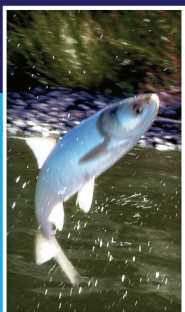
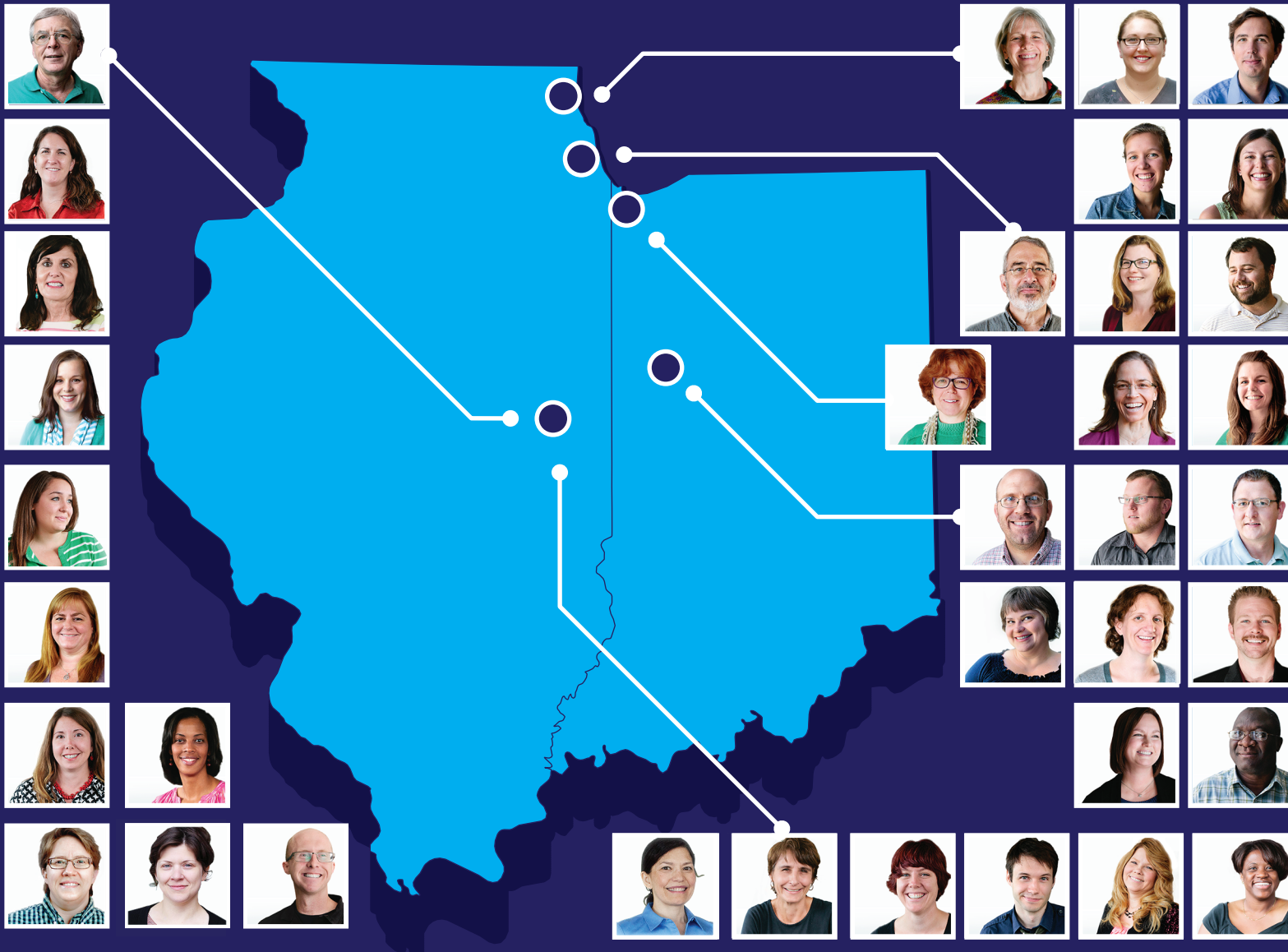


# IISG 2010-2014

“Two Great States Caring for One Great Lake”





# PROGRAM MANAGEMENT AND ORGANIZATION

## LEADERSHIP

Situated along the southern coast of Lake Michigan, [Illinois-Indiana Sea Grant](#) (IISG) serves the heavily populated coastline in Illinois and Indiana. Approximately 10 million people live in the region, drink the water, and fish, swim and boat in the lake. IISG focuses programming in topics that align with the four National Sea Grant priorities as follows.

Healthy Coastal Ecosystems

40%

Resilient Communities & Economies

45%

Literacy and Workforce Development

10%

Safe Sustainable Seafood Sources

5%

Aquatic Invasive Species  
Great Lakes Monitoring  
Coastal Remediation  
Pond Management  
River Restoration

Pollution Prevention  
Sustainable Planning  
Water Supply Planning  
Climate Change Adaptation  
Nutrient Loss Reduction  
Coastal Tourism

Youth Education  
Teacher Training  
Environmental Stewardship  
Internships and Fellowships

Aquaculture Marketing

## Institutional and Programmatic Structure

IISG is co-located at the University of Illinois and Purdue University with staff and management duties split between the two universities. In Illinois, the program is housed within University of Illinois Extension with reporting lines to the Office of the Vice Chancellor for Research. The director, program leader, communication coordinator, and education coordinator are University of Illinois Extension employees. Purdue University serves as the research program and fellowship lead.

The IISG management team is comprised of members from each of the chief functional areas.

PROGRAM ADMINISTRATION

RESEARCH

OUTREACH

EDUCATION

COMMUNICATION



**Brian Miller**  
Director

**Lisa Merrifield**  
Assistant Director

**Tomas Höök**  
Associate Director  
for Research

**Martin Jaffe**  
Program Leader

**Terri Hallesy**  
Education  
Coordinator

**Irene Miles**  
Communication  
Coordinator

The IISG management team members collectively serve on 30 boards and committees that provide critical communication with collaborators and stakeholders and inform our work on state and regional issues.

## Leadership on Boards and Committees

13 Sea Grant and NOAA boards and committees

3 National and international boards and committees

5 Regional committees

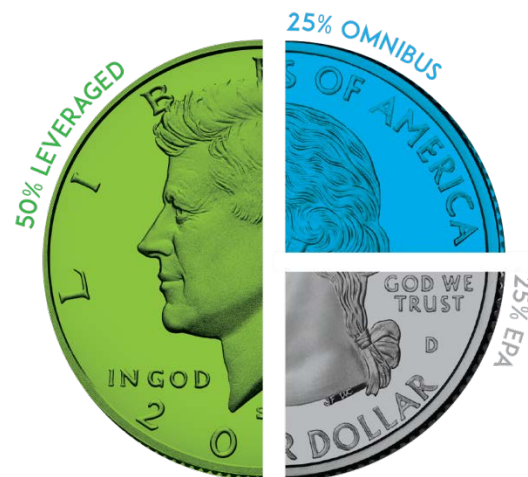
9 State, university, and local committees

For a complete list: [www.iiseagrant.org/sitevisit](http://www.iiseagrant.org/sitevisit)

## Funding and Program Staff

About one-fourth of our annual \$3 million plus budget comes from Sea Grant omnibus funding. Another quarter of the funding comes from a partnership with the U.S. EPA Great Lakes National Program Office (GLNPO). Through this partnership, IISG provides research and outreach to support Great Lakes communities using GLNPO data and research. The remaining 50 percent comes from outside grants and matching funds provided by the universities.

We have 36 employees with 32.72 FTE dedicated to Sea Grant activities. IISG has very successfully leveraged Sea Grant dollars to secure other grants. As such, less than eight staff members are funded through the omnibus.



## Advisory Committees

IISG activities are guided by two advisory committees, an administrative committee, and a user committee.

### Administrative Advisory Committee

The administrative advisory committee is comprised of representatives from the respective colleges and universities that govern IISG. The committee is responsible for oversight of IISG regarding strategic matters. These include policy considerations that affect the priorities and long-term directions of the program; guidance in the involvement of partnering institutions, stakeholders, and the various advisory groups; sources of matching funds; and a communication strategy for engaging local, state and federal government entities. The administrative advisory committee meets 2-4 times per year. In addition, the director communicates with advisory committee members individually or collectively as administrative issues arise. Committee members are named based on their position. When one of the members leaves, his or her replacement joins this committee.

### University of Illinois

### Purdue University

George Czapar  
*Associate Dean and Director, Illinois Extension*

Rob Swihart  
*Department Head, Forestry and Natural Resources*

Gary Miller  
*Associate Executive Director, Prairie Research Institute*

Jason Henderson  
*Associate Dean and Director of Purdue Extension*

Melanie Loots  
*Executive Associate Vice Chancellor for Research*

Karen Plaut  
*Associate Dean and Director of Agricultural Research*



## User Advisory Committee

The user advisory committee is comprised of industry, conservation, community, and agency leaders representing the bi-state region. The board aids in defining the strategic goals of IISG, including providing guidance throughout the strategic planning process. It helps position IISG and host institutions to assume a vital role in the science and practice of coastal restoration and management in our region. The committee convenes once per year and interacts via conference call and email as needed.

Name	Title	Organization	Sector and/or Expertise
Nicole Barker	<i>Executive Director</i>	Save the Dunes	NGO: Indiana dunes
Joel Brammeier	<i>CEO and President</i>	Alliance for the Great Lakes	NGO: Great Lakes
Chris Dillion	<i>President</i>	Campbell Coyle Holdings, LLC	Business: Sustainable development
Aaron Koch	<i>Deputy Commissioner</i>	Dept. of Water Management City of Chicago	City of Chicago: Water sustainability
Frank Kudrna	<i>President (retired)</i>	Kudrna and Associates, Ltd	Business and GLOS Board (formerly NOAA SAB and Sea Grant Advisory Panel)
Abigail Derby Lewis	<i>Conservation Ecologist</i>	The Field Museum Science Action Center	Museum: Climate change
Christine Livingston	<i>Assistant Director</i>	Indiana Dunes Tourism	Regional tourism
David Naftzger	<i>Executive Director</i>	Council of Great Lakes Governors	NGO: State government
Kelly O'Brien	<i>President &amp; CEO</i>	Alliance for Regional Development	NGO: Regional economic development
Jim Schwab	<i>Manager</i>	Hazards Planning Research Center, American Planning Association	Hazard resilient planning
Debra Shore	<i>Commissioner</i>	Metropolitan Water Reclamation District of Greater Chicago	City of Chicago: Storm and wastewater management
David Ullrich	<i>Executive Director</i>	Great Lakes and St. Lawrence Cities Initiative	NGO: City government
Ty Warner	<i>Executive Director</i>	Northwest Indiana Regional Planning Commission	Regional planning
Frank Beal, Ex Officio	<i>Senior Executive</i>	Civic Consulting Alliance	Business interest: Civic Committee of the Commercial Club of Chicago
Diane Tecic, Ex Officio	<i>Program Manager</i>	IL Coastal Management Program, Illinois DNR	NOAA Coastal Management Program
Mike Molnar, Ex Officio	<i>Program Manager</i>	Lake Michigan Coastal Program, Indiana DNR	NOAA Coastal Management Program

# RECRUITING TALENT

## Request for Proposal Process

IISG issued eight requests for research proposals from 2010-2014. Four were driven by the Great Lakes Regional Research Information Network for Lake Michigan (GLRRIN)—three were for development proposals and one was for social science projects. From 2010-2014, IISG funded 41 research projects—38 through the omnibus and three by leveraging outside resources. IISG invested over \$2.3 million in research in this time period.

Details for each RFP process are outlined below. To review projects we have funded since 2010 by topic:

[www.iiseagrant.org/research/topics\\_research.html](http://www.iiseagrant.org/research/topics_research.html)

IISG follows two main processes for reviewing research proposals.

### Review Process 1 (typically for larger projects lasting 18-24 months):

1. IISG accepts preproposals or letters of intent, which are reviewed by a panel of 4-8 IISG specialists and external subject experts, who comment on the projects' innovation and promise. Preproposals are narrowed to ensure a success rate of 1 in 3 or 4.
2. Full proposals are reviewed in detail by 2-3 external subject experts (technical reviews). Typically, these experts review one full proposal, but in some cases more than one.
3. A second and new panel of 2-5 subject experts considers full proposals plus technical reviews and makes funding recommendations. After conferring with the management team, the research coordinator submits a letter of intent to NSGO indicating which project(s) IISG plans to fund.

### Review Process 2 (typically for smaller projects spanning less than 12 months):

1. IISG accepts proposals, which are reviewed by a review panel of 5-8 IISG specialists and external subject experts. Each proposal is reviewed by 2-3 panelists, and each panelist reviews 4-12 proposals.
2. IISG convenes a discussion for panelists to make funding recommendations. After conferring with the management team, the research coordinator submits a letter of intent to NSGO indicating the project(s) we intend to fund. (A letter of intent is not necessary if the source is development funds.)

In most cases, IISG solicits reviewers and panelists who work outside of Illinois and Indiana. All reviewers are required to complete a conflict of interest form to ensure that their reviews are unbiased.

## GLRRIN RFPs (4)

GLRRIN is an ongoing effort led by Sea Grant programs to bring university research and federal agencies together to discuss research findings, identify research gaps, and ultimately fund research to fill those gaps. In 2008, 2012, and 2014, IISG, along with GLRRIN Lake Michigan partner agencies (NOAA Great Lakes Environmental Research Laboratory, USGS Great Lakes Science Center, U.S. EPA GLNPO, Wisconsin Sea Grant, and Michigan Sea Grant) hosted two-day meetings for Lake Michigan food web researchers. Nearly 50 researchers attended from the Great Lakes Fishery Commission, International Joint Commission, Great Lakes Observing System, and Michigan Department of Environmental Quality, plus private consulting companies, and universities throughout the Great Lakes. This was the only current Lake Michigan research fora in which university researchers had a voice.

*The 2008 and 2014 meetings served as a springboard for planning for the IISG-coordinated 2010 and 2015 Cooperative Science and Monitoring Initiative (CSMI) Lake Michigan field year. CSMI rotates, focusing on one Great Lake each year—seeking an in-depth understanding of the lake via an international effort of coordinated sampling between agency and university researchers.*

As a result of the GLRRN meetings, IISG invested \$1.8 million in nine projects between 2010 and 2014. IISG and Wisconsin Sea Grant issued three joint RFPs related to Lake Michigan food webs and funded three projects. In addition, IISG leveraged the Great Lakes Restoration Initiative to fund three additional projects. In 2014, NSGO minibus funding provided IISG with an additional \$300,000 to fund resilience projects. We solicited projects in this area and funded three.

## Social Science RFP (1)

In 2013, IISG issued an RFP specifically for social science projects. Through discussion with IISG specialists about program needs, research priorities were set. We encouraged projects that explored a) indicators of Great Lakes literacy and/or evaluation of education networks to address and improve Great Lakes literacy, b) contaminant removal programs currently underway, especially those related to Areas of Concern and/or unwanted pharmaceuticals, c) the spread and impacts of aquatic invasive species in the Great Lakes region, and d) adaptation to climate change in Lake Michigan coastal areas. Researchers could request up to \$70,000 in funding (at least \$105,000 total for projects given the 50 percent match requirement), and projects could last up to two years.

This RFP followed Review Process 1. With relatively few social scientists available to participate in review processes, and the fact that non-social scientists may not have a thorough enough understanding of social science literature and methodology to adequately evaluate the proposed work, IISG partnered with Minnesota Sea Grant and Wisconsin Sea Grant and led the review panel process. The panel included five social scientists who reviewed projects submitted to all three programs. With additional NSGO social science funding, IISG was able to fund two projects through this RFP.

## Development Proposals RFPs (3)

As illustrated above, IISG receives a significant amount of funding from outside sources. As a result, we are often able to save omnibus funds. We use that omnibus savings to fund development projects. These projects range from \$10,000-\$25,000 for one year and are meant to either jumpstart an idea that may lead to additional funding from another agency (seed proposal) or contribute to work in progress to maximize impact (completion proposal). IISG issued development RFPs in 2010, 2011, and 2012. Proposed work could address any current or emerging regional areas.

For each of these RFPs, we followed Review Process 2. IISG funded 29 development projects in this review period.

## RFP Results and Intuitional Representation

Year/Competition	Preproposals	Full Proposals	Funded	New/Continued	New/Prev. PIs	Invested
2010 Omnibus/GLRI (GLRRIN)	9 (4 institutions)	4 (3 institutions)	1 Omnibus/ 3 GLRI (2 institutions)	4/0	3/0	\$1,100,000
2010 Development	N/A	35 (10 institutions)	15 (5 intuitions)	15/0	10/5	\$126,000
2011 Development	N/A	22 (9 intuitions)	10 (7 institutions)	10/0	10/0	\$164,000
2012 Omnibus (GLRRIN)	6 (8 institutions)	2 (2 institutions)	1	1/0	1/0	\$200,000
2012 Development	N/A	13 (6 institutions)	5 (3 institutions)	5/0	4/1	\$125,000
2014 Omnibus (GLRRIN)	6 (6 institutions)	2 (2 institutions)	1	1/0	1/0	\$240,000
2014 Minibus (GLRRIN)	N/A	6 (7 institution)	3 (3 institutions)	2/1	2/1	\$289,000
2014 Social Science	6 (2 institutions)	5 (2 institutions)	2 (2 institutions)	2/0	2/0	\$140,000

# STAKEHOLDER ENGAGEMENT AND COLLABORATIVE NETWORKS

Dividing stakeholders, partners, and collaborators is difficult. Most successful projects include interaction with all three. Our specialists work with over 300 national, state, local, NGO, industry, and international entities including:

14	Federal agencies
31	State agencies
70	Local agencies
47	Businesses
21	Schools
32	Universities
18	Sea Grant programs

To elucidate how we work with our stakeholders, collaborators, and partners, we have divided our work into three primary areas. The following are examples of projects, partnerships, and collaborations we engage in. For a more complete list of programs and products:

[www.iiseagrant.org/topics.html](http://www.iiseagrant.org/topics.html)

## FOODWEBS AND HABITATS

The health of the region is intrinsically tied to the health of the Great Lakes themselves. When the lakes and nearby waterways become degraded from contaminants, nutrients, and invasive species, the toll is taken not just on fragile food webs, but also on communities that depend on these resources for drinking water, shipping, recreation, and quality of life. Since 2008, IISG has been a leader in Great Lakes food web research, investing \$1.8 million in nine projects between 2010 and 2014. Through our extension efforts, IISG strives to make monitoring more modern and accessible, keeps the public involved in clean-up efforts, and works tirelessly to stop the spread of aquatic invasive species.

Below are three examples of our 11 food web outreach initiatives.

### Modernizing Great Lakes Monitoring

U.S. EPA GLNPO has engaged in extensive Great Lakes monitoring for many years, as have many other scientists and institutions. If all this long-term data were easily accessible, agency and university-based researchers could get a clearer picture of Great Lakes conditions and resource managers could make more informed decisions.

IISG, along with the National Center for Supercomputing Applications (NCSA) at the University of Illinois, developed a web application that does just that. The website [greatlakesmonitoring.org](http://greatlakesmonitoring.org) makes it easy to view and analyze decades of nutrient, contaminant, and water characteristic data collected by universities and government agencies, including GLNPO.

## Funded Research

*Expanding Lake Michigan Food Web Knowledge through GLRRIN (University of Illinois and University of Wisconsin; U.S. EPA 2010)*

*Monitoring Episodic River Inflow Plumes Using In-Situ and Remote Sensing Data (Purdue University; U.S. EPA 2010)*

*Predictability of Nutrient Loads Delivered to Lake Michigan Based on Large Storm Events (University of Illinois; U.S. EPA 2010)*

*Constructing the Nearshore Lake Michigan Food Web Using Multiple Trophic Indicators (University of Illinois; Core Omnibus 2010)*

*Alteration of Nutrient Cycling and Food Web Structure by Profundal Quagga Mussels in Lake Michigan (University of Wisconsin and Purdue University; Core Omnibus Funding 2012)*

*Quantifying Coastal Wetlands – Nearshore Linkages in Lake Michigan for Sustaining Sports Fishes (University of Notre Dame; Core Omnibus 2014)*

*Assessing Nearshore-Offshore Connectivity in the Lake Michigan Food Web Using Multiple Trophic Indicators (University of Illinois; Minibus 2014)*

*Drivers of microbial food web structure and function: Bottom-up and top-down controls across Lake Michigan (University of Illinois Chicago; Minibus 2014)*

*Impact of taxonomic and genetic diversity on dissolved organic carbon uptake by bacterial communities (University of Illinois Chicago; Minibus 2014)*

*Mapping Vulnerability in EPA-designated Areas of Concern (University of Illinois; Social Science 2014)*

[15 additional development projects](#)



IISG's Paris Collingsworth, Great Lakes ecosystem specialist, and Kristin TePas, community outreach specialist, worked closely with NSCA programmers to design the site with a range of parameters and analysis tools. And, they focused on ease of use and flexibility—the expectation is that the site will eventually include all the EPA data from biology to oxygen monitoring.

## Engaging Communities in Great Lakes Clean-Ups

The Great Lakes Legacy Act (GLLA) provides local communities with the opportunity to clean up polluted waterways that were often a price paid for a booming industrial economy. Most of the industry is, typically, long gone and these Areas of Concern communities are left economically and environmentally handicapped by unhealthy lakes and rivers. GLLA funding is defined by federal, state, and local partnerships as it comes in the form of matching funds.

IISG Environmental Social Scientist Caitie McCoy works closely with state and local GLLA partners to educate, as well as be a sounding board for, local residents as the clean-up process starts as a possibility, through dredging and restoration. Through public meetings, fact sheets, kiosks, and more, she has helped move the process forward in 12 Great Lakes communities, including Sheboygan and Milwaukee, WI, Buffalo, NY, and Hammond, IN.

The Grand Calumet River in northwest Indiana has been called the most polluted river in America, and it flows through severely economically-challenged cities. Still, it is home to some of the most diverse native plant and animal communities in the Great Lakes region. After a three-year dredging project on the river and in nearby Roxana Marsh, 748,000 cubic yards of sediment impacted by PCBs and mercury have been removed or capped. Throughout, in addition to engaging the community at large, Caitie has worked closely with local teachers and students, turning this process into a learning opportunity for young residents, some who walk past the Grand Cal on their way to school.

High school students engaged in meaningful water monitoring activities in restored sites and their data were shared with EPA and GLLA project partners. They also learned to analyze data and how to use this information to make project-level decisions. Younger students grew native plants that were put in the ground along the restored marsh at a celebratory press event that brought project partners and local and state officials together. Many of these students visited the site a year later to see the impact of their work. A curriculum—*Helping Hands*—designed for schools in communities going through the remediation process came from Caitie's efforts in Hammond. It has since been used in Sheboygan and Buffalo schools.

## Preventing the Spread of Aquatic Invasive Species (AIS)

IISG's Pat Charlebois, AIS outreach coordinator, has been engaged in raising awareness and fostering behavior change to help prevent the spread of AIS for nearly two decades. In that time, she has continually striven to find new approaches to clearly convey information to target audiences and address significant AIS pathways. Pat and her team have dedicated their efforts to addressing a number of pathways, with a strong focus on the risks posed by recreational water use, as well the marketplace, which include species sold for live bait, water gardens, aquariums, and classrooms.

A prime example, IISG committed to working closely with decision makers, stakeholders, and researchers in Indiana to address the threat of potentially invasive plants that would most likely come to local waters through the water garden or aquarium trade. IISG established the Invasive Plants Working Group that brought together representatives from the Indiana Department of Natural Resources and other state agencies and the plant industry, along with hobbyists, and University of Notre Dame researchers. The group developed a risk assessment tool to predict which species are most likely to pose a threat to local waters.

Through regular meetings, this working group developed a list of 28 aquatic plants that pose a high risk of invasion in the state. As a result, Indiana passed a ban in 2012 on the sale and transport of these species. Compliance from the plant trade is more likely due to their participation in the decision process. This work in Indiana led directly to a 2013 ban on the sale or transport of 27 invasive plants in Illinois.

## Leadership on Boards and Committees

*12 National and regional committees*












*13 State and local committees*

 [www.iiseagrant.org/sitevisit](http://www.iiseagrant.org/sitevisit)

The Indiana working group results also led to GLRI funding for Reuben Keller (Notre Dame researcher now with Loyola University Chicago) to develop risk assessments for all taxa throughout the Great Lakes region. To accompany this, Pat has GLRI funding to collaborate with Great Lakes Sea Grant programs to inform audiences broadly about invasive plants—starting with water garden and aquarium hobbyists and retailers.

IISG and the Illinois Department of Natural Resources collaborated on a new campaign to get boaters, fishers, divers, and everyone who loves spending time on the water involved in preventing the spread of AIS. [Be a Hero – Transport Zero](#) is a multi-season message that introduced three simple steps through major media and one-on-one interactions. Altogether, the campaign had more than 5 million impressions. Now it is being adapted for other audiences—including water gardeners and aquarium hobbyists, as well as those that can prevent the spread of terrestrial invasive species.

## 138 STAKEHOLDERS, PARTNERS, AND COLLABORATORS

 23 State agencies	 14 Local gov. agencies	 12 Universities	 10 Community groups	 4 Professional associations	 22 Businesses
 2 Museums and gardens	 The Canadian government	 Fond du Lac Native American Tribe	 12 NGOs	 4 K-12 schools	 4 Other

## 11 FEDERAL AGENCIES

National Park Service	National Wildlife Federation	National Coast Guard Auxiliary	Fish and Wildlife Service	National Weather Service	Geological Survey
Environmental Protection Agency	Forest Service	Geological Survey	Army Corps of Engineers	Department of Agriculture	

## 4 NOAA GROUPS

Coastal Services Center	Great Lakes Environmental Research Laboratory	NOAA Regional Teams	Cooperative Institute for Limnology and Ecosystems Research
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## 14 SEA GRANT PROGRAMS

California	Connecticut	Lake Champlain	Louisiana	Michigan	Minnesota	Washington
National Sea Grant Law Center	New York	North Carolina	Ohio	Oregon	Pennsylvania	Wisconsin


## **COMMUNITY DECISION MAKING**

Many communities face the struggle of embracing growth and ensuring sustainability at the same time. Knowing what is at stake, what is of value, and what is necessary are key to successful planning. And, while we can all do our part to protect water resources, many actions are more effective and efficient taken on as a community choice. Indeed, some can only take place on a community level. Having expertise and tools to help protect natural resources and plan for economic development at their disposal helps local decision makers strive for resilience going forward.

Below are six examples of the 11 community development outreach initiatives we are engaged in.

### **Enhancing Public Spaces**

Public spaces are essential to the social, economic, and environmental sustainability of communities. Parks, greenways, and town centers define a sense of place where residents experience social interactions, explore nature, and purchase goods and services. Public space management decisions made by policymakers, private business owners, and residents impact the well-being and livelihood of the community as a whole.

Kara Salazar, IISG sustainable communities extension specialist, along with Purdue University Extension community development specialists, developed the  [Enhancing the Value of Public Spaces](#) program to provide local leaders in Indiana with a decision support framework that assesses the value of their public spaces using social, economic, and environmental indicators. The project team developed curriculum and created, implemented, and evaluated the education program. Five pilot workshops were held in Allen, Gibson, Harrison, Porter, and Vigo counties with about 60 community leaders. Participants in the Harrison County workshop used the workshop data, tools, and worksheets to assist the town of Laconia in developing a new master plan. Kara is now working with Kokomo and Frankfort to develop public spaces action plans to support their downtown redevelopment programs.

Enhancing the Value of Public Spaces is now being implemented statewide as a Purdue Center for Community Development signature program.

### **Disposing of Unwanted Medicine**

Researchers have found traces of medicine in waterways around the country. While the levels are not high enough to pose immediate human health concerns, negative impacts on aquatic species have been well documented. Since flushing medicine or throwing it in the trash contributes to the problem, what should one do with unwanted or expired medicines? IISG has been a leader in helping communities, individuals, and medical professionals answer that question by helping them become informed decision makers about their medicine disposal options and the impacts that their actions may have on human, animal, and environmental health and water quality.

Laura Kammin, IISG pollution prevention specialist, has been a key resource for Illinois and Indiana communities on this issue—raising awareness and providing support for local medicine collection programs, both ongoing and one-day events. Medicines collected through these events are properly incinerated.

## **Funded Research**

*Evaluating the maintenance and diffusion of Best Management Practices in the Salt Creek Watershed (Purdue University; Social Science 2014)*

*Estimating the ecological impacts of pharmaceuticals in Lake Michigan (Purdue University; Development 2012)*

*Low impact development in Chicago for integrated watershed management across scales (University of Illinois; Development 2012)*

*Modeling methods to evaluate low impact development (Purdue University; Development 2011)*

*Assessing consumer preferences and demands for fish: a marketing analysis of the Midwestern aquaculture industry (Purdue University; Development 2011)*

*Trace organics in Lake Michigan: Concentration and detection frequency of pharmaceuticals in the nearshore water column (Ball State University; Development 2010)*

*Is wind energy development community development? Cooperative governance as social enterprise (University of Illinois; Development 2010)*

*Modeling the effects of land use/surface water quality within the Chicago MSA (Indiana State University; Development 2010)*

 [7 additional development projects](#)

In setting up take-back programs, Laura has worked closely with 70 local officials, from solid and hazardous waste management districts, law enforcement offices, and public health departments—to name a few. She provides information, assistance on setting up and promoting collection programs and, often, financial support to purchase supplies. As a result, nearly 72,000 pounds of drugs have been collected and incinerated in Illinois, Indiana, Wisconsin, and Michigan in the past four years by IISG-supported programs.

Laura has also brought IISG's leadership on medicine collection to Sea Grant program nationwide. In 2013, she organized a workshop to train specialists from around the country and created and chairs the Sea Grant National Pharmaceuticals and Personal Care Products Working Group (PPCP). So far, the group has coordinated conference sessions, planned outreach, and conducted surveys. All of these tasks are designed to help Sea Grant better connect PPCP information to local communities and to help them take action.

In addition to her work with communities, Laura engaged with the American Veterinary Medical Association (AVMA) in 2011 to inform veterinarians, their support staff, and, ultimately, their clients. She helped facilitate a Memorandum of Understanding with AVMA and NSGO to develop outreach that brings medicine disposal information to veterinarians and pet owners. The first effort in this partnership went big—a 15-second PSA on the CBS Times Square Jumbotron during the holiday season and several months into 2012. About 500,000 people go through Times Square daily, and one million people crowd the streets at midnight on New Year's Eve. Ongoing outreach has been more targeted—informing 902 veterinary professionals and students from 31 states and eight countries at regional and national veterinary conferences.

## **Adapting to Climate Change**

Climate predictions for the Midwest include drier summers and, at the same time, more intense precipitation year around, putting added strain on already overtaxed infrastructure. If winters are warmer, this presents its own management difficulties—temperatures hovering around freezing can contribute to an increase in potholes and falling ice. Are communities in the region prepared for these likely shifts in long-term weather patterns?

When she joined IISG and the Midwestern Regional Climate Center, Extension Climatologist Molly Woloszyn's first goal was to do a needs assessment of about 2,900 local officials and resource managers in the southern Lake Michigan region regarding local climate change impacts and adaptation planning. She adapted a survey developed by Oregon Sea Grant and widely used in the Sea Grant network to assess local climate change perceptions and readiness. The survey revealed that a majority of communities have not taken on climate adaptation. From this, Molly developed the Resilient Chicago Workshop Series in 2014 to inform local decision makers, educators, and others about adapting to extreme precipitation, floods and droughts, and temperature and ecosystem changes in northeastern Illinois. IISG also teamed up with other Great Lake Sea Grant programs to use social science to improve their work with communities as they incorporate climate change into hazard mitigation planning.

With the risk of flooding likely to increase, Molly is working with the Cook County Department of Homeland Security and Emergency Management to assess the flood vulnerability of critical buildings in Chicago, including utility providers, transportation facilities, and hospitals. She is looking at factors like location, elevation, and flooding history, as well as the placement of critical systems, such as generators and potable water supplies. Ultimately, this will result in recommendations on how these facilities can shore up structures and systems to reduce this risk in the face of future storms.

## **Enhancing Aquaculture Markets**

As fish continue to be harvested from oceans and other water bodies at unsustainable rates, the role of aquaculture grows ever more vital. The Midwest is a great location for aquaculture industries due to its rich supply of raw materials for fish food and access to large markets. And industry trends show that the expansion of aquaculture supports economic development in a variety of sectors.

Kwamena Quagraine, IISG aquaculture marketing specialist, has worked closely with the Indiana Soybean Alliance, the Indiana Aquaculture Association, Inc., and Purdue University Extension to be a driving force in the growth of aquaculture in Indiana

and the region. Kwamena has worked one-on-one and through workshops and videos, advising potential and ongoing producers throughout the region, and has engaged in numerous market studies. Through the [efforts of IISG and its partners](#), farm sales of aquaculture products in Indiana reached about \$15 million in 2013, up from \$3.5 million in 2005. Fish farming in Indiana supports 280 jobs, 169 directly in the aquaculture industry. It also generates \$3.7 million in labor income and \$19.5 million in added value.

## Working Towards a Sustainable Water Supply

Concern for future water supplies in Chicago may seem unnecessary—situated along the shores of Lake Michigan, the greater metropolitan region has benefited for centuries from a seemingly abundant source of freshwater. As the population continues to increase, however, water demand bumps up against legal limits on Lake Michigan water use. Groundwater dependent communities, meanwhile, face potential long-term depletion of resources. Coupled with long-term infrastructure underinvestment, concern grows.

Margaret Schneemann, IISG water resource economist, works with the Chicago Metropolitan Agency of Planning and other regional partners to engage communities in sustainable water supply planning. Margaret's program areas include full-cost water pricing, outdoor water conservation, and community water efficiency planning and outreach. By working with partners in the region to implement *Water 2050: Northeastern Illinois Regional Water Supply/Demand Plan* recommendations, local officials have resources to make informed choices about water management.

For example, Margaret is assisting the Northwest Water Planning Alliance (NWPA), a coalition of over 70 communities planning for shared groundwater resources. IISG led the development of an outdoor water conservation program guide—best management practices include the lawn watering ordinance, quickly adopted by seven communities. Margaret also assisted the Metropolitan Mayors Caucus, representing 275 Chicagoland communities, with water pricing data to enhance the Greenest Region Compact, a tool that defines opportunities for municipal actions that promote regional sustainability. Margaret also worked with partners in the Great Lakes promoting natural lawn care, which has saved millions of gallons of Lake Michigan water.

## Planning to Avoid Tipping Points

For land use planners, balancing community growth and environmental health is always a challenge. Laying down new roads, building along waterways, or removing riverbank vegetation puts stress on local ecosystems—sometimes so much that it can trigger rapid and potentially irreversible shifts in how they function.

IISG coordinated the development of a new web-based tool—[Tipping Points and Indicators](#)—that provides watershed planning groups and others information with to avoid these tipping points while still meeting community needs. The web tool uses the latest watershed research taking place at Purdue University and other Great Lakes universities, as well as cutting-edge technology to show planners how close their watershed is to known tipping points and how it will fare if land use decisions continue "business as usual." With help from a Great Lakes Sea Grant facilitator, planners can use these interactive maps and simulators—along with recommended policies, ordinances, and outreach efforts—to prevent aquatic ecosystems from being degraded beyond repair.

Since it was launched in 2013, Tipping Points and Indicators has undergone many design updates inspired by months of pilot testing by Ohio, New York, Minnesota, Wisconsin, Michigan and Illinois-Indiana Sea Grant programs. For example, larger maps and detailed legends now give users a closer look at their watershed and make information on characteristics like stream quality and land cover types more accessible.

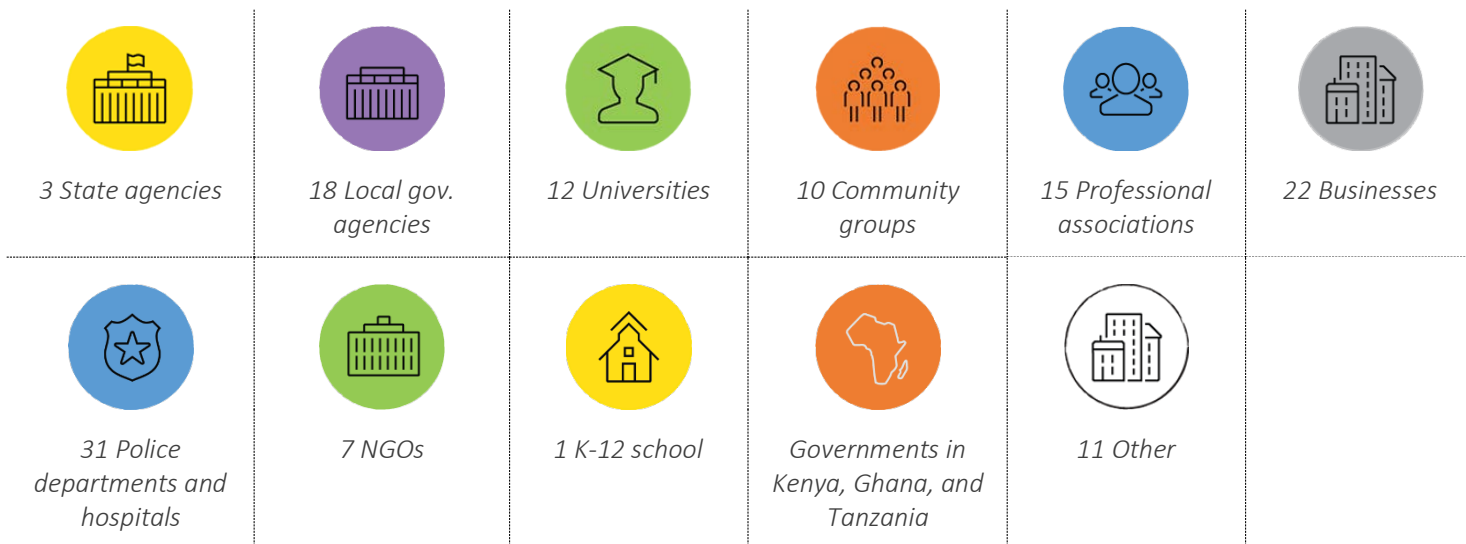
### Leadership on Boards and Committees

2 Sea Grant and NOAA committees  
8 National and regional committees  
35 State and local committees

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# 148 STAKEHOLDERS, PARTNERS, AND COLLABORATORS



## 3 FEDERAL AGENCIES

Drug Enforcement Administration

Department of Agriculture

Environmental Protection Agency

Illinois & Indiana Coastal Management programs

NOAA Regional Teams

Cooperative Institute for Limnology and Ecosystems Research

## 4 NOAA GROUPS

## 8 SEA GRANT PROGRAMS

Lake Champlain

Hawaii

Michigan

Minnesota

South Carolina

Wisconsin

Ohio

New York

## LITERACY AND WORKFORCE DEVELOPMENT

Increasing Great Lakes literacy helps people to better understand the essential concepts about these waters, to be able to effectively communicate these concepts to others, and to become better stewards of this resource as they make informed decisions. IISG provides resources and training for educators to bring the Great Lakes into classrooms and help build this literate population, starting with the students.

### Leadership on Boards and Committees

- 2 Sea Grant and NOAA committees
- 3 National and regional committees
- 8 State and local committees

[www.iiseagrant.org/sitevisit](http://www.iiseagrant.org/sitevisit)

IISG offers 11 programs to provide curricula and tools for teachers and has facilitated four university-based community stewardship classes. We have promoted workforce development by funding 14 graduate research projects, supported six Knauss fellows, and provided summer coordinating education Great Lakes wide.

## Coordinating Education Great Lakes Wide

Kristin TePas, IISG community outreach specialist, in her role at U.S. EPA GLNPO, and Terri Hallesy, IISG education coordinator, led the development of the Center for Great Lakes Literacy (CGLL) to continue activities and projects that were part of the Center for Ocean Sciences Education Excellence (COSEE) Great Lakes. Over the past four years, they have brought together all the Great Lakes Sea Grant programs with projects that connect teachers and scientists on land and on the water. Through workshops and engagement with schools, CGLL curricula and programs have been adopted by over 500 educators around the Great Lakes. For these efforts, CGLL was recognized by NOAA in the 2013 Portfolio Review of Educational Partnerships as a model case study for successful partnerships with a focus on a local issue.

## Connecting Teachers and Scientists

IISG and GLNPO are bringing scientists and teachers together through several projects. The Limno Loan program helps teachers expand and strengthen aquatic sciences by providing students opportunities to collect water quality data from local waterways using monitoring sensors used by scientists. Thirty-seven teachers have introduced EPA's hydrolab and Great Lakes science to 3,600 students in the region.

Scientists are also making their way into classrooms directly from onboard EPA's *R/V Lake Guardian* or from their labs via livecasting. Nearly 40 classes have gotten a tour of the research ship, quizzed scientists, or learned about Great Lakes monitoring.

## Connecting Teachers and Sea Grant Specialists

The Great Lakes B-WET Field Experiences for Watershed Educators workshop provides an example of how Sea Grant specialists, along with experts from agencies and organizations throughout the region, work together to bring science and stewardship opportunities to teachers and their students. The focus of NOAA's B-WET grants are on local aquatic ecosystems and corresponding curriculum activities that can be easily integrated into the classroom. Fourteen Illinois and Indiana teachers learned about everything from water quality and conservation to medicine disposal to climate change from IISG specialists and experts from museums, national and state parks, and Great Lakes-focused NGOs.

One result, a Chicago sixth grade class took part in the Community Collaborative Rain, Hail and Snow Network, which transformed these students into citizen scientists. When they weren't measuring rainfall, Marea Spentzos-Inghram's class could be found collecting ants, recording squirrel sightings (which provided actual research data), and cleaning up their newly-adopted North Avenue Beach. Another example, Eileen DeJong's class visits to local nature preserves gave these seventh graders a chance to improve forest health by weeding and planting native species. Students from other classes asked to join in, and the school's Green Club members became forest preserve volunteers.

## Funded Research

*Is wind energy development community development? Cooperative governance as social enterprise, Keith Taylor, University of Illinois (Grad 2010)*

*Impacts of invasive Asian carps on native food webs, David Wahl, University of Illinois (Research 2011)*

*The effects of wet weather driven dissolved oxygen sags on fishes in urban streams, Greg Gaulke, University of Illinois (Grad 2011)*

*A web-based tool to measure environmental quality standards for phosphorous in water at Lake Erie, Antony Acushla, Purdue University (Grad 2009)*

*Evaluation of phosphorus loading following a manure spill and an in-stream sediment amendment to reduce phosphorous desorption, Shalimar Armstrong, Purdue University (Grad 2009)*

*Modeling methods to evaluate low impact development, Laurent Ahiablame, Purdue University (Grad 2011)*

*Assessing Consumer preferences and demands for fish: a market analysis of the Midwest aquaculture industry, David Ortega, Purdue University (Grad 2011)*

*Replacement of fish meal in hybrid striped bass diets with proteinaceous fermentation biomass, Brian Gause, Southern Illinois University (Grad 2009)*

*Contaminant transport by introduced Pacific salmon to Great Lakes tributaries, David Janetski, University of Notre Dame (Grad 2010)*

*Modeling the effects of land use/land cover change on surface water quality within the Chicago MSA, Cyril Wilson, Indiana State University (Grad 2010)*

*Developing functional indicators of coastal wetland health, Matthew Cooper, University of Notre Dame (Grad 2011)*

[!\[\]\(291e070cef6c4d5e78fefe4696ef53be\_img.jpg\) 2 additional development projects](#)

## 64 STAKEHOLDERS, PARTNERS, AND COLLABORATORS



3 State agencies



8 Local gov. agencies



7 Universities



7 Professional associations



11 K-12 schools



11 Museums and NGOs



1 Other

## 3 FEDERAL AGENCIES

National Park Service

Fish and Wildlife Service

Environmental Protection Agency

## 13 SEA GRANT PROGRAMS

Michigan

Minnesota

California

Connecticut

Florida

Louisiana

Wisconsin

New York

North Carolina

Ohio

Oregon

Pennsylvania

Washington

## EMERGING INITIATIVES

As IISG grows, the program forges new partnerships and embraces new approaches and opportunities to share information and address coastal concerns. In these efforts, IISG is emerging not just as partner, but often as a leader—bringing together resources, technology, people, and ideas.

### Networking Great Lakes Social Science

Sea Grant's role is to help communities make better decisions about their coastal resources using science. But, if specialists only share natural science knowledge, they are missing half the story. Social science explains why people interact with their natural environments in the ways they do.

IISG Environmental Social Scientist Caitie McCoy launched the Great Lakes Social Science Network (GLSSN) in 2011 to help Sea Grant specialists use social science methods to bolster conservation efforts and decision-making. The network serves as a platform for training and as a community for discussing social science theory and application.

At this point, IISG has partnered with NOAA's Coastal Services Center, NSGO, and Sea Grant programs in Wisconsin, Minnesota, New York, and

### Funded Research

*Real-time online access to fish consumption advice (Purdue University; Development 2010)*

*Nutrient flexes in tile drains and ditches draining Midwestern agricultural fields fertilized with manure (Purdue University; Development 2010)*

*Impacts of Nanomaterials on Aquatic Microbial Communities (Loyola University Chicago; Development 2012)*

*Development of Lake Michigan actinomycete bacteria as a source for antibiotic drug leads (University of Illinois Chicago; Development 2012)*

*Lake Michigan Plastic Pollution Survey (SUNY-Fredonia; Development 2013)*

[2 additional development projects](#)

Virginia to provide more than 160 specialists social science training through GLSSN. Specialists have learned how to use surveys, qualitative data coding, and other social science methods to better understand and connect with audiences. GLSSN has also grown into a research group, facilitating multi-program projects and taking the lead in a handful of regional and national studies. Most notable was its examination of the warning system used by the National Weather Service (NWS) to keep broadcast meteorologists and emergency managers up-to-date on the expected impacts of severe weather. Using the results of a series of surveys and focus groups, a GLSSN team comprised of several Great Lakes specialists presented NWS with strategies for improving the clarity and effectiveness of the system.

## **Managing Nutrient Loss Reduction**

With more than 22 million acres of row crops and 13 million people, Illinois is a primary contributor to the Gulf of Mexico hypoxia. Millions of pounds of nitrogen and phosphorus from Illinois farm fields, city streets, and wastewater treatment plants are carried to the Gulf each year through the Mississippi River system. These nutrients spur algal blooms that leave an area the size of Connecticut all but devoid of oxygen and marine life.

IISG, with our sister program, the Illinois Water Resources Center (IWRC), collaborated with scientists, government agencies, non-profit groups, and agriculture and wastewater treatment professionals to develop a plan for reducing nutrient pollution from point and non-point sources in priority watersheds. The *Illinois Nutrient Loss Reduction Strategy*, released for public comment in late 2014, outlines best management practices that are expected to ultimately reduce the amount of nitrogen and phosphorus reaching Illinois waterways by 45 percent. The strategy marks the most comprehensive and integrated approach to nutrient loss reduction in the state's history. Implementation, facilitated by IISG and IWRC specialists, is slated to begin in spring 2015.

## **Monitoring Nearshore Waters with Buoys**

In a populated area like the shores of Illinois and Indiana, buoys that are equipped with monitoring capabilities can provide useful information not just for scientists, but for beachgoers, anglers, boaters, and other local residents and tourists. IISG, along with Purdue University, launched a buoy in the nearshore waters of Michigan City, IN in 2012. Since then, buoy data has helped the National Weather Service improve wave height predictions and, as a result, small craft advisories. A second IISG buoy will be placed in nearshore waters of Waukegan, IL in spring 2015.

## **Discovering Emerging Contaminants**

The microplastics common in personal care products and clothing can enter lakes and rivers through wastewater treatment plants that are not designed to remove such small materials. IISG funded and helped conduct the first study of plastics in southern Lake Michigan. Early results indicate that southern Lake Michigan contains more than 19,000 microfibers/sq. km, making these the most prevalent microplastic and setting southern Lake Michigan apart from the other Great Lakes. These microfibers are most likely from clothing, particularly those made from polyester or polyurethane. An AP story on the research and its implications for Great Lakes ecosystems ran in more than 40 news outlets worldwide, including The New York Times, The Guardian, and the Chicago Tribune. The media effort also led to a Time Magazine story on research showing that Great Lakes fish are ingesting plastic fibers.

## ***SUMMARY***

IISG operates on over \$3 million each year with 36 staff members located at the University of Illinois, Purdue University, and partnering agencies. Approximately one-fourth of IISG funding comes from NSGO omnibus funds. The remaining funding is leveraged through other federal and state programs.

IISG is a bi-state program administratively housed in University of Illinois Extension and Purdue University Department of Forestry and Natural Resources. Matching funds are contributed by the University of Illinois Vice Chancellor of Research and Office of Extension and Outreach. Other matching funds come from Purdue University and research partners.

IISG works in all four of the NSGO focus areas—conducting research, outreach, and education throughout. While we have funded research to address information gaps in most of our outreach program topics, the most coordinated research and outreach effort is the Food Web and Habitat focus area. There, IISG coordinated GLRRIN efforts to identify and fund research gaps by bringing university researchers and federal agencies together. IISG has supported \$1.8 million dollars in food web research, which has informed Extension programming, such as [greatlakesmonitoring.org](http://greatlakesmonitoring.org).

IISG connects education to outreach and research by offering 11 programs that provide science-based curricula and tools for teachers and it has facilitated four university-based community stewardship classes. We have promoted workforce development by funding 14 graduate research projects, supporting six Knauss fellows, and providing summer internships for 18 undergraduate students.

IISG's focus is guided by a user advisory board made up of key, high-level stakeholders. In addition, IISG specialists sit on over 100 boards and committees through which we are able to ensure our programming is relevant and responsive to stakeholder needs.

IISG collaborates with over 300 federal, state, local, business, NGO, and university partners. We actively partner with 18 other Sea Grant programs and founded the Great Lakes Social Science Network and the National Pharmaceuticals and Personal Care Products Working Group. We have led or participated in 22 multi-state projects since 2010.

## ***REGIONAL AND MULTI-PROGRAM PROJECTS***

Title	Funding Agency	Major Partners
Tipping Points and Indicators – Engaging Great Lakes Coastal Communities in Planning for Storm water Best Management Practices (Miller—Co-Lead)	NOAA Great Lakes Environmental Research Lab	Great Lakes states, 7 universities, communities in each state
Weather Ready Nation (Miller, McCoy—Partner)	NOAA National Sea Grant Office	Great Lakes and Coastal Regional National Weather Service, Great Lakes Social Science Network, NOAA regional team
Implementing Dangerous Currents Best Practices (Miles—Partner)	NOAA Coastal Storm Program	Great Lakes Sea Grant programs
A Comprehensive Regional Public Outreach Campaign on AIS (Charlebois, Goettel, Hallesy—Lead)	NOAA	Sea Grant programs around the country
Great Lakes Regional Research and Information Network (Miller, Mankin—Lead for Lake Michigan)	NOAA National Sea Grant Office	USGS, NOAA Great Lakes Environmental Research Lab, U.S. EPA
B-Wet (Goettel, Hallesy—Partner)	NOAA Office of Education	Great Lakes Sea Grant Network



Center for Ocean Science Education: Great Lakes (Goettel, Hallesy—Partner)	NOAA and National Science Foundation	Great Lakes Sea Grant Network
Tipping Points and Indicators: Engaging Great Lakes Coastal Communities in Planning for Storm water Best Management Practices: A Submission to the Great Lakes Coastal Storms Competition (Salazar—Lead)	NOAA Coastal Storms Program	Great Lakes Sea Grant programs
Reducing The Risks of Schools, Science Curricula and Biological Supply Houses as Potential Pathways for Spreading Aquatic Invasive Species (Charlebois, Goettel, Hallesy—Lead)	NOAA National Sea Grant Office	Oregon, New York, NOAA Great Lakes Environmental Research Lab
Fishing Tournament Organizers and Professional Anglers: Preventing the Spread of AIS by Extending AIS-HACCP and the Stop Aquatic Hitchhikers Campaign in the Great Lakes (Charlebois—Lead)	NOAA National Sea Grant Office	Great Lakes Sea Grant Network
Agriculture and Land Use Change Indicators (Miller—Lead)	NOAA Great Lakes Environmental Research Lab	Great Lakes Sea Grant programs, 7 universities, NOAA Great Lakes Environmental Research Lab
Great Lakes Sea Grant Network Education and Outreach Proposal on Asian Carp in Support of Asian Carp Regional Coordinating Committee (ACRCC) (Charlebois—Lead)	Asian Carp Regional Coordinating Committee	Great Lakes Sea Grant Network
Increasing Citizen Involvement and Improving Great Lakes Literacy through Training, Mentoring, Community-Building, and Place-Based Stewardship (Miller, Hallesy, Tepas—Lead)	U.S. EPA Great Lakes Restoration Initiative	Great Lakes Sea Grant educators
Bringing Great Lakes Science to the Classroom via the Lake Guardian and other Dynamic Professional Development Experiences to Strengthen the Educator/Scientist Community of Practice (Miller, Hallesy, Tepas—Lead)	U.S. EPA Great Lakes Restoration Initiative	Great Lakes Sea Grant educators
Great Lakes Sea Grant Organisms in Trade Initiative (Charlebois, Hallesy—Lead)	U.S. EPA Great Lakes Restoration Initiative	Great Lakes Sea Grant Network
Expanding Risk Assessment Outreach for Organisms in Trade (Charlebois—Lead)	U.S. EPA	Great Lakes Sea Grant Network
Train Local Groups to Inspect and Wash Fishing Tourney Boats (Charlebois—Partner)	U.S. EPA Great Lakes Restoration Initiative	Great Lakes Sea Grant Network
Undo the Chemical Brew (Goettel, Hallesy—Partner)	U.S. EPA Great Lakes Restoration Initiative	Great Lakes Sea Grant Network
Health Lawns Healthy Lakes (Schneemann—Lead)	U.S. EPA	Lake Champlain Sea Grant, various Great Lakes Extension offices
2011 Great Lakes Charter Captains Study (Charlebois—Lead)	NOAA Great Lakes Environmental Research Lab	Great Lakes states, 7 universities, communities in each state
Preventing Invasions from Trade in Live Aquatic Organism (Charlebois—Lead)	NOAA National Sea Grant Office	Great Lakes and Coastal Regional National Weather Service, Great Lakes Social Science Network, NOAA regional team

## ***SUCCESS IN SEA GRANT NATIONAL COMPETITIONS***

- 2010** Aquaculture Extension: Programming Aquaculture and Seafood Products in the Great Lakes Region (Kwamena Quaigrainie, Purdue University)
- 2012** Special Project Competition: Pollution Prevention Workshop on Disposal of Unwanted Medicine (Laura Kammin, University of Illinois)
- 2013** Community Climate Adaptation Initiative: Reducing Flood Vulnerability of Chicago Critical Facilities (Molly Woloszyn, University of Illinois)
- 2014** Aquaculture Research: Developing a Food and Drug Administration-approved Therapeutic Drug for Treating Diseases of Cultured Marine Fishes (Jesse Trushenski, Southern Illinois University)

## ***PROGRAM CHANGES RESULTING FROM PREVIOUS SITE VISIT***

### **Recommendation: Find ways to increase research**

IISG took three measures to increase competitive research. Between 2010-2014, IISG funded 41 research projects, investing about \$2.3 million in omnibus and leveraged dollars in research.

1. Through salary savings and programming efficiencies, IISG has funded 29 competitively selected development projects.
2. IISG was able to secure almost \$1M from US EPA Great Lakes National Program Office to fund three IISG peer reviewed research projects.
3. With new minibus funding, IISG spent \$400,000 on competitively selected research in 2014.

### **Suggestion: Expand representation on advisory committee to include other groups, including industry**

Three members of the user advisory committee now represent industry and business sectors.

### **Suggestion: Increase collaborations with NOAA partners**

Members of the coastal management programs in Illinois and Indiana now serve as ex-officio members of the user advisory committee. Staff routinely partner with GLERL, CILER, the NOAA Regional Team, the Midwest Regional Climate Center and we just completed a project with the National Weather Service.

### **Suggestion: More actively engage advisory committee in strategic planning process**

The 2014 strategic planning process started with a stakeholder and partner needs assessment and personal meetings with user advisory committee members and included advising and committee feedback throughout the process.