stream restoration. 2001. IISG-01-21.

Products

Dorworth, L. E.. River Resoration: Practices and Concepts. A hands-on workshop on the latest techniques for stream restoration. 2001. Brochure.

Publications developed by Illinois-Indiana Sea Grant-Funded Researchers

Fullerton, A. H., G. A. Lamberti, D. M. Lodge, and F. W. Goetz. Potential for resource competition between Eurasian ruffe and yellow perch: growth and RNA responses in laboratory experiments. Transactions of the American Fisheries Society, 129:1387-1395.

Kolar, C.S. and Lodge D.M. 2000. Freshwater nonindigenous species: interactions with other global changes. Pages 3-30 in: H.A. Mooney and R.J. Hobbs (eds.), Invasive Species in a Changing World. Island Press.

Perry, W. L., J. L. Feder, and D. M. Lodge. 2000. Crayfish impacts on zebra mussel recruitment, other macroinvertebrates, and algal biomass in a lake-outlet stream. American Midland Naturalist 144:308-316.

Publications continued

August 1, 2000 – December 31, 2001

Abstracts

Burkholder, CL and JR Wallace, and WL Perry. 2001. Crayfish survey of Lancaster County: Invasion of rusty crayfish (Orconectes rusticus). International Conference on Aquatic Invasive Species, Oct 1 2001, Alexandria, Virginia.

Burkholder, CL and JR Wallace. 2001. Crayfish survey of Lancaster County: Invasion of rusty crayfish (Orconectes rusticus). North American Benthological Society, LaCrosse Wisconsin (name added to poster after title submission)

Dettmers, J., B. Pientka, and J. Janssen. 2001. Evidence for Offshore Transport of Yellow Perch Larvae in Southern Lake Michigan. International Association for Great Lakes Research meeting.

Janssen, J. and D. J. Jude. 2001. Lake Michigan Yellow Perch: Washed Up or Washed Out? nternational Association for Great Lakes Research meeting.

Lodge, D.M., W.L. Perry, J.L. Feder. 2000. Invasion of the Great Lakes by the rusty crayfish (Orconectes rusticus): lessons from inland lakes. International Association of Great Lakes Research

Lodge, DM. 2001. Progress in invasion biology: understanding the occurrences an impact of nonindigenous species in natural ecosystems. Ecological Society of America Symposium on the Current status of knowledge on Invasive species: theory and practice

Perry, W.L., Feder, J.L., Lodge, D.M., & Dwyer, G. 2001. Assessing the Role of Hybridization in the Invasion of the Rusty Crayfish, Orconectes rusticus, in Northern Wisconsin and Michigan. Society of the Study of Evolution Meetings, Knowville, TN

Perry, W.L., J.L. Feder, and Lodge, D.M. 1999. Crayfish in the Great Lakes with an emphasis on the distribution, spread and possible consequences of O. rusticus. 61st Midwest Fish and Wildlife meetings. Chicago Ill.

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Articles

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Janssen, J. and D. J. Jude. 2001. Recruitment failure of mottled sculpin, Cottus bairdi, in Southern Lake Michigan induced by the newly introduced round goby, Neogobius melanostomus. Journal of Great Lakes Research. In press.

Kolar, C.S. and Lodge, D.M. 2000. Freshwater nonindigenous species: interactions with other global changes. Pages 3-30 In: H.A. Mooney and R.J. Hobbs (eds.), Invasive Species in a Changing World. Island Press.

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Lodge, D. M., C. A. Taylor, D. M. Holdich, and J. Skurdal. 2000. Reducing impacts of exotic crayfish introductions: New policies needed. Fisheries 25:21-23.

Lodge, D. M., C. A. Taylor, D. M. Holdich, and J. Skurdal. 2000. Nonindigenous crayfishes threaten North American freshwater biodiversity: Lessons from Europe. Fisheries 25:7-20.

Lodge, D.M. 2001. Lakes. Ch. 13 In: F.S. Chapin, O.E. Sala,, and E. Huber-Sannwald (eds.), Future Scenarios of Global Biodiversity. Springer-Verlag, New York.

Perry, W.L., J.L. Feder, and Lodge, D.M. in press. Hybrid zone dynamics and species replacement between Orconectes crayfishes in a northern Wisconsin lake. Evolution

Perry, W.L., J.L. Feder, and Lodge, D.M. in review. Nonindigenous Species Threaten North American Biodiversity: Systematics, Hybridization, and Introgression. Systematic Biology.

Perry, W.L., J.L. Feder, and Lodge, D.M.. 2000. Crayfish impacts on zebra mussel recruitment, other macroinvertebrates, and algal biomass in a lake-outlet stream. American Midland Naturalist 144:308-316.

Perry, W.L., J.L. Feder, and Lodge, D.M.. in press. Hybridization and introgression between introduced and resident Orconectes crayfishes. Conservation Biology

Sala, O.E., F.S. Chapin, III, J.J. Armesto, E. Berlow, J. Bloomfield, R. Dirzo, E. Huber-Sannwald, L. Huenneke, R.B.

Newspaper & Trade Journal Coverage

"Exotic species upsetting lakes." South Bend Tribune. Written by Wayne Falda, Reporter. April 22, 2001.

"Looking for bigger fish to fry." Chicago Tribune. Written by Jeff Long, Reporter. April 13, 2001. Research: Frederick Goetz.

Publications / Conference presentations

Arrigoni, H. M., and M. B. Berg. 2001. Alteration of benthic invertebrate community structure as a result of an invasive fish in the Great Lakes. Forty-ninth Annual Meeting of the North American Benthological Society, LaCrosse, Wisconsin. (poster)

Arrigoni, H. M., M. B. Berg. 2001. Comparing the effectes of the round goby (Neogobius Melanostomus) and mottled sculpin (Cottus bairdi) on benthic invertebrate community structure. Forty-fourth Annual Meeting of the International Association of Great Lakes Research. (poster)

Publications continued

August 1, 2000 – December 31, 2001

Bauer, C. R., G. A. Lamberti, and M. B. Berg. 2001. Potential interactions between Eurasian ruffe and round gobies in the Great Lakes: Prey and habitat preferences. Forty-ninth Annual Meeting of the North American Benthological Society, LaCrosse, Wisconsin.

Bauer, C.R., G.A. Lamberti, and M.B. Berg. Potential interactions between Eurasian ruffe and round gobies in the Great Lakes: prey and habitat preferences. Annual Meeting of the North American Benthological Society, LaCrosse, WI. June 7, 2001.

Bauer, C.R., G.A. Lamberti, and M.B. Berg. Zebra mussels, round gobies, and Eurasian ruffe: Predicting ecological impacts of the 'exotic triad' to improve control. Illinois-Indiana Sea Grant College Program Research Symposium, Chicago. April 12, 2001.

Berg, M.B. 2001. The little fish that could: round gobies and their impacts in the Great Lakes. Illinois-Indiana Sea Grant College Program Annual Research Symposium, Chicago, IL.

Berg, M.B. The little fish that could: round gobies and their impacts in the Great Lakes. Illinois-Indiana Sea Grant College Program Research Symposium Chicago. April 12, 2001.

Jansen, J. 2001. Cang the Indigenous Constrain the non-indegenous? 2001 International Association for Great Lakes Research. (presentation)

Lamberti, G. A., C. R. Bauer, and M. B. Berg. 2001. Zebra mussels, round gobies, and Eurasian ruffe: predicting ecological impacts of the "exotic triad" to improve control. Illinois-Indiana Sea Grant College Program Annual Research Symposium, Chicago. (poster)

Lamberti, G.A. Zebra mussels, round gobies, and Eurasian ruffe: Should we be afraid of this 'exotic triad'? Illinois-Indiana Sea Grant College Program Research Symposium, Chicago. April 12, 2001.

Rehmann, C.R., L.J. Leach, P.R. Jackson, J.A. Stoeckel, D.K.. Padilla, D.W. Schneider. Transport in the Hudson and Illinois Rivers and implications for zebra mussel population dynamics. American Society of Limnology and Oceanography, Albuquerque, 2001.

Rhodes, O. E. 2000. Department of Forestry and Natural Resources Annual Symposium.(poster)

Rhodes, O. E. 2000. The Wildlife Society National Meeting. (poster)

Rhodes, O. E. 2001. Department of Forestry and Natural Resources Annual Symposium. (poster)

Rhodes, O. E. 2001. Illinois-Indiana Sea Grant Research Symposia. (poster)

Schneider, D.W., C.R. Rehmann, J.A. Stoeckel, D.K. Padilla, and R.E. Sparks. The zebra mussel (Dreissena polymorpha) as a model organism for examining marine metapopulation dynamics. American Society of Limnology and Oceanography, Albuquerque, 2001.

Ting E, C Tseng, D Johnson, L Dominguez, and R. Whitman (2001) Random amplified polymorphic DNA fingerprints of Escherichia coli isolated from Lake Michigan water, beach, sand, and gull droppings. Abstracts of Great Lake Beaches Conference, Chicago, p.8

Ting WTE, C. C. Tseng, D.S. Johnson, L. Dominguez, J. Vander Hoogt, M. Saluta, and R.L. Whitman. (2000) Genetic Diversity of Escherichia coli isolated from Lake Michigan water, beach sand, and seagull drops as revealed by random amplified polymorphic DNA fingerprints. American Society for Microbiology 100th General Meeting, p.610-611.

Tseng CC (2000) Tracking the source of E. coli by RAPD analysis. Abstracts of Virginia Water Research Symposium 2000, p.7

Tseng CC (2001) Tracking the source of E. coli. Proceedings of Septic Systems and Water Quality in Indiana. p.20-28

Tseng CC, E Ting, D Johnson, G Thomas, and S Adams (2001) RAPD database for trackingthe source of E. coli contamination. Abstracts of Great Lake Beaches Conference, Chicago, p. 8

Tseng CC, WTE Ting, D. Johnson (2001) Automated ribotyping of Escherichia coli isolates from humans and animals. Abstracts of 2001th Amer. Soc. Microbiol. Meeting, p. 650

Tseng CC. WTE Ting, D Johnson, LD Dominguez, J VanderHoogt, K Davis-Fleicher, and M. Saluta (2000) Efficacy of RAPD analysis for differentiating human from animal E. coli isolates. Abstracts of 2000th Amer. Soc. Microbiol. Meeting, p. 610

Wolfe, K. (graduate assistant to John Janssen). 2001. Nest preference of the round goby (Neogobius melanostomus): Birth control in the bedroom. 2001 International Association for Great Lake Research. (presentation)

Professional and Committee Affiliations

August 1, 2000 – December 31, 2001

Patrice Charlebois

Executive Committee of the Dispersal Barrier for the Chicago Waterways Advisory Panel
Illinois State Management Plan for Aquatic Nuisance Species Steering Committee
Member, North American Benthological Society
Member, International Association for Great Lakes Research
Vice Chair, Great Lakes Panel on Aquatic Nuisance Species
Information and Education Committee for the Great Lakes Panel on Aquatic Nuisance Species
Public Outreach and Education Committee, Illinois Natural History
Co-Chair, Ballast Water Policy Committee
Communcations, Edication and Outreach Committee of the Aquatic Nuisance Species Task Force

Leslie Dorworth

Grand Calumet River / Indiana Ship Canal Corridor Vision Steering Committee
Environmental Management Policy Committee (voting member)
CARE Committee
Rhone-Poulenc Citizen Advisory Committee
Brownfields Technical Advisory Committee
Indiana Dunes Good Fellows Camp
Inter-Agency Technical Task Force on *E. coli*
Great Lakes Sea Grant Network Coastal Land Use Committee
Extension Advisory Committee (PCARET)

Robin Goettel

Education Organizaing Committee – Chicago Wilderness
Communications Liaison to Communications Committee – Chicago Wilderness
University of Illinois College of ACES Open House Planning Committee
National Sea Grant Exhibits and Special Events Taskforce
Agricultural Communicators in Education
National Sea Grant Communications Products Contest Committee Chair

Martin Jaffe

American Planning Association, Water Resources Subcommittee, Environmental Policy Guide Task Force
Northeastern Illinois Regional Planning Commission, Water Resources Advisory Committee and Water Supply Task Force
Chicago Metropolis 2020 Project, Commercial Club of Chicago, Natural Environment Work Group
City of Chicago, Department of Environment, Lake Calumet Ecological Management Plan Task Force
Chicago Wilderness, Sustainability Team and Chicago Region Biodiversity Council (General member)
Commisioner, Village of Wilmette (IL) Historic Preservation Commission
Steering Committee, University of Illinois at Chicago Institute for Environmental Science and Policy
Editorial board, Journal of Architectural and Planning Research
Editorial board, Land Use Law & Zoning Digest
Ely Chapter, Lambda Alpha International Honorary Land Economics Society

Debra Levey Larson

Champaign Urbana Ad Club
Agriculutral Communications in Education (ACE)
Interpretation Committee for Indiana Dridge March Environmental Center

Robert McCormick

Epsilon Sigma Phi National Extension Honorary
Indiana Rural Development Association
Purdue University Co-operative Extension Specialists Association
American Whitewater Affiliation

Professional and Committee Affiliations continued

August 1, 2000 – December 31, 2001

Brian Miller
National Sea Grant Assembly of Program Leaders
Coastal Communities and Economies Theme Team, National Sea Grant
Lake Calumet Intergovernmental Working Group
Programming Subcommittee of the Lake Calumet Intergovernmental Working Group
State Wetland Management Plan User Advisory Committee
NRCS Prescribed Fire Committee
National SeaGgrant's Regional and National Extension Program Development Committee
National 4-H Sport Fishing Executive Board
Purdue University Cooperative Extension Service, Water Quality Common Interest Group

Richard Sparks
Illinois State Management Plan for Aquatic Nuisance Species Steering Committee

Richard Warner
North Central Region Aquaculture Committee (NCRAC) Board of Directors
North-Central Regional Experiment Station Committee NCA-23
North-Central Regional Experiment Station Committee, Administrative Advisor for NC-94
Illinois Advisory Committee on Animal Damage Control, USDA - APHIS
National Association of University Fish and Wildlife Programs (NAUFWP)
AD Hoc Agricultural Policy Committee - The Wildlife Society Regional / National
Partnership Illinois Water Issues Ad Hoc Advisory Board
Executive Board, Illinois Water Resources Center
Cook County Illinois Animal Control Advisory Committee

Susan White
Agricultural Communicators in Education

Students Supported by Illinois-Indiana Sea Grant College Program

August 1, 2000 – December 31, 2001

Students supported by the Illinois-Indiana Sea Grant College Program in 2001

Level of Study	Number of Students
Undergraduate and post-baccalaureate	13
Graduate students (MS candidates)	13
Graduate students (PhD candidates)	5
Post Doctoral associates	1
Total Supported	32

Students supported by the Illinois-Indiana Sea Grant College Program in 2000

Level of Study	Number of Students
Undergraduate and post-baccalaureate	29
Graduate students (MS candidates)	21
Graduate students (PhD candidates)	9
Post Doctoral associates	1
Total Supported	60

Photograph and Art Credits

Robert Espeseth, cover and page 15
Brian Miller, page 7
Robin Goettel, page 8
David Riecks, page 10
Martha Kneuer, page 11
Charles Tseng, page 13