Illinois-Indiana Sea Grant College Program

2014-2017

Strategic Plan

Two great states caring for one Great Lake

Illinois-Indiana Sea Grant College Program
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History and Strategic Scope

Sea Grant, established in 1966, is a national network of 32 programs that invest in research and conduct education and outreach on coastal concerns such as invasive species, water quality, loss of natural habitat and ecosystem services, stormwater and climate change.

In 1982, Illinois-Indiana Sea Grant (IISG) began as a small marine extension project through a partnership between the University of Illinois, Purdue University, and National Oceanic and Atmospheric Administration (NOAA). The program was soon funding research and the outreach staff grew over time from a single specialist to a team of 28 experts in the two states. In 1997, IISG was awarded College Program status by the U.S. Department of Commerce.

Today, IISG works locally, regionally, and nationally in 10 different topic areas. Our core efforts focus on the heavily urbanized and industrialized southern Lake Michigan shoreline. We partner with communities, schools, state agencies, and regional planning groups to bring sound science to people in the region. IISG also partners with U.S. EPA and other federal agencies to provide community assistance and decision support tools around the Great Lakes basin. And we work with the Great Lakes Sea Grant Network, the National Sea Grant Office, and other Sea Grant programs to address issues that have a broader reach.

Competitive Strengths

IISG serves as a conduit between universities and communities in the region by filling research gaps, providing decision support tools, empowering communities to make research-based decisions, and improving environmental literacy. We work from a scientific base and provide unbiased resources for the region.

IISG fills research gaps

Over the last 30 years, Illinois-Indiana Sea Grant has been awarded more than $20 million to support research, outreach, and education projects and to address research gaps in a range of Great Lakes issues. Altogether, the program invested over $7.5 million in research projects, 81 of which were funded from the core budget and more than 45 from additional or leveraged funds. IISG researchers have shared the results of these studies through more than 130 peer-reviewed publications. Below are selected research results.

- Not only do the by-products of drinking water disinfection have toxic properties, but non-toxic medical diagnostic chemicals that accumulate in drinking water sources can become toxic during the disinfection process. This body of IISG-supported research has led to almost $1 million in additional funding.
- Flood peaks in the Chicago metropolitan area are higher than they used to be, and they are also higher than the flood risk estimate currently used by water managers.
- Aluminum sulfate can significantly reduce phosphorous levels in water contaminated by manure spills and runoff from farm fields.
- Rain barrels do more to control runoff than porous pavement.
- Consumers are willing to pay more for U.S. produced seafood.
- By-products of ethanol production are showing promise as cheaper fish food for aquaculture facilities.

IISG brings data to decisions

Scientists in Illinois and Indiana are continually monitoring and studying the Great Lakes ecosystem, but it is often difficult for decision makers to access data that can help them make informed decisions. IISG specialists help bridge this gap. We serve as catalysts, identifying needs and building tools that meet those needs. Below are a few examples of ways IISG brings data to decisions.

- A team of NOAA researchers and Great Lakes scientist are defining environmental tipping points, which predict when aquatic ecosystems head into unfavorable states as a result of human impacts. A web-based decisions support tool will aid planners in decision making.
- In a partnership with the National Center for Supercomputing Application, IISG is developing cyber infrastructure to display and retrieve 30 years of U.S. EPA and other federal and state agency data.
- IISG research found that green infrastructure is as efficient as conventional urban stormwater management infrastructure, at a lower cost. These results have led to an annual investment of almost $5 million by the state of Illinois in community-level green infrastructure.
- The U.S. Geological Survey is updating risk assessment tools based on Sea Grant-supported research on invasive species in the Great Lakes region.
- The IISG-led Lake Michigan Great Lakes Regional Research and Information Network is developing a much-needed food web management model. Progress to date includes the coordination of federal, university, and state monitoring efforts and the investment of $1.7 million in regional research funding to fill data gaps.
- IISG and the National Prescription Drug Disposal Program work closely with Illinois EPA, keeping the agency informed of the growing evidence of pharmaceuticals in streams and rivers. When an AP investigation in 2008 found pharmaceuticals in drinking water supplies of at least 41 million Americans, Illinois became the first state to test drinking water for pharmaceuticals.
- In Indiana, IISG formed and facilitated the *Aquatic Plant Working Group* to develop a screening tool to help industries and the Indiana Department of Natural Resources assess the invasion risks of aquatic plants imported for the aquarium and water garden trades. This effort led to a law prohibiting the sale, distribution, and transport of 28 plant species that pose a high risk of invasion.

IISG empowers communities

IISG starts locally and thinks globally. Working directly with communities around the Great Lakes, we seek to make small changes that will result in big impacts. We work directly with communities to address natural resource concerns, providing scientifically-sound technical assistance. The following are some of our community level accomplishments.

- Because of IISG workshops, two dangerous dams have been removed or purposely breached to improve local water ways, preserving more than 100 acres of high quality wetlands, restoring stream channels, and creating fish passages and bypass channels.
- IISG has helped 10 communities make informed decisions about Great Lakes Legacy Act cleanup programs in their communities.
- IISG has helped 62 communities in Great Lakes states with single-day or permanent collection programs, ensuring the proper disposal of 9.65 million pills (or 81,813 pounds). Additionally, IISG provided guidance to Sea Grant programs in Pennsylvania, New York, and Ohio, resulting in a collaborative project that has educated over 1 million people and collected over 2.6 million pills.

IISG improves Great Lakes literacy

Educating tomorrow's leaders is vital if we hope to affect lasting environmental change. IISG works locally and nationally on a variety of education programs —reaching teachers and the general public with scientifically-sound and age-appropriate tools, games, and interactive displays. Examples include:

- 1,100 students understand Great Lakes science better because of Shipboard Science Education workshops for teachers on board the R/V Lake Guardian.
- IISG has overseen the development of nine curricula that have enlightened more than 110,000 students about critical Great Lakes issues.
- In 2010, the Nab the Aquatic Invader! website was featured at the Smithsonian National Museum of Natural History as part of the Ocean Today Kiosk. It was also on display at Coastal Ecosystem Learning Centers throughout the country, including the John G. Shedd Aquarium in Chicago.
- Since 2000, IISG has supported nearly 350 undergraduate and graduate students engaged in research or outreach activities.

Situational Analysis

IISG started our 2014-2017 strategic planning process by conducting a needs assessment. We surveyed people familiar with our work to identify where our abilities and strengths are most needed. Below are the top issues identified through this process, in order of priority identified in the needs assessment.

Outreach Needs	Research Needs	Emerging Needs
Water quality	Water quality	Off shore planning
Aquatic invasive species	Aquatic invasive species	Coastal tourism
Climate change	Climate change	
Great lakes health	Emerging contaminants	

We then identified overlap between the National Sea Grant Office strategic plan objectives and ours and, asked our specialists to review their programs in light of both the national plan and our stakeholder input. We focused our efforts on bridging gaps and finding places where we can have the greatest impact. Throughout this process, we engaged our external and administrative advisory boards. The external board comprises representatives from high level positions in our client groups who can provide a broad perspective on their program needs and IISG's potential to address them. Our administrative advisory board includes Purdue University and University of Illinois officials to whom IISG reports or with whom we share significant partnerships and interests.

Given the input from levels, we refined our goals and objectives as outlined below.

Operating Principles

IISG is administratively housed at both the University of Illinois and Purdue University and supports 28 staff members in the two states. Of the 28 staff members, only seven FTEs are supported directly by Sea Grant core funds, with the remaining supported with a combination of partner contributions. Partners include the Illinois Natural History Survey, University of Illinois Office of Extension and Outreach, the University of Illinois at Chicago, the Midwest Regional Climate Center, the Chicago Metropolitan Agency for Planning, Purdue University Department of Forestry and Natural Resources and Agricultural Economics, Purdue Calumet, the Chicago Metropolitan Agency for Planning, and the U.S. EPA Great Lakes National Program Office.

IISG has organized our activities into the four National Sea Grant Office focus areas. The approximate level of effort in each is noted next to the heading and calculated from core Sea Grant funds and leveraged funds that pass through the NSGO. Additional funding from grants and outside partnerships allows the program to expand some areas beyond what core funds allow. Those extramural projects are not reflected in the goals and outcomes listed in each topic area, but are reflected in program objectives.

Healthy Coast Ecosystems (33%)	Sustainable Fisheries and Aquaculture (6%)	Resilient Communities and Economies (38%)	Environmental Literacy and Workforce Development (23%)
Aquatic invasive species Coastal restoration Great Lakes health	Aquaculture	Climate change adaption Coastal tourism Community planning Pollution prevention	K-16 Education Career and professional development

Overarching Mission

IISG seeks to improve environmental integrity through applied research, state and local decision support, community assistance, and education programs. Our programs and products are science-based and provide an unbiased and neutral perspective on Great Lakes issues. We measure our progress by monitoring changes in knowledge, behavior, policy, and the environment.

Healthy Coastal Ecosystems

IISG will address three topics under the Healthy Coastal Ecosystem focus area: aquatic invasive species, coastal restoration, and Great Lakes health. Goals, outcomes, and objectives in this area relate to protecting, restoring, and conserving natural resources and developing mechanisms to help natural resource managers make optimal decisions. Below are our specific goals and outcomes.

Goal 1. Ecosystem services are improved in the Great Lakes.

Outcome 1.1. Resource managers use standards and indicators to support ecosystem-based management decisions.

Goal 2. Ecosystem-based approaches are used to manage land, water, and living resources in the Great Lakes.

Outcome 2.1. Stakeholders have access to data, models, policy information, and training that supports ecosystem-based planning, decision-making, and management approaches.

Outcome 2.2. Residents, resource managers, and businesses understand the effects of human activities and environmental change on Great Lakes resources.

Goal 3. Great Lakes ecosystems and their habitats are protected, enhanced, and restored.

Outcome 3.1. Residents, resource managers, and businesses understand the threats to ecosystems and the consequences of degraded ecosystems.

Outcome 3.4. Resource managers adopt scientifically-sound approaches to maintaining and improving ecosystem function.

To achieve these goals, Sea Grant has set forth the following objectives in our program areas.

Aquatic Invasive Species

Over 180 non-native species have already been introduced into the Great Lakes region. Some of these species such as the zebra mussel, Eurasian watermilfoil, and silver carp have flourished and negatively impacted both our environment and economy. Many more aquatic invasive species (AIS) pose potential threats to Lake Michigan and the inland waters of both Illinois and Indiana.

AIS can be introduced and spread through a variety of activities including those associated with recreational water users, water gardeners, aquarium hobbyists, and nursery tradespeople. For example, when an angler releases bait fish or a water gardener disposes of excess plants in a local stream, they could also be accidentally introducing AIS into those waterways. IISG works with these groups to provide the tools they need to avoid AIS-risky behaviors.

AIS PC 1. By 2015, natural resource agency professionals in the 10 Great Lakes states and provinces will receive training in the use of the Great Lakes organisms in trade risk assessment tools.

AIS PC 2. By 2015, a needs assessment of the water gardening and aquarium hobbyist audience will be conducted.

AIS PC 3. By 2016, 75 percent of webinar(s) attendees surveyed will understand ways to avoid the introduction and spread of AIS via water gardens.

AIS PC 4. By 2017, 80 percent of recreational water users surveyed in southern Lake Michigan will be aware of AIS.

AIS PC 5. By 2017, 70 percent of recreational water users surveyed in southern Lake Michigan will routinely take precautionary steps to prevent the spread of AIS through their recreational activities.

AIS PC 6. By 2017, four of the 10 Great Lakes states and provinces will incorporate information generated from the Great Lakes organisms in trade risk assessment tools into their decision making processes.

Coastal Restoration

Years of industrial activity and development have left numerous lakes and rivers contaminated with nitrogen, heavy metals, PCBs, and other toxic pollutants. Many rivers and streams have also been dammed, channelized, or diverted to suit local needs. The result is stressed and degraded ecosystems that many aquatic ecosystems are stressed and degraded—unsafe for people and unsuitable for some wildlife. Sea Grant is working to restore these waterbodies through extension activities that help policy makers, resource managers, and the general public improve coastal health and ensure continued enjoyment and use of coastal resources.

CR LD 1. By 2015, 50 resource managers will have knowledge of the current field technologies and techniques for stream restoration.

CR CM 2. By 2017, IISG will reach beyond traditional audiences in seven communities within U.S. EPA designated Great Lakes Areas of Concern to improve understanding and awareness of sediment remediation and habitat restoration.

Great Lakes Health

IISG is engaged in initiatives that provide the latest scientific information to those in the Great Lakes region who can best use it. For example, Sea Grant works closely with U S. EPA Great Lakes National Program Office (GLNPO) to develop products, tools, and strategies to communicate the results of the State of the Lakes Ecosystem Conference (SOLEC), and recent findings from water quality sampling conducted aboard the research vessel R/V Lake Guardian. In these and other efforts, IISG works with community leaders, natural resource professionals, and Great Lakes residents to monitor, improve, and protect the quality of the Great Lakes overall and in critical locations.

GL CF 1. By 2017, 1,000 people will visit the IISG buoy webpage that displays real-time monitoring data transmitted from the Indiana waters of Lake Michigan to learn about current and past local lake conditions.

GL KT 2. Through 2017, data collected through U.S. EPA GLNPO (including State of the Lake Ecosystem Conference, the Great Lakes Restoration Initiative results, and/or monitoring data) will be delivered to researchers, planners, and natural resource managers in a format that helps them make decisions or pursue further discoveries.

GL PC 3. By 2017, IISG will manage the Coordinated Science and Monitoring Initiative research conducted in four of the Great Lakes to make better use of Triaxus and other monitoring data collected.

GL CF 4. Through 2017, IISG will work with federal, state, and academic researchers around Lake Michigan to identify and address current research gaps, pressing data needs, and emerging issues affecting the Lake Michigan ecosystem.

GL LD 5. By 2016, 10 resource managers will use the IISG-developed beach management manual to improve coastal water quality and decrease beach closures.

GL PC 6. By 2017, 50 resource managers and scientists will use greatlakesmonitoring.org to incorporate environmental monitoring data into research and management decisions.

Healthy Coastal Ecosystem Performance Measures

1. Number of Sea Grant tools, technologies and information services that are used by our partners/customers to improve ecosystem-based management.

2. Number of ecosystem-based approaches used to manage land, water, and living resources in coastal areas as a result of Sea Grant activities. (NOAA defines ecosystem approaches as: “management that is adaptive, geographically specific, takes account of ecosystem knowledge and uncertainties, considers multiple external influences, and strives to balance diverse social objectives.”)

3. Number of acres of coastal habitat protected, enhanced or restored as a result of Sea Grant activities.

Sustainable Fisheries and Aquaculture

With large markets such as Chicago, hungry for fresh fish, IISG focuses aquaculture programming on making fish farms in the two states productive and profitable. Goals, outcomes and objectives promote economic viability and technological efficiencies in fish production. Specific goals and outcome in this area are as follows.

Goal 4. An economically viable fish farming industry in Illinois and Indiana meet public demand.

Outcome 4.1. Fish farmers learn and understand economically viable techniques and processes to ensure the production and delivery of safe and healthy seafood.

Outcome 4.2. The seafood market in the two state region is expanded.

Specific objectives include the following.

A KQ 1. By 2015, IISG will develop a tool to help aquaponics producers evaluate the economic viability and pricing of their business ventures.

A KQ 2. By 2017, IISG will provide outreach and marketing assistance to Indiana aquaculture producers, resulting in a $20 million industry in the state.

Sustainable Fisheries and Aquaculture Performance Measures

1. Number of fishermen, seafood processors and aquaculture industry personnel who modify their practices using knowledge gained about fisheries sustainability and seafood safety as a result of Sea Grant activities.

Resilient Communities and Economies

IISG's resilient communities and economies efforts reside in five topic areas: climate change adaptation, coastal tourism, community planning, pollution prevention, and water supply. Goals, outcomes and objectives include increased availability of tools and information and the implementation of best management practices at the local and state level. Specific goals and outcomes are as follows.

Goal 5. Communities balance economics and environment.

Outcome 5.1. Communities will be aware of the interdependences between healthy economies and healthy ecosystems.

Outcome 5.2. Communities will have information and tools to promote natural resource tourism.

Goal 6. Communities use planning tools to make informed strategic decisions.

Outcome 6.1. Communities will use tools and information to explore the use of water supply planning, demand forecasting, and other techniques that can help communities live within water supply budgets.

Outcome 6.2. Communities will adopt natural resource-based plans to address water supply planning, stormwater management, and other challenges.

Goal 7. Improvements in water quality sustain human health and ecosystem services.

Outcome 7.1. Communities will be aware of the impact of human activities on water quality.

Outcome 7.2. Communities will adopt best management practices and ordinances to address water quality.

Goal 8. Communities adapt to climate change.

Outcome 8.1. Communities have access to information, tools, and techniques to understand and adapt to climate change.

Outcome 8.2. Communities will develop and adopt climate adaptation strategies to suit local needs.

To achieve these goals, Sea Grant has set forth the following objectives in our program areas.

Climate Change Adaptation

Climate change is among the top environmental challenges facing society, It poses a threat to both aquatic and terrestrial ecosystems, as well as human lives and economies. It also poses threats to human lives, environments, and economies. IISG helps communities and individuals plan for and adapt to projected climate changes, taking into account the extent of uncertainty in these forecasts.

CC MW 1. By 2014, the IISG climate change topic webpage will be a resource for climate science information, with an emphasis on local information and impacts.

CC MW 2. By 2015, understandable climate change metrics and winter adaptation policies will be developed for Chicago.

CC MW 3. By 2016, at least three municipalities in the southern Lake Michigan region will develop and adopt climate adaptation plans.

CC MW 4. By 2017, the climate change metrics and winter adaptation policies piloted in Chicago will be adopted by two additional communities in the Great Lakes basin.

Coastal Tourism

According to the Chicago Convention and Visitors Bureau, Chicago hosted over 43 million visitors in 2011. That is an 11 percent increase over 2010 and the largest increase in tourism in the country. Although ample tourism resources exist for many urbanized areas of the region, IISG seeks to further benefit local economies by providing innovative tools that inform tourists about issues facing the natural and built environments in the entire bi-state area.

CT LD 1. By 2016, people will have information about coastal recreational opportunities around southern Lake Michigan.

CT IM 2. By 2016, people will access a Chicago waterfront tour via a mobile website or smartphone application.

CT IM 3. By 2017, IISG will explore emerging mobile technologies as effective outreach tools for residents and tourists in the southern Lake Michigan region.

Community Planning

Chicago's greater metropolitan region supports the economic, social, and recreational needs of 12 million people. By 2030, the metro region is projected to gain an additional two million people, which will further stress the area's natural and ecological resources. New plans and policies are needed to accommodate this growth while protecting—and possibly even enhancing—the region's ecological services and biodiversity.

IISG works with communities to formulate resource management strategies that address water supply and demand, land use decisions, storm water management, and other challenges. IISG's outreach to local officials encourages more sustainable growth at the community scale, while planning assistance to regional agencies helps them sustainably manage surface and groundwater resources and their associated ecosystems.

CS LD 1. By 2014, IISG will develop a tool to assess the impacts of land use decisions on storm water flow rates.

CS KS 2. By 2014, IISG will conduct a needs assessment of Indiana counties to determine the type of services we can and should provide.

CS KS 3. By 2015, 10 communities in Indiana will have been trained to use the tipping points decision maker tool.

CS MS 4. By 2017, IISG will provide guidance for incorporating water pricing and economic analysis into water conservation planning to 20 communities in the southern Lake Michigan region.

CS MS 5. By 2016, Lake Zurich will identify and implement integrated water resource strategies and develop a community best management toolkit to be used by other communities.

CS KS 6. By 2017, IISG will explore options for developing a community-level small grants program.

CS MJ 7. By 2017, four communities will incorporate green infrastructure practices into their land use and stormwater management plans.

Pollution Prevention

Through tool kits and outreach, IISG helps communities and individuals make better consumer choices and wisely deal with unwanted or no-longer-needed products. By modifying purchasing behavior and safely disposing, recycling, or donating many unwanted items, people can help protect the Great Lakes ecosystem and our drinking water quality.

P2 LK 1. By 2016, IISG will start a new outreach program to address at least one new emerging contaminant.

P2 LK 2. By 2017, 500,000 residents in the Great Lakes will be educated about safe disposal of unwanted medicine.

P2 MS 3. By 2015, a lawn care watering ordinance will be adopted by 10 communities in the Northwest Water Planning Alliance.

P2 MS 4. By 2015, the Northwestern Indiana Regional Planning Commission will incorporate natural lawn care guidelines in comprehensive plan implementation efforts.

P2 LK 5. By 2015, Sea Grant led initiatives on proper disposal of unwanted medicines will emerge in six states outside of the Great Lakes.

P2 LK 6. By 2017, 25 new unwanted medicine collection programs will be established in the Great Lakes.

P2 MS 7. By 2017, IISG will provide sustainable lawn and landscape outreach tools to 30 local decision makers in the Northwest Water Planning Alliance.

CC LM 1. By 2016, IISG will conduct an economic analysis of IISG's pollution prevention program.

Resilient Communities and Economies Performance Measures

1. Number of communities that implemented sustainable economic and environmental development practices and policies as a result of Sea Grant activities.

2. Number of communities that implemented hazard resiliency practices to prepare for, respond to, or minimize coastal hazardous events as a result of Sea Grant activities.

Environmental Literacy and Workforce Development

IISG has divided efforts in this focus area into two topics: K-16 education and career and professional development. Goals, outcomes, and objectives include increased availability of tools and information for teachers and students, as well as internships, fellowships, and continuing education programs.

Specific goals and outcomes are below.

Goal 9. The Great Lakes region is increasingly environmentally literate.

Outcome 9.1. K-12 students will understand Great Lakes literacy principals.

Outcome 9.2. K-12 teachers will incorporate Great Lakes literacy principles into their lesson plans.

Goal 10. People in the Great Lakes have the knowledge and skills to become active and relevant participants in local, state, or national dialogues about water resources.

Goal 10.1. College students and professionals will have the opportunity to pursue internship, fellowships and other opportunities that will enhance their natural, physical, or social science careers.

Goal 10.2. Research projects will support undergraduate and graduate student training in fields related to Great Lakes science.

To achieve these goals, Sea Grant has set forth the following objectives in our program areas.

K-16 Education

Education is essential if a society is to make well-informed decisions about the environment. Sea Grant is well positioned to foster scientifically-literate citizens to serve as stewards of our local aquatic and marine resources. IISG's team of educators is meeting the challenge of improving today's science education through its professional training for educators and curriculum resources for students and teachers grades K-16. Our classroom and community stewardship programs are developed for all learners, including underserved student populations in the Chicago and northwest Indiana regions. We also foster multi-disciplinary learning by integrating science with math, language arts, geography, and cultural arts.

EWD TH 1. By 2014, IISG will provide 35 teachers in the Lake Michigan watershed with the expertise and inspiration to involve 3,000 students in watershed educational experiences.

EWD TH 2. By 2015, IISG will help provide 50 teachers with land–based learning experiences to improve Great Lakes literacy.

EWD CM 3. By 2017, IISG will engage 400 K-12 students in classroom or stewardship activities to increase understanding of sediment remediation, habitat restoration, and ecological principles.

EWD KS 4. By 2017, IISG will provide natural resource sustainability educational resources to 50 formal or informal educators in Indiana.

EWD TH 5. By 2017, IISG will inform 10,000 students about the harmful effects of environmental contaminants and the importance of properly managing these substances.

EWD TH 6. By 2017, the Nab the Aquatic Invader! website will be accessed by 8,000 users.

EWD TH 7. By 2017, IISG will provide 200 teachers and students with workforce development resources to connect students to natural resource related careers.

EWD TH 8. By 2017, IISG will work with the Midwest Regional Climate Center to provide climate adaptation resources and lesson plans to 50 teachers.

EWD MW 9. By 2015, 20 K-12 teachers will use Sea Grant designed activities to educate students about weather and climate.

EWD TH 10. By 2016, the Fresh and Salt collection of Great Lakes and marine activities for the classroom will be used in over 200 classrooms throughout the U.S. to supplement science curricula.

EWD KT 11. By 2017, IISG will help 50 teachers integrate Great Lakes information into their curriculum.

EWD MW 12. By 2017, 10 K-12 schools will enhance school hazard preparedness plans with climate adaptation components for extreme weather events.

Career and Professional Development

Sea Grant also supports the career and professional development of college students and professionals through internships and fellowships, trainings, certification programs, and professional recognition.

EWD LD 13. By 2017, 50 college students will increase their knowledge of water resource issues in southern Lake Michigan.

EWD TH 14. By 2017, 30 University of Illinois students will collaborate with community partners on service learning projects to raise awareness and understanding of regional water resource issues.

EWD AA 16. By 2017, IISG will provide workforce development opportunities to 14 Illinois or Indiana students through fellowships or internships.

EWD MS 17. By 2017, IISG will help to develop a certification program that will train the next generation of water, waste water, and storm water operators in sustainable water planning.

EWD LK 18. By 2017, IISG will educate 500 veterinary or pharmaceutical students about the proper disposal of unwanted medicine.

EWD KS 19. By 2017, IISG will develop a recognition program for industries, professionals, communities, or citizens that will help integrate natural resource sustainability principles into everyday practices.

EWD CM 20. By 2017, IISG, through the Great Lakes Social Science Network, will provide 10 trainings on incorporating social science principles and methods into outreach activities for Sea Grant professionals.

EWD LM 21. By 2017, IISG will provide support for 20 students working on Great Lakes research.

EWD AA 22. By 2017, IISG will conduct 20 campus visits to introduce Sea Grant opportunities to students across the two states.

Environmental Literacy and Workforce Development Performance Measures

1. Number of Sea Grant-facilitated curricula adopted by formal and informal educators.
2. Number of people engaged in Sea Grant supported informal education programs.
3. Number of Sea Grant-supported graduates who become employed in a career related to their degree within two years of graduation.

Sea Grant
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