

## *Water-Wealthy/Water-Poor* by Daniel McGrath

Nearly a fifth of the globe's fresh water is contained in the Great Lakes...definitely a water-wealthy area. But there are many other areas around the globe which are water-poor. This inequity of water resources may become an issue for the Great Lakes region if at sometime in the future, those water-poor countries put pressure on water-wealthy areas to share or sell their water. How much would the water cost and what effects would removing it have on the aquifer, the ecosystems and the economy of the areas involved?

### *Computer Modeling May Have the Answers*

Dr. Franklin Fisher, Professor of Economics at Massachusetts Institute of Technology is working to promote peace in the Middle East through integrating science and economics. He is a member of the Middle East Water Project, which is attempting to produce a computer model to predict the economic value of the water in Jordan, Israel and Palestine, nations currently in bitter conflict over the ownership of their shared water resources. Fisher is of the view that it is not so important who owns the water, but rather who uses it, and users should pay what the water is worth. Fisher hopes that modeling the economics of water can help these countries find areas of cooperation in water resource infrastructure and maybe economic gains for all parties. How the water conflict in the Middle East is resolved will have an impact on how other water resource conflicts are addressed in other parts of the world, for example, between the U.S. and Canada.

### *Water Resources Conference*

Fisher was one of the keynote speakers at a national conference sponsored by Illinois-Indiana Sea Grant entitled, "Improved Decision-making for Water Resources: The Key to Sustainable

Development for Metropolitan Regions" held in Chicago September 16-17, 1999. Co-hosted by University of Illinois at Chicago Great Cities Institute, the conference brought together nationally recognized scholars, leaders and practitioners from the U.S. and Canada, like Fisher, to present issues, solutions, ideas and controversies related to making more informed, science-based decisions about North America's and specifically the water - wealthy of this region are likely to face enormous pressure to share their water resources with arid regions around the world that have the money and power to make it happen.

### *Scientists, Economists and Policy-Makers*

Mr. David Festa, Principal Advisor to U.S. Secretary of Commerce William Daley began the conference by addressing the gap in our ability to translate science and economics into responsible use of our natural resources. He stressed that communication and collaboration between scientists, economists, government officials and industry is vital to encouraging "smart growth rather than a choking sprawl," particularly in metropolitan areas.

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Phillip E. Pope

## Letter from the Director

Sustainable economic development — a frequently heard phrase, lately. The words are even in the IISG Program mission statement: “to foster stewardship of an enhanced and sustainable environment and economy along southern Lake Michigan and in the Great Lakes region through research, education, and outreach.” Environment and economy go hand-in-hand; the Program’s purpose is to promote both, making these goals complementary, not adversarial.

One recent step the Program has taken to promote these goals is the conference featured on the first page of this issue of *The HELM*. Within our Coastal Business and Environmental thematic area, specialist Dr. Daniel McGrath organized a national conference examining improved decision-making for water resources as a key to sustainable development for metropolitan regions.

Current demographic studies estimate that 60% of the world’s population lives in coastal zones and the percentage is expected to increase substantially in the future. Similar estimates exist for the current and future demographics of the coastal and Great Lakes regions of the U.S.— a trend that signals growth in the regional economies and greater demands on the associated environmental resources.

The topics discussed at the conference have broad national application but are particularly relevant to the Great Lakes Region, and to southern Lake Michigan specifically — water wealthy regions as defined in Daniel McGrath’s article. Issues governing the use, management and allocation of Great Lakes water resources are of timely importance. And through the use of predictive modeling, environmental and economic consequences can be estimated.

In another effort, Illinois-Indiana Sea Grant partnered with Northeastern Illinois Planning Commission (NIPC) to fund a project to support region-wide planning in southern Lake Michigan. The initiative, led by NIPC, seeks to integrate, through a shared vision, the regional planning efforts of Southeastern Wisconsin, Northeastern Illinois, Northwest Indiana and Southwestern Michigan Regional Planning Commissions. IISG has also joined the Department of Environment, City of Chicago in its effort to restore the Indian Ridge Marsh in south Chicago. Once restored, the site will serve as an environmental education center and surrounding land will be developed for new businesses and industries.

Sustainable economic growth and a sustainable environment are achievable with careful planning and informed decision-making. Illinois-Indiana Sea Grant is pleased to be a part of the future of this process and the future of the southern Lake Michigan region.

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## Welcome New IISG Employees!



Fannie Lambert

**Fannie Lambert** joined the Illinois-Indiana Sea Grant College Program in the fall of 1999 as secretary to the Research Coordinator. She comes from the University of Illinois’ Office for Academic

Policy Analysis. Prior to that, she worked in other U of I campus offices. Her responsibilities include assistance with the research proposal process, communication activities, and meeting logistics.



Debra Levey Larson

**Debra Levey Larson** joined IISG on September 15, 1999 just in time to attend the Improved Decision-Making for Water Resources conference in Chicago that same day! Larson is working half time for IISG

in the offices on the U of I campus at Urbana-Champaign in media and communications. Her primary responsibilities will be to serve as editor of *The HELM* and other publications, write press releases and help IISG gain media exposure. Outside of IISG, Larson is a freelance writer/producer.



Cindy Salazar

**Cindy Salazar** is the new Program Assistant in the Director’s Office of IISG. Her main duties include providing administrative support to the Director and Assistant Director, preparing and mailing

correspondence, assisting the Program Manager with the compilation of program documents and proposals, maintaining and updating the calendars and the Web and other aspects of keeping the Administrative Office running smoothly. She holds a technical certificate from IVY Tech College in Administrative Office Technology.

## Charlebois Identifies New Invader



Patrice Charlebois

It was first spotted in the open waters of southern Lake Michigan by Burt Atkinson, captain of a charter boat named "Donna G," who was out with a fishing party off Waukegan Harbor. The captain noticed the masses (which can look and feel like wet cotton batten) on his lines and knew they were different from the other spiny water flea, *Bythotrephes cederstroemi*. Pat Charlebois, Biological Resources Specialist for IISG checked zooplankton samples which were collected in the same area and identified them as *Cercopagis pengoi*.

*Cercopagis* has little barbs on its tail, which give it the nickname, "fishhook flea." The barbs make it difficult for small fish to eat them, and so without a predator, the fishhook flea can concentrate on multiplying.

Charlebois worries that this new species could cause even greater problems for the Lake Michigan ecosystem. As is the case with the spiny water flea, this new invader feeds on zooplankton, an important food source for young fish. So, *Cercopagis* could compete for the same food as these fish. Charlebois said that the fishhook flea "...could also be a serious threat to yellow perch who rely on zooplankton as a food resource. If *Cercopagis* strikes another blow to this already battered resource, yellow perch may feel the impact again."

So, what can be done to stop the spread of this potentially destructive water flea? Boaters and anglers can help by observing the same procedures used to prevent the spread of other exotic species like inspecting the boat and removing plants and animals from equipment; draining the boat of all lake or river water (including the baitbucket); dumping bait on land or in the trash, never in the water; and rinsing the boat with a high-pressure sprayer or 104 F degree water or allowing the boat to dry for at least five days before transporting it to another body of water.



Male *Cercopagis*: note the crimp in the tail which gives it the nickname "fishhook flea."

Image is courtesy of Igor A. Grijorovich, Hugh J. MacIsaac, Irina K. Rivier, Nikolai V. Aladin, and Vadim E. Panor from their paper entitled, "Comparative biology of the Ponyo-Caspian cladoceran *Cercopagis pengoi* from Lake Ontario, Baltic Sea and Caspian Lake."

If you would like more information on the newest exotic species invader to southern Lake Michigan, contact Patrice Charlebois, 847-872-0140; [p\\_char@ix.netcom.com](mailto:p_char@ix.netcom.com).

# *IISG Goes to Brazil:*

## *An interview with LaDon Swann*



Brazilian fish farmer holding extruded fish feed used for fingerling productions at the State Fish Station in Rio Branco.

Aquaculture Extension Specialist, LaDon Swann, traveled to Rio Branco and Laranjal do Jari in Brazil, South America to share his aquaculture expertise with farmers in order to help them improve their management techniques including feeding, pond fertilizers, and stocking rates. The HELM asked Swann to tell us a little about his experiences.

### **What was your first thought when you heard you were going to Brazil for three weeks?**

Swann: I was very excited because while I have worked extensively in Africa through Peace Corps and Volunteers in Overseas Cooperative Assistance (VOCA) I have never had the chance to work in South America. Besides, I have always had an interest in tropical fish production and Brazil is the country to visit if you like tropical fish.

### **With your work there being of a technical nature, was communication a problem or do you know how to say “Aquaculture” in Portuguese?**

Swann: My background in French helped me understand a lot of Portuguese but I still had to have a translator.

### **What were some of the other obstacles you faced?**

Swann: Travel logistics was probably the most frustrating obstacle I had to deal with during my work. For example, due to weather I missed my initial flight from Chicago to Sao Paulo. With only one flight a day I was forced to wait two extra days before I could be booked on a flight.

### **What local species were they working with?**

Swann: Tambaqui, Curimata, Pacu, and Tilapia.

### **Are they similar to any species here in the IISG area?**

Swann: Tilapia is a commonly produced species worldwide and is a common species being produced here in Illinois and Indiana. Therefore, my experiences here allowed me to provide a great deal of technical support to the Brazilian farmers I worked with in the two Brazilian States.

### **How did you help them?**

Swann: Well, at both sites I stressed improved farm management to increase yields. For example, there was considerable inconsistency in the frequency and quantity of feed they fed to their fish. Teaching the importance of feeding is a key way for farmers to increase their yields and ultimately the return per acre. Also, farmers at both sites had a tendency to overstock their ponds under the impression that higher stocking densities increased yield. While this is true up to a point my task was to help them understand that there was a negative correlation with stocking densities and average fish size beyond what the pond water could assimilate.

**And produce less fish?**

Swann: Well, they were stocking so many that the individual fish couldn't grow large enough to get a good price at market. No more than two fish per square meter is a better ratio. I also encouraged them to eliminate trying to produce tilapia. They were using a mixed sex stocking strategy which causes excessive natural reproduction and resulted in stunting their growth.



*Small fish pond with a beautiful algae bloom essential for fingerling production. The fence is made from wood and used to prevent bank erosion.*

**What about at Rio Branco? Were there different problems there?**

Swann: They were encountering some of the same problems we just talked about, but the farmers in Rio Branco had another problem, too. They need to set up a cooperative marketing strategy to transport fish outside of the area to larger markets to sell. I'd also like to see them get access to trained technical support personnel and semi-annual or annual fish farmer meetings where technical information could be shared.

**Have you given that same kind of advice to farmers here in the U.S.?**

Swann: Yes I have. Here in Illinois we have recently created an Illinois Fish Farmers Cooperative to address similar issues. We are looking for ways to pool fish supplies from local farmers in an attempt to tap into some of the larger and more stable markets.

**So what happens next? Will you be going back?**

Swann: I would love to go back. However, a trip like that every two to three years is about all I can afford to be away from my work here. I tried to teach farmers there to be self-reliant and rely less on outside assistance.



*Most farmers in the State of Acre have integrated aquaculture and constructed hog houses over their ponds. The uneaten pig food and hog manure provide essential nutrients for the algae and zooplankton which in turn are consumed by the fry and fingerling fish.*

# News

## *Congratulations Dr. Swann*

LaDon Swann, Illinois-Indiana Sea Grant's Aquaculture Extension Specialist, received his Ph.D. on August 8, 1999 from the Purdue University School of Education— Department of Curriculum Instruction. His doctoral thesis was titled, "The Comparison of Computer-Based Instruction with Face-to-Face Lecture During an In-Service Training Program for Extension Service Educators".

## *Leslie Dorworth Chairs E. coli Task Force Subcommittee*

Beach closings due to high levels of bacteria have been an issue not just for the Indiana shoreline, but nationally in other coastal states as well. The *E. coli* Task Force is a collaborative effort between 17 agencies and other organizations all interested in protecting the public health, the health of the Lake Michigan shoreline, and the quality of life in northwest Indiana. Four subcommittees are currently functioning within the Task Force. A new subcommittee concerning outreach was recently formed, with Leslie Dorworth named as the chair. Look for more about Dorworth's work with the *E. coli* Task Force in the next issue of *The HELM*.  
*National Education Award for*

## *Exotic Species Project*

The Great Lakes Sea Grant Network was recently honored with an Outstanding Educational Program Award from the American Distance Education Consortium. The award was given to "The Exotic Species Day Camp for Educators" project team for innovation and excellence in the development and delivery of programs for technological and pedagogical innovation.

Project Coordinator Robin Goettel noted that the training led to new classroom activities developed by participating teachers (available next summer). Goettel and her team members in IL, IN, MI, NY, OH, MN, and WI educated teachers in remote locations throughout the Great Lakes region about the availability and benefit of classroom teaching resources focusing on the biology, spread, and impact of aquatic exotic species.

## *Sea Grant Gets an A+ in Connecting with Information Users*

Those who take advantage of products and services offered by Illinois-Indiana Sea Grant expressed their appreciation and support during the program's Performance Assessment Team Review (PAT) on May 4-6. The review team gave IISG a rating of "excellent" in the "Connecting with Users" category — a direct result of the outstanding turnout by clients along with their positive comments on how IISG staff have helped them in their work dealing with southern Lake Michigan and related inland water issues.

Clients and project partners who participated represented the diverse audience

that IISG staff helps on a daily basis—including regional planners, water resource managers, charterboat operators and anglers, elementary school teachers, aquaculturists, agency personnel, and an aquarium education director. In addition, there were presentations by program outreach staff and funded researchers addressing issues relating to water quality, biological resources, aquaculture, and coastal business and environment. The review team, along with program monitor, Leon Cammen, had the opportunity to evaluate IISG's effectiveness by speaking with members of the Joint Policy, Research Advisory and External Users Advisory Committees.

The PAT Review is a new procedure instituted by the National Sea Grant Office which reviews all Sea Grant programs once every four years. The process determines how merit funding from National Sea Grant should be allocated. This forum gave IISG an opportunity to describe its current impacts and benefits and future research and outreach activities in the context of the Program's Strategic and Implementation Plans.

Following the recommendations of the PAT review, the program gathered at a retreat where staff worked to implement changes which will increase program effectiveness in the southern Lake Michigan region. A major outcome was a new procedure that will allow for a quicker and more effective way to transfer results to client groups.

*We are always interested in learning how IISG can be of help to you. Please feel free to contact the relevant specialist or administrator on the back page of The HELM for information.*

## *NiSource and IISG Team Up to Fund Environmental Projects*

More than \$26,000 was awarded toward funding the following twelve environmental restoration/enhancement projects across northern Indiana through a partnership between the NiSource, Inc. Environmental Challenge Fund and Illinois-Indiana Sea Grant. NiSource, Inc. is a holding company whose primary business is the distribution of electricity, natural gas and water in the Midwest and Northeast United States. Applications for the Environmental Challenge Fund are available by contacting Karen McKeown, NiSource Environmental Affairs, 801 E. 86th Avenue, Merrillville, Indiana 46410. More information about NiSource can be found on the Web at [www.nisource.com](http://www.nisource.com).

Sea Grant chose to completely fund Jay Boodheshwar's work in the Pastrick Marina, Lake County entitled, "Aquatic Spawning Habitat Restoration Project." Boodheshwar is the director of the East Chicago Parks and Recreation Department. Local students will work with his department and the Aquatic Research Center to construct and install artificial spawning structures in the marina to increase spawning success of the Lake Michigan Fishery.

For more information contact:  
Jay Boodheshwar at 219-391-8474.

The following is a list of the other partially funded projects. Contact the editor of *The HELM* for more details.

*Cline Lake Fen Prairie Restoration Project*  
*George Earle School Prairie Restoration Project*  
*Griffith Chimney Swift Towers Project*  
*Lincoln Elementary School Nature Trail Project*  
*Little Calumet Prairie Project*  
*Northeast Purdue Agricultural Center Filter Strips Project*  
*Ober Savanna Prairie Restoration Project*  
*Pokagon State Park Oak Savannah Restoration Project*  
*Urban Wetland Restoration Project*  
*Wetland Expansion and Nature Study Center Project*  
*Whitko Community Schools Habitat Restoration and Enhancement Project*

## *We're Blowing Our Horn!*

IISG received more than a half a million dollars in funding from Sea Grant's National Strategic Initiatives Competition 1999-2000. The projects are in Aquatic Nuisance Species Outreach and Aquaculture Technology. Congratulations to Patrice Charlebois, Brian Miller, Robin Goettel, LaDon Swann and researcher, Dan Schneider.

**Patrice Charlebois** (partnering with Connecticut, Minnesota, North Carolina and Florida Sea Grants.)  
*Aquatic Nuisance Species Research and Outreach:*  
*A National Invasive Plant Outreach Initiative*

**Patrice Charlebois** (partnering with Minnesota, Michigan, Ohio, Pennsylvania and Wisconsin Sea Grants.)  
*Aquatic Nuisance Species Research and Outreach:*  
*Sustaining Wild Harvest and Aquaculture of Bait Fish in ANS Infested Waters and Reducing Risk of ANS Spread*

**Patrice Charlebois, N. Carroll, R. N. Wiedenmann, and D. J. Voegtlin**  
(partnering with Michigan and Minnesota Sea Grants and the Illinois Natural History Survey)  
*Aquatic Nuisance Species Research and Outreach:*  
*Biological Control of Purple Loosestrife by 4-H Field Volunteers*

**Brian Miller** (partnering with Wisconsin Sea Grant)  
*Transferring Sea Grant Zebra Mussel Research and Outreach Results to the Nation Using a World Wide Server*

**Robin Goettel** (partnering with Louisiana, Ohio, Minnesota and Washington Sea Grants.)  
*Exotic Aquatics on the Move:*  
*Building a Web of Awareness for Geography Educators and Students*

**LaDon Swann** (partnering with Delaware and Maryland Sea Grants.)  
*Electronic Information and Education for the Aquaculture Industry through a Web-Based Network of Aquaculture Information Services*


**Dan Schneider** (partnering with New York Sea Grants.)  
*The Role of Larval Mortality in Metapopulation Dynamics and Control of the Zebra Mussel in Freshwater and Estuarine Systems*

## Water-Wealthy

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The diversity of the topics presented at the conference was an eye-opening demonstration for the need for improved communication and collaboration. When scientists, researchers and environmentalists sit down at the table together alongside city planners and economists, they each bring information, crucial to the decision-making process. And that is where a tool such as Fisher's computer models can be a tremendous resource to help focus the discussion and guide the decision-making process. Though this kind of modeling is immensely complex, the process of model development helps bring together ideas, information and perspectives—critical elements needed to achieve sustainable development of our metropolitan regions.

*The conference was made possible through significant public funding support from the National Sea Grant Office and the Office of Sustainable Development and Intergovernmental Affairs at the U.S. Dept. of Commerce and private funding from Harza Engineering Inc., NiSource, Inc., the Northeast-Midwest Institute and the Chicago Environmental Fund.*

For a copy of the papers presented at the conference, contact Daniel McGrath, Coastal Business and Environmental Specialist, at 312-355-1276, [dmcgrath@uic.edu](mailto:dmcgrath@uic.edu). 

## State-Funded Projects for 2000-2002

*Seven new research projects were selected to receive \$600,000 in funding over two years.*

**DNA Fingerprinting as a Means for Tracing the Source of *E. coli* Contamination**  
Dr. Charles C. Tseng and Dr. W. T. Evert Ting, Purdue University Calumet

**Influence of Upwelling Events on Larval and Juvenile Yellow Perch**  
Dr. John Janssen, Loyola University Chicago

**Consequences of Round Goby Invasion for Littoral Zone Communities: Effects of Sculpins and Benthic Invertebrates**  
Dr. Martin B. Berg and Dr. John Janssen, Loyola University Chicago

**Development of Water Markets for Northeastern Illinois**  
Dr. Martin Jaffe, University of Illinois at Chicago

**The Development of Molecular and Biochemical Tools to Assess Changes in Yellow Perch (*Perca Flavescens*) Growth Hormone**  
Dr. Frederick William Goetz, University of Notre Dame

**Zebra Mussels, Round Gobies, and Eurasian Ruffe: Predicting Ecological Impacts of the "Exotic Triad" to Improve Control**  
Dr. Gary A. Lamberti, University of Notre Dame; and Dr. Martin B. Berg, Loyola University Chicago

**Predicting Zebra Mussel Transport in Rivers and Estuaries**  
Dr. Chris R. Rehmann and Dr. Daniel W. Schneider, University of Illinois at Urbana-Champaign; and Dr. Dianna K. Padilla, State University of New York at Stony Brook

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## Upcoming Events

**Workshop entitled, "Aquaculture Recirculating Systems"**

March 18, 2000  
Contact: LaDon Swann,  
765-494-6264

[lswann@purdue.edu](mailto:lswann@purdue.edu)

**Aquaculture Association Meeting**

March 25, 2000  
Contact: LaDon Swann,  
765-494-6264

[lswann@purdue.edu](mailto:lswann@purdue.edu)



## *The Forecast for E. coli is...*



Judith Coffman Thomas

Closing beaches due to high bacterial counts is embarrassing to beach managers and city health officials, not to mention inconvenient to residents and tourists seeking a little fun in the sun.

Judith Coffman Thomas has been awarded a two-year Illinois-Indiana Sea Grant Graduate Fellowship for a research project which will help forecast the levels of *E. coli*. Thomas will monitor *E. coli* contamination in areas around the Indiana

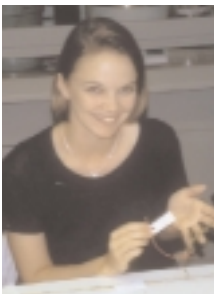
Dunes and examine the variability of bacteria concentrations in streamflow, particularly during storm periods. Dr. Greg A. Olyphant, Associate Professor of Geological Sciences at Indiana University at Bloomington will supervise the laboratory and statistical analysis of Thomas' project and Dr. Richard Whitman, director of United States Geological Survey, Biological Research Division, will coordinate the water collections and analysis of *E. coli* concentrations.

IISG has also funded a related project to determine whether the sources of the *E. coli* bacteria can be identified. Possible sources include sewage, animal wastes, or soil eroded from stream banks and shore-

lines and carried into the lake. If the problem can be stopped at the source, by improved waste treatment or better watershed management, then beach closings might be avoided altogether. Drs. Evert Ting and Charles Tseng (Purdue University at Calumet) are developing genetic "fingerprinting" techniques to identify strains of *E. coli* bacteria. If different strains are associated with different sources, the distinctive genetic "signatures" will also reveal the "home address" of the bacteria.

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## *New Knauss Fellowship Awarded*



Adrienne Froelich

Adrienne Froelich grew up catching crayfish in a nearby creek at the foothills of the Appalachians. She watched those crayfish and other wildlife disappear due to housing developments and subsequent decisions made by the city. In her personal statement for the Knauss Fellowship, Froelich says, "The conflict between development and nature had hit home, both literally and figuratively."

Out of this early experience grew Froelich's desire to improve environmental legislation. She discovered that there was not always a good flow of communication between scientists and policy-makers. Froelich will spend a year in Washington D.C. as a Dean John A. Knauss Fellow for the year 2000 working in Senator Ron Wyden's office (D-Oregon) on the ground fish crisis and salmon issues. She hopes "to learn how to effectively communicate scientific findings to policy-makers."

Froelich was named Knauss Fellow by the National Sea Grant College Program, National Oceanic and Atmospheric Administrations (NOAA). She graduated magna cum laude from the University of Alabama in Huntsville, receiving a B.S. in Biological Sciences. She is expected to finish her Ph.D. at Notre Dame in 2000.

## *Fishing for Information?*

*We've Got the Catch of the Day for You!*

Our research scientists are delving into studies that address issues affecting people's quality of life. In September IISG - funded principal investigators and outreach specialists shared their progress and findings with the Association of Great Lakes Outdoor Writers (AGLOW).

### **Let's Go Swimming . . . Maybe Not**

Water Quality Specialist Leslie Dorworth spoke about the *E. coli* problem that closed many beaches last summer, and described how the *E. coli* Task Force plans to determine sources of bacterial contamination and to inform people about why beaches are closing.

### **Exploring Poor Survival of Yellow Perch in Lake Michigan: Where have all the Tasty Fish Gone?**

John Dettmers, Lake Michigan Biological Station Director with the Illinois Natural History Survey explained what may be the causes for the reduced stocks of this tasty Lake Michigan fish that had been a popular catch for anglers.

### **A Dispersal Barrier for Chicago Waterways: Mitigating Movement of Malevolent Marauders**

Biological Resources Specialist Pat Charlebois talked about the importance of the planned exotic species dispersal barrier to deter exchange of organisms between the Great Lakes and Mississippi River drainage systems. This is a particular concern due to the downstream movement of the round goby.



*Zelda Zebra Mussel shares her expertise on exotic aquatics at AGLOW meeting.*

### **Great Lakes Exotic Invaders: PCBs May Reemerge as Human Health Threat**

Marty Berg, Assistant Professor at Loyola University of Chicago, noted that the introduction of zebra mussels and round gobies may serve as a means to move toxic substances to higher levels in the food chain. He described potential links to human health when round gobies are eaten by game-fish such as smallmouth bass, a fish often consumed by humans.

To obtain a fact sheet summarizing these projects, request the AGLOW Tip Sheet from:

Robin Goettel  
217-333-9448  
[goettel@uiuc.edu](mailto:goettel@uiuc.edu)

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## *Exotic Aquatics on the Move: New Opportunity for Geography/Social Studies Teachers*

Here's a new way to use the subject of invading aquatic species to teach geography and social studies. Come to the EATM (Exotic Aquatics on the Move) workshop in June and get up close and personal with some notorious exotics including purple loosestrife, zebra mussels, sea lamprey and round gobies. We have lots of teaching tools to help you educate your students.

This topic is a natural for geography because you can teach about species dispersal and transport, show how exotics have impacted human activities, and how our actions have affected the movement and population growth of exotic aquatics.

Illinois-Indiana Sea Grant is coordinating this national effort in partnership with Geographic Alliances around the country and the National Council for Geographic Education. Other Sea Grant programs (LA, NY, WA, OH, MN, and MI) are co-facilitating the various project elements: Hands-on workshops, Student community awareness projects, Web site development and Teacher-developed activities on exotic aquatics.

Visit our Web site [ag.ansc.purdue.edu/il-in-sg](http://ag.ansc.purdue.edu/il-in-sg) or contact Project Coordinator Robin Goettel, 217-333-9448 if you are interested in participating (limited enrollment).



Happenings & Education around Lake Michigan (*The HELM*), reports on Illinois-Indiana Sea Grant research, extension, education and other Lake Michigan issues and activities.

For a free subscription, program information or to send suggestions for articles or editorial correspondence write to us at the address above or contact:

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Visit our website at:

**<http://ag.ansc.purdue.edu/il-in-sg>**

Illinois-Indiana Sea Grant College Program fosters the creation and stewardship of an enhanced and sustainable environment and economy along southern Lake Michigan and in the Great Lakes region through research, education, and outreach.

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