

# Ocean Commission Highlights Great Lakes Resource

by Irene Miles

In the 1960s, it was the age of the space race and science ruled. The release of ocean reports during this time inspired dramatic changes in national policy, leading directly to an increase in funding for marine research, the establishment of the National Sea Grant College Program, and the beginning of the National Oceanic and Atmospheric Administration (NOAA) in 1970.

*An Ocean Blueprint for the 21st Century*, the final report of the U.S. Commission on Ocean Policy, was presented to Congress on September 20, 2004, with a comprehensive list of recommendations related to a number of coastal concerns. “In these times of tight budgets and shifting priorities, the question is whether *this* report will have an effect of similar magnitude,” said Dick Warner, Illinois-Indiana Sea Grant director.

The report, which was mandated by the Oceans Act of 2000, reaffirms the importance of ocean research, noting that funding has fallen from seven percent of the total federal research budget 25 years ago to just 3.5 percent today. The commission also states, “Data collection and scientific discovery are not enough. These findings must be translated into useful, timely, and relevant information products so that policy makers, managers, and others can make informed decisions.”



(Photo courtesy of Indiana Dunes National Lakeshore)

## Inside This Issue

- Stewardship Synergy Takes off in Calumet Region ..... 2
- River Conference Assesses Restoration Efforts ..... 3
- Fellowships Provide Rich Opportunities ..... 4
- Asian Carp “Hot Topic” ..... 6

# Stewardship Synergy Takes off in the Calumet Region

The Calumet region of southeast Chicago and northwest Indiana has a rich history filled with industry and immigrants. But, before years of steel and railroad manufacturing, the region was the site of the country's largest wetlands. Now, as much of the industry has moved to other parts of the world, brownfields lie next to some of the most ecologically significant sites in Illinois.



*Sea Grant's Kristin TePas and Leslie Dorworth discuss questions and answers with students playing the Water Wheel to Reel in Information.*

“As part of a larger effort to revive both the economy and ecology of the region, the Calumet Stewardship Initiative has provided a way to create synergy by streamlining and coordinating a number of ongoing efforts in the region,” said Nicole Kamins, City of Chicago, Department of Environment Calumet project coordinator. The Calumet Stewardship Initiative is composed of 17 citizen groups, agencies, institutions, and programs (including Illinois-Indiana Sea Grant) that have joined forces to engage volunteers in protecting and rehabilitating their local environment.

“Stewardship in the region has been going on for many years; by establishing this partnership, we are following in the footsteps of those who have come before us,” said Kamins. In addition to efforts by several local organizations, the Field Museum has been involved in educational programs in Calumet region schools for a number of years.

Through the initiative, over 70 community events are conducted each year, engaging local citizens and others in restoration activities and environmental stewardship. This year, Sea Grant has presented several workshops on aquatic invasive species directed towards teachers, students, natural resource managers, and other citizens. Another Sea Grant workshop focused on ways to prevent beach water contamination.

Each spring the initiative sponsors the Calumet Stewardship Day for students from the region to take part in hands-on learning experiences. “This event is an opportunity to bring together scientists and outreach specialists to interact with students, capping a year-long education effort,” said Julie Grecian, Field Museum regional program manager. For the past several years, she has overseen the Calumet Stewardship Initiative.

*continued on page 10*

**Irene Miles,**  
Managing Editor  
**Robin Goettel,**  
Copy Editor  
**Jennifer Fackler**  
**Robin Goettel**  
**Lisa Merrifield**  
**Kristin TePas,**  
Contributors  
**Rod Roberts,**  
Designer/Layout  
**Larry Ecker,**  
Graphic Designer



Illinois-Indiana Sea Grant is one of 31 programs of the National Sea Grant College Program created by Congress in 1966. Sea Grant is a partnership of universities, government, business and industry that addresses marine and Great Lakes needs to enhance sustainable coastal economic development. Funding is provided by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA Grant #NA86RG0048), Office of Sea Grant, University of Illinois at Urbana-Champaign and Purdue University, West Lafayette, Indiana. University of Illinois and Purdue University offer equal opportunities in programs and employment.



# The Ebbs and Flows of River Restoration

Urban river and stream ecosystems are generally disturbed. Many have been channelized, drained, impounded, armored, stripped of vegetation or have altered hydrology. As a result, river restoration projects have success and failure stories.

At a recent conference, “Riparian Bioengineering and Restoration Techniques,” sponsored by Illinois-Indiana Sea Grant and the Chicago Wilderness Consortium, experts and interested individuals from across the country gathered in Wheaton, Illinois, to share their stream restoration experiences and learn from others.

“Traditional stream repair methods are usually costly and destroy aquatic habitats along with the natural beauty of the stream,” said Leslie Dorworth, Illinois-Indiana Sea Grant aquatic ecology specialist. “For ten years now, bioengineering has offered less expensive and more environmentally sound options. The pairing of engineering principles and biological expertise can reduce erosion while maintaining a more natural stream.”

More than 90 consultants, resource managers, designers, environmentalists, scientists, and engineers looked at what works and doesn’t work in real world stream restoration efforts. “This conference was inspired by the surge in restoration projects,” said Dorworth. “It had something for everybody. The focus was not one stream or practice; it provided a variety of information about a number of technologies.”

The conference included an overview of over 100 restoration projects compiled by the Northeastern Illinois Planning Commission. “Urban streams suffer from a multitude of insults, so it was gratifying to see that many of these projects were 90 percent successful. These efforts surpassed expectations,” said Don Roseboom, a U.S. Geological Survey water specialist who helped plan the conference.

Commonly used bioengineering techniques in these projects include bank stabilization with the use of fabric and fiber rolls, riparian buffer restoration to return prairie and wetland plants along the river’s edge, and in-stream restoration with the use of riffles—rocky shoals or sand bars.

In addition to many case studies, the conference featured several speakers that are involved in national and international river restoration projects. Chester Watson, Colorado State University, Bill Annable from University of Waterloo in Ontario, Canada, and Steve Gough of Little River Research and Design in Murphysboro, Illinois, discussed their successes and failures over the years.



# Fellowships Provide Rich Opportunities

*By Lisa Merrifield*

The classroom only provides part of a graduate education. To enhance learning and expand horizons, Sea Grant offers a variety of fellowships for talented students pursuing degrees related to water. Fellowship opportunities range from biotechnology to water quality. Students can conduct research on their home campus, intern at the Great Lakes

Commission, or spend a year in Washington, D.C. This year IISG is honored to have two new fellows among our ranks.



*Jesse Trushenko's aquaculture research earned her a Sea Grant Industry Fellowship to work with Archer Daniels Midland.*

Jesse Trushenski, an aquaculture student at Southern Illinois University Carbondale (SIUC), was recently awarded a Sea Grant Industry Fellowship. Industry Fellows are involved in research and development projects on topics of interest to a particular industry or company. "In a true partnership, the student, the faculty advisor, the Sea Grant college or institute, and the industry representative work together, sharing research facilities and the cost of the activity," said IISG Director Richard Warner. "We look forward to Jesse Trushenski's involvement in this program."

Trushenski has a background in marine science and biology and is pursuing her doctorate with Christopher Kohler, director of the Fisheries and Illinois Aquaculture Center at SIUC. "To maintain sustainability, aquaculture operations will have to reduce their dependence on medications and find better ways to control disease outbreaks," said Trushenski. "I will examine the effects of dietary supplementation with natural vitamin E on the ability of sunshine bass, a popular culture species, to tolerate stress and resist infection and disease." Through her efforts with Kohler, IISG, and Archer Daniels Midland, Trushenski hopes to identify an optimal dose of vitamin E that will make it a "proactive disease-management tool."

Bridgett Chapin, although not from a Sea Grant state, approached IISG early about applying for the Knauss Fellowship. Chapin completed a doctorate in aquatic ecology at the University of Kansas this summer and wanted to connect her interest in ecology with the world of policy. "We are very pleased that Bridgett Chapin has been accepted as Knauss Fellow finalist," said Warner.

The Knauss Fellowship matches exceptional scholars with legislators during a year long marine policy internship. It provides a unique educational experience to those who have an interest in ocean, coastal, and Great Lakes resources and in the national policy decisions affecting those resources. Established in 1979, the fellowship is named in honor of one of Sea Grant's founders, former NOAA administrator, John A. Knauss.

In November, Chapin will interview with policymakers in the executive branch and be matched with a mentor. She will begin her fellowship in early 2005.

In addition to these opportunities, Sea Grant offers the Coastal Management Fellowship, which matches postgraduates with state coastal zone management programs to work on state projects. The Great Lakes Commission/Sea Grant Fellowship accepts graduate or professional students in marine or aquatic-related fields into a one-year internship working to advance environment quality and sustainable economic development in the Great Lakes states. The Sea Grant National Marine Fisheries Service Fellowship program funds thesis work for students interested in either population dynamics or marine resource economics. IISG also offers a fellowship to graduate students in Illinois or Indiana who are either entering or are working on projects of interest to the bi-state region.

Fellowship deadlines and awards vary. More information can be found on the IISG Web site at [www.iisgcp.org](http://www.iisgcp.org).

## Do You Have Habitattitude?








**Habitattitude**  
 PROTECT OUR ENVIRONMENT  
 DO NOT RELEASE FISH AND AQUATIC PLANTS

*Habitattitude*<sup>™</sup>—it’s more than a new attitude, it’s a way to help preserve the lakes and rivers you enjoy. *Habitattitude* is a program developed by the Great Lakes Sea Grant Network, the Pet Industry Joint Advisory Council, and the U.S. Fish and Wildlife Service to help prevent the spread of aquatic invasive species.

The program will educate aquarium and pond hobbyists on the proper steps to take when they no longer want their aquarium or pond plants and animals. The *Habitattitude* message will be printed on fish bags, aquarium stickers, pet store window decals, and brochures. For more information, visit [www.habitattitude.net](http://www.habitattitude.net).

Here are a few things you can do with unwanted aquarium plants and animals.

-  **Contact retailers** for proper handling advice or for possible returns.
-  **Give/trade** with another aquarist, pond owner, or water gardener.
-  **Donate** to a local aquarium society, school, or aquatic business.
-  **Seal aquatic plants** in plastic bags and dispose in trash.
-  **Contact** a veterinarian or pet retailer for humane disposal of animals.

## Pilot Testers Wanted for Education Web Site

Illinois-Indiana Sea Grant is seeking teachers and non-formal educators of students in grades 4-10 to help pilot test our new education Web site until December 12, 2004. You’ll be asked to review the “Nab the Aquatic Invader!” Web site for its functionality in a classroom setting and complete an evaluation.

This site is designed to fully engage your students in problem-based activities about real world issues. The subject matter of aquatic invasive species will compliment units on biology, ecology, and geography. We request that students have at least 5-6 hours of contact time on the site. Visit [www.iisgcp.org/news/noteworthy/pilot.pdf](http://www.iisgcp.org/news/noteworthy/pilot.pdf) for more information. If you are interested in pilot testing the new site, please e-mail Robin Goettel at [goettel@uiuc.edu](mailto:goettel@uiuc.edu).



# Asian Carp Hot Topic at



*This boater on the Illinois River came prepared for Asian carp—when startled by passing motor boats the fish often jump dramatic distances out of the water. (Photo by Lloyd Degrane)*

Invasive Asian carp consume similar food as a critical native fish in the Mississippi River ecosystem, according to preliminary findings presented at the 2004 Illinois-Indiana Sea Grant Research Symposium. If populations of Asian carp species go unchecked, they may adversely affect numbers of gizzard shad, the most abundant fish in the river.

Asian carp escaped into the Mississippi River in the 1980s and are now plentiful in much of the river—in fact, they have moved into the Illinois River and are approaching Lake Michigan. Due to their size and diet, Asian carp have the potential to adversely affect many species of fish in the Mississippi River and Great Lakes. At this point, an experimental electric barrier stands between these fish and Lake Michigan.

John Chick and Mark Pegg, biologists at the Illinois Natural History Survey, are assessing the potential impact of Asian carp on several native Mississippi and Illinois River filter-feeding fish. They have also been testing barrier technologies to see whether they effectively stop the

Asian carp. Along with five other researchers, they shared their latest research results at the second biennial symposium.

Chick and Pegg compared the diet of two Asian carp species, bighead and silver carp, with the diet of paddlefish, bigmouth buffalo, and gizzard shad. “We sampled these fish in backwater habitats during spring flooding, which is a good way to find all these species in the same location,” said Chick. There, they also collected zooplankton samples.

Despite the fact that Asian carp can grow to more than 50 pounds in the Mississippi River, the researchers found that these species typically eat zooplankton smaller than 200 microns in length, as do the prevalent gizzard shad. “On the other hand, in our samples, paddlefish and bigmouth buffalo primarily ate larger prey, including crustacean zooplankton, insects, and fish larvae,” explained Chick.

“At this point there’s no evidence that Asian carp are reducing abundance of zooplankton in the Mississippi River; it is a very productive system,” said Chick. “But if populations of bighead and silver carp go unchecked, zooplankton numbers may drop, impacting gizzard shad. The shad are eaten by all predatory fish—channel catfish, blue catfish, flathead catfish, large-mouth bass, walleye, and more.”

“If Asian carp populations are able to take off in Lake Michigan, the impact will likely be even more detrimental,” said Chick. “The lake is a less productive system, and its zooplank-

# Research Symposium

ton populations have already been depleted by zebra mussels.”

At Sea Grant’s Research Symposium, held at the Ralph Metcalfe Federal Building in Chicago on May 18, resource managers, agency staff, scientists, concerned citizens, and the media had the opportunity to hear cutting-edge research findings from projects that address a variety of southern Lake Michigan concerns. In addition to Asian carp, about 60 attendees learned the latest on aquatic nuisance species pathways, toxic contaminants, the state of drinking water supplies, and innovations in aquaculture.

“The symposium is designed to bring together researchers funded by

Illinois-Indiana Sea Grant to discuss their findings with interested agencies and individuals,” said Phil Mankin, research coordinator. “This is part of a much larger effort to ensure that our research results get into the hands of those who can make the most of them.”

In addition to Chick and Pegg’s research on the Asian carp diet and their experiments on dispersal barriers to stop Asian carp, over the course of the one-day symposium:

- Robert Hudson of the University of Illinois explained his work on detecting methylmercury levels in the highly-polluted Grand Calumet basin.
- Jean-Francois Gaillard of Northwestern University spoke about his

work with heavy metals that accumulate in wetland plants.

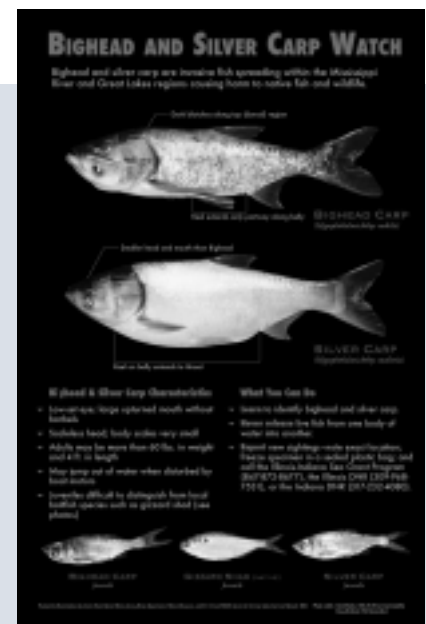
- Martin Jaffe, Sea Grant coastal business and environment specialist, discussed likely water quantity management issues of the future.
- Paul Collodi of Purdue University presented gene targeting methods that he is using to develop sterile fish for aquaculture.
- Reuben Keller of Notre Dame talked about trade pathways through which aquatic invasive species are transported into the region.

## Bighead and Silver Carp Watch

Illinois-Indiana Sea Grant is enlisting the help of anglers and boaters with tracking the movement of Asian carp. Sea Grant is encouraging them to be on the lookout for and report any new sightings of bighead and silver carp. Two products have been created to aid the public with monitoring efforts: the Asian carp WATCH card and the Asian carp poster. Both include information on how to identify bighead and silver carp and what anglers can do if they catch or find one. The products also feature color photos of the adult bighead and silver carp to help with identification. The poster, additionally, contains photos of the juvenile carp alongside a native gizzard shad (a common baitfish species). “The carp and shad look very similar as juveniles and thus easily could be misidentified and spread as bait,” said Kristin TePas, IISG aquatic invasive species extension associate.

The poster and WATCH card have been distributed to bait shops and marinas throughout Illinois. “By increasing the awareness of Asian carp, Sea Grant hopes that more people will keep an eye out for these invasive species and report any new sightings,” said TePas. These reports will help Sea Grant get a better handle on where the Asian carp are moving and how quickly. “It is espe-

*This poster was developed by Illinois-Indiana Sea Grant in cooperation with the Illinois Department of Natural Resources, Illinois Natural History Survey, and the U.S. Fish and Wildlife Service.*



cially important to know whether any Asian carp make it as far north as the electric barrier in the Chicago Sanitary and Ship Canal,” added TePas. Potential challenges to the electric barrier need to be known to determine if action is needed.

**For information, contact Kristin TePas at (847) 872-8677.**

# IEPA Addresses Growth with Watershed Planning

The Illinois Environmental Protection Agency (IEPA) is adopting a new policy to plan more holistically to protect water quality. As subdivisions spring up across the landscape in Illinois, future planning for sewer extension will happen on a watershed basis.

“This approach provides a more comprehensive way to address potential water quality concerns that can emerge in the face of increased growth,” said Martin Jaffe, IISG coastal business and environment specialist. As part of the Basinwide Management Advisory Group or B-MAG, Jaffe helped develop recommendations for IEPA on how watershed planning should be structured.

“IEPA established B-MAG to look at the range of watershed planning that takes place in other states and to develop a framework for what it might look like here in Illinois,” said Marcia Willhite, IEPA, water bureau chief. The group includes representatives from agriculture, developers, industry, environmental groups, and government bodies.

The group was also charged with reforming the Facility Planning Area (FPA) program, the process in place to address sewer extension planning. “The program wasn’t serving the purpose it was designed for, nor has it been useful for other purposes,” said Willhite.

B-MAG has helped IEPA develop a two-pronged approach to water quality management: at the state level, where “big picture” water quality issues provide an overarching framework; and at the local level, where communities define their specific visions, requirements, and resources. “Local governments will engage in creating and adopting the new watershed plan,” explained Jaffe.

Pilot studies of the new planning process will take place in two Illinois watersheds: Kishwaukee, which is an increasingly urban region; and Green, which is mainly agricultural. “We will see how the process works in these venues and will revisit with B-MAG to discuss any additional recommendations,” said Willhite.



*These two youngsters fished themselves a question about aquaculture while playing Sea Grant’s Water Wheel to Reel in Information exhibit at the Indiana State Fair.*

## Indiana State Fair Stocked with Aquaculture Information

At the Indiana State Fair, thousands of visitors who played *Sea Grant’s Water Wheel to Reel in Information* were introduced to the world of aquaculture. In this version of the game, players spin the wheel, which lands on one of six fish farming categories, such as species or marketing. They fish for a question from the matching bucket and try their hand at answering it.

“Although children typically played the game, the whole family learned something about aquaculture and Sea Grant as well,” said Charles Felkner, IISG aquaculture specialist.

This effort was in partnership with Purdue University Extension. “It is a natural connection for Extension to work with Sea Grant,” said Felkner. “It was a great team effort.”



# Lake and Porter Counties Turn to Smart Growth

Sea Grant's *Planning with POWER* program has helped launch a smart growth initiative in Indiana's Lake and Porter counties, which sit along the Lake Michigan shoreline.

"Smart growth is development that serves the economy, the community, and the environment," explained Robert McCormick, *Planning with POWER* coordinator. "Smart growth principles include mixed land uses, compact building designs, walkable neighborhoods, and preservation of open space."

*Planning with POWER* has been working with Lake and Porter county planning directors to bring national experts to northwest Indiana to meet with local officials to discuss smart growth issues and strategies. Geoff Anderson, U.S. EPA director of the Division of Development, Community, and Environment, provided information and strategies on how communities can implement smart growth tools and techniques. Kendra Wills, a Michigan State University Extension land use agent, explained the United Growth for Kent County, which involves over 85 local organizations that are developing strategies and policies directed at urban sprawl, land conservation, open space development, and farmland preservation programs. County officials also learned about the growth plan for Kane County, Illinois, which directs development toward the urban sector and away from rural areas and suburban fringe, thus protecting farmland, open space, natural areas, and critical sensitive environmental areas.

"Lake and Porter counties plan to continue to work towards smart growth by inviting additional speakers to the region," said McCormick. Funding and training for this effort has been provided by NOAA and U.S. EPA.

## In Memory of Valerie Eichman

By Robin Goettel

In May, 2004, Valerie Eichman, a dedicated IISG education staff member, passed away. We will always remember her quality work, attention to detail, and educational wisdom.

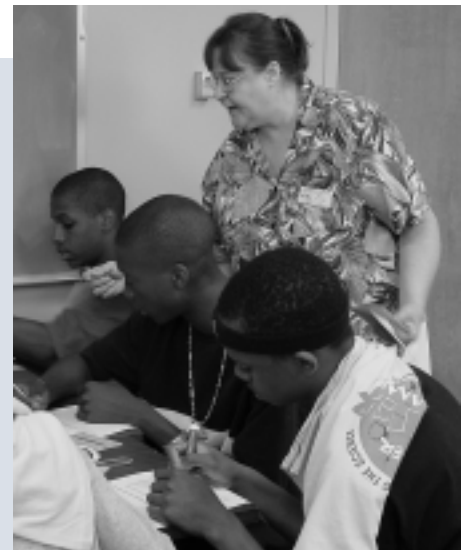
From 2000-03 Valerie served hundreds of teachers and thousands of students by co-coordinating the *Exotic Species Compendium of Activities to Protect the Ecosystem (ESCAPE)* Project and *Exotic Aquatics on the Move*. These award-winning education resources could not have been developed without her expertise and dedication.

As a former classroom teacher, Valerie had a clear understanding of the realities of the classroom and teachers' needs. Her most significant contribution was reviewing and editing the 36 *ESCAPE* lesson plans so they would be easily understood and enjoyed by students. She took great pride in the final product as did the rest of the collaborators; this education product earned the "Outstanding Professional Skill" award for instructional design by the Association for Communication Excellence.

In my role as education specialist, I couldn't have had such successful teacher workshops without Valerie's able assistance in preparing materials and co-teaching many of them. She had a great aptitude for setting agendas for these programs that would excite teachers.

Valerie's outstanding organizational skills were critical as she coordinated the loan programs and evaluation of the Zebra Mussel Mania Traveling Trunk Lending Network of 30 zoos, aquaria, museums, and nature centers.

To honor Valerie's many contributions to the program, we are dedicating the new education Web site, "Nab the Aquatic Invader!" in her memory.



Valerie Eichman helped students learn about aquatic invasive species during University of Illinois' Water Camp in 2003.

Stewardship (continued from page 2)



Students play Arrest That Invader! by studying rap sheets, identifying invasive aquatic plants from a police line up and throwing them in the slammer.

On May 26, 2004, 900 middle school students gathered at Wolf Lake in Calumet Park to learn about biodiversity and what they can do to protect it. A number of Calumet Stewardship Initiative members, including the Illinois Natural History Survey, the Field Museum, the Shedd Aquarium, the Chicago Park District, and Friends of the Park, used games, exhibits, and field activities to increase environmental awareness and knowledge.

Under two tents, Illinois-Indiana Sea Grant engaged students with *Arrest That Invader!*, an exhibit in which participants identify invasive aquatic plants put on display in a “police plant line up”; and with *Sea Grant’s Water Wheel to Reel in Information*, a wheel spinning and fishing game with questions and answers on a range of water-related topics.

Ocean Commission Highlights (continued from page 1)

The Great Lakes are explicitly tied to many of the issues critical to coastal regions, including growing populations--a full half of the population of the U.S. lives in coastal counties, and 20 percent of the population lives in the Great Lakes basin.

“The commission reaffirms the Great Lakes as a critical national resource, and makes the point that marine coasts start in the Midwest. This region is home to some of the most important waterways in the U.S.—the Great Lakes, and the Illinois and Mississippi Rivers, which ultimately reach the Gulf of Mexico and the Atlantic Ocean,” said Warner. “Ensuring the health and vitality of the region, as well as the nation as a whole, depends quite heavily on maintaining the health and vitality of these waters.”

Education plays a key role. The report promotes the importance of fostering lifelong learning, science literacy, and a sense of stewardship, as well as the need to develop and maintain a diverse, knowledgeable, and adequately prepared ocean-related workforce.

In addition, the commission recommends improved governance, including a new national ocean policy framework, a stronger federal agency structure that regularly brings ocean issues to the forefront in the White House, and enhanced opportunities for local input.

Warner sees much in the report as affirming the mission and methods of Sea Grant. “It underscores the importance of the land-grant model that Sea Grant embodies, including the critical importance of transforming information into knowledge.” In fact, the report recommends that Congress double the federal budget for ocean and coastal research over the next five years, with increased funding available to significantly enlarge the Sea Grant program.

“Legislators now have the opportunity to create new ocean policy in light of the latest recommendations,” said Warner “This report provides Congress direction towards integrating programs and making wise investments in the future of our oceans.”

## IISG AWARDS

### Outstanding Leadership

Each year during the annual meeting of the Assembly of Sea Grant Extension Program Leaders, awards are given to individuals or programs that meet certain criteria. At this year’s meeting, held on Jekyll Island, Georgia, Brian Miller, Illinois-Indiana Sea Grant associate director, received the Chair’s Award. This award is given for outstanding leadership and service to the assembly.

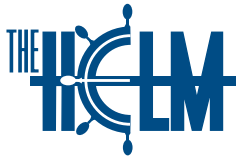
Excellence this year. Sharing the award are IISG’s Pat Charlebois, Kristin TePas, Susan White, and Robin Goettel. Last but not least is Jerry Barrett, who through his role as designer at the University of Illinois, provided the playful cartoon at the heart of the exhibit.

### Outstanding Program

At the 2004 Great Lakes Network Meeting in Put-in-Bay, Ohio, ESCAPE from Exotics was selected for the Outstanding Program Award. IISG led the effort that involves reaching out to teachers and students in a variety of innovative ways.

### Excellent Exhibit

The Sea Grant exhibit, *What’s Wrong with this Picture? Find 7 Ways Exotics are Spread* won a bronze award from the Association for Communications



### **Brownfields: A Rural Community Problem**

When you think of brownfields, you probably think of old industrial sites, but the use of pesticides in agricultural settings can leave farm property contaminated. Land owners, local officials, and concerned citizens can learn more about why it matters and what can be done in this 6-page overview. IISG-03-10.

### **Understanding Contaminated Sediments: Bioavailability of Contamination**

What should we do about contaminated sediment? This 4-page publication discusses the problems posed by contaminants and the pros and cons of remediation. For those living in areas where contaminated sediment is a reality, this fact sheet can provide useful information. IISG-03-09.

### **Understanding Why Some Organic Contaminants Pose a Health Risk**

Man-made organic contaminants, which are present in trace amounts in virtually all ground and surface water, can build up in the environment and cause adverse health effects. This fact sheet briefly explains what organic contaminants are, where they come from, and what is known about their effects to the environment and to humans. IISG-03-08.



### **Marine & Aquatic Science Literacy: Educating the 21st-Century Workforce**

The U.S. Commission on Ocean Policy has stressed the importance of ocean education for all ages. Find out in this 28-page booklet why Sea Grant is uniquely positioned to play a key role in a variety of education venues, including professional development, curriculum development, assessment and evaluation, inclusion of underserved groups, opportunities for undergraduate and graduate students, and more.

### **Ensuring Global Competitiveness of the U.S. Seafood Industry: A National Sea Grant Initiative**

The U.S. seafood industry faces many challenges and opportunities as it enters the 21st century. This 20-page booklet presents key areas where Sea Grant can play a significant role in increased productivity and profit for the industry, including ensuring the safety of seafood and improving seafood processing technology.



### **Making Waves**

A guide to the latest public service activities of Illinois-Indiana Sea Grant. Outreach activities involve adult and youth education and training in a range of areas, including aquaculture, coastal community development, land use and resource planning, water quality, and aquatic invasive species. IISG-04-10.

*To order any of these free publications, contact Susan White at 217-333-9441 or [white2@uiuc.edu](mailto:white2@uiuc.edu).*



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 below or contact

Irene Miles  
217-333-8055  
miles@uiuc.edu

If reprinting this material, we ask that you notify us and give credit to *The HELM* and Illinois-Indiana Sea Grant College Program.

Visit our Web site at:  
[www.iisgcp.org](http://www.iisgcp.org)

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.

**Richard E. Warner, Director**  
[dickw@uiuc.edu](mailto:dickw@uiuc.edu)  
University of Illinois  
350 NSRC, 1101 W. Peabody  
Urbana, IL 61801  
217-333-6444

**Brian K. Miller, Associate Director**  
[bmiller3@purdue.edu](mailto:bmiller3@purdue.edu)  
Purdue University  
195 Marsteller St., Room 211  
West Lafayette, IN 47907  
765-494-3573

---

#### **Aquaculture**

**Charlie Felkner**  
765-412-2134  
[cfelkner@purdue.edu](mailto:cfelkner@purdue.edu)

---

#### **Biological Resources**

**Patrice Charlebois**  
847-872-0140  
[charlebo@uiuc.edu](mailto:charlebo@uiuc.edu)

---

#### **Coastal Business and Development**

**Martin Jaffe**  
312-996-8933  
[mjaffe@uic.edu](mailto:mjaffe@uic.edu)

---

#### **Communications/K-12 Education**

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

---

#### **Planning with POWER**

**Robert A. McCormick**  
765-494-3627  
[rmccormick@fnr.purdue.edu](mailto:rmccormick@fnr.purdue.edu)

---

#### **Research**

**Phil Mankin**  
217-244-6916  
[pmankin@uiuc.edu](mailto:pmankin@uiuc.edu)

---

#### **Water Quality**

**Leslie Dorworth**  
219-989-2726  
[dorworth@calumet.purdue.edu](mailto:dorworth@calumet.purdue.edu)

---

University of Illinois at Urbana-Champaign  
Illinois-Indiana Sea Grant College Program  
350 NSRC, MC-635  
1101 W. Peabody Drive  
Urbana, IL 61801

Non-Profit Organization  
U.S. Postage Paid  
Permit No. 75  
Champaign, IL 61820