

IISG - P²D² Partnership Promotes Medicine Collection

In 2008, in a Pontiac Township High School ecology class, a question came up—where do unused medications go when patients no longer need them? This moment led to the development of a rapidly growing medication disposal program that has come to work closely with Illinois-Indiana Sea Grant (IISG).

The answer to teacher Paul Ritter's question is that many people flush medicine down the toilet, causing pharmaceuticals to turn up in waterways, and in some cases drinking water supplies, across the country. Ritter's response was to develop the Prescription Drug Disposal Program, P²D², which seeks to deter that behavior through education and to provide resources for community collection programs.



Photo courtesy of P²D²

In LaSalle County, Illinois, drop boxes have been placed in police stations where ongoing medicine collections are taking place.

"When I got into this, I didn't expect the success and magnitude of the program," said Ritter, who initially wanted his students to simply research the question. "It just happened."

But Ritter and his colleague, social studies teacher Eric Bohm, realized that that the unexpected growth of the program would require more brainpower and resources. "We're two high school teachers," Ritter said.

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Illinois-Indiana Sea Grant

Two States Caring for One Great Lake

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No bones about it: Easy steps for filleting Asian carp

In the ongoing effort to prevent the invasive Asian carp from entering Lake Michigan and the rest of the Great Lakes, here's one possible solution: "If you can't beat them, eat them."

Boaters and anglers can now look to an IISG-funded instructional video for tips on filleting Asian carp. In the 27-minute video, U.S. Geological Survey fish biologist Duane Chapman tackles the bones in Asian carp fillets, which make them difficult to eat. He shows step-by-step procedures for deboning the fish, as well as how to remove the bones after they are cut and cooked.

According to Pat Charlebois, IISG aquatic invasives specialist, most people are not aware of the great taste and high quality of meat in Asian carp. Anglers often associate Asian carp with common carp, a bottom-feeding fish, and are reluctant to catch and eat them. Rather, Asian carp—a collective term for numerous species, such as bighead and silver carp—feed on microscopic plants and animals that live in the water column so they have much higher quality meat.

"We want people to reduce the number of Asian carp in our waters, and thus reduce their impact on the environment," said Charlebois. "One way to do that is to encourage anglers to eat the fish."

Although you are encouraged to catch and eat the fish downstream of the electric barrier installed in the Chicago Sanitary and Ship Canal, any Asian carp caught in Chicago area waters should be, if possible, frozen in a sealed plastic bag and reported to IISG (847-242-6440), the Illinois Department of Natural Resources (DNR) (618-435-8138 x123), or the Indiana DNR (317-234-3883).

The video, "Flying Fish, Great Dish," produced by the Louisiana State University AgCenter, can be seen in three parts on YouTube and is available on DVD through IISG. For more information or to order a free copy visit www.iiseagrant.org/catalog/ais.

To learn about two new IISG Asian carp publications, turn to page 8.

The HELM

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Sea Grant
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Green infrastructure benefits include cost

In light of climate change predictions that include bigger storm events and more flooding, IISG's Martin Jaffe's conclusion from a state-mandated study of green infrastructure is pretty simple: "It works about as well as conventional infrastructure, and it's cheaper."

The purpose of the Illinois EPA study, required by the 2009 Illinois Green Infrastructure for Clean Water Act, was to examine the standards and costs of green infrastructure as a possible replacement for or supplement to conventional urban stormwater infrastructure (e.g., stormwater sewers and on-site detention and retention ponds). Jaffe, IISG environmental planning specialist, and a team of University of Illinois researchers were awarded a \$300,000 grant to do this research.

Green infrastructure is a sustainable, environmentally-friendly approach to land use planning. Its practices—such as rain gardens, permeable pavements, and green roofs—naturally manage stormwater to improve water quality, reduce flood risk, and increase biodiversity.

"We found that, on average, many of the green infrastructure methods are about as effective as conventional detention ponds in removing total nitrogen and total suspended solids from stormwater runoff," Jaffe said, "while also reducing the rate and volume of stormwater discharged to nearby lakes and streams."

"It also provides a lot of valuable community benefits—more groundwater recharge, increased open space for recreation and habitat, and energy saving by reducing ambient temperatures—not provided by conventional stormwater facilities. Moreover, our economic models show that most green infrastructure is cheaper to install and maintain than conventional stormwater infrastructure over their respective useful lives."

Even though the study assessed green infrastructure practices exclusively in northeastern Illinois, Jaffe accounted for the transferability of each practice so that recommendations can be made throughout the state.

He will finish this project working with IISG Director Brian Miller to develop a dissemination and training plan for the study. According to Jaffe, the purpose of the plan is "to recommend educational materials that are needed to train local



officials in the best green infrastructure practices for urban stormwater management and to determine which local officials ought to be trained."

Jaffe is optimistic about the future of green infrastructure. "Congress has made commitments to using green infrastructure to manage stormwater in federal projects and to promoting its use by municipalities. There should be plenty of opportunities to use these techniques," he said.

Teachers engage in Lake Michigan shipboard science



Workshop participants learn how to operate an ROV (remotely operated vehicle) aboard the W.G. Jackson.

Those aboard the U.S. EPA's *R/V Lake Guardian* for the CO-SEE Great Lakes Shipboard and Shoreline Science workshop got a lock, stock, and barrel experience of Lake Michigan, the last stop for the Great Lakes workshop series.

Departing from Milwaukee, the fifteen teachers and nonformal educators worked alongside scientists and Sea Grant specialists Helen Domske and Jim Lubner throughout the week.

They sampled in open water as well as made stops in Green Bay, Wisconsin; Traverse City, Michigan; and Muskegon, Michigan. The stops gave the educators an opportunity to sample in a variety of environments and also allowed for on-land excursions, such as a naturalist-led walk in Sleeping Bear Dunes and a

tour of the Great Lakes Naval Memorial and Museum.

According to Tomas Höök, a Purdue University faculty member and the workshop's lead scientist, the educators engaged in sampling for larval fish, zooplankton, and benthic invertebrates and helped perform standard measurements on the lake. The samplings, which were logged into an EPA database, will be used by Höök to compare nearshore and offshore productivity.

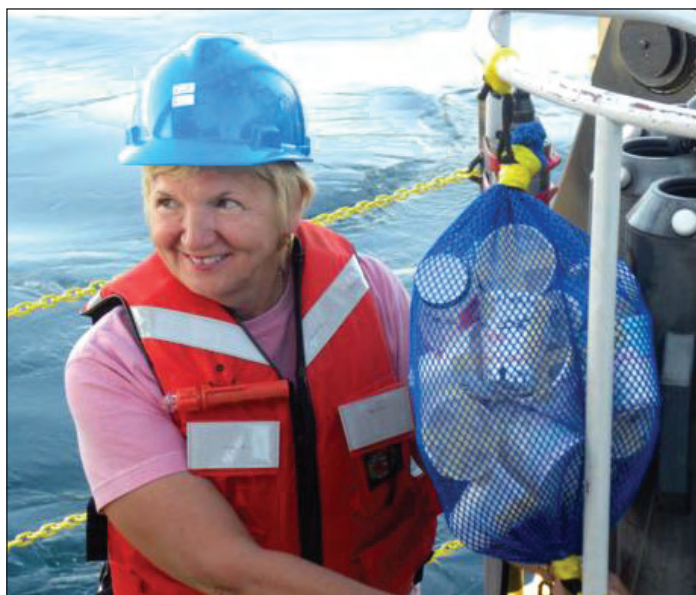
"The teachers were helpful collecting data for

our research," Höök said, "but it was even more exciting to experience their enthusiasm for Great Lakes science."

Höök said the workshop experience encouraged him to reach out to educators more as an audience for his work. He has been in contact with several participants since the workshop.

"The two-way dialogue created between scientists and teachers is a critical part of the workshop," said Robin Goettel, IISG associate director for education and workshop coordinator. "It serves as a vessel for the many impacts of this educational experience."

The hands-on research component of the workshop was supplemented with group activities onboard the vessel. COSEE, the Center for Ocean Sciences Education Excellence, developed a set of Great Lakes literacy principles that served as a foundation for



Helen Domske, New York Sea Grant coastal education specialist, demonstrates the water pressure of Lake Michigan using Styrofoam cups.

the participants throughout the week and for future curriculum plannings. Corresponding ocean literacy principles were also highlighted.

“The workshop is a win-win situation,” said Goettel. “The teachers not only have first-hand experiences to incorporate in their classrooms, but they were also helping scientists do their research onboard.”

COSEE goals for the workshop were to make Great Lakes science more accessible and to increase Great Lakes literacy. The participants voiced that these efforts were a success.

“My awareness of Great Lakes literacy has been expanded 100-fold,” said Goshen, Indiana middle school science teacher Matt Katzer. “The importance of Great Lakes ecology is an essential learning tool for my students, adults, all of us.”

Gwen Bottoli, a fourth grade teacher at Robbinssdale Spanish Immersion School, in Delano, Minnesota said, “I’m now aware of the complexity of the Great Lakes ecosystems and how much I have left to learn! Beyond a doubt, I am privileged to have the opportunity to go on this voyage of a lifetime.”

The week-long workshop was held from July 6-12. COSEE Great Lakes Shipboard and Shoreline



Jim Lubner, Wisconsin Sea Grant marine safety and education specialist, explains the purpose of a Secchi disk, which measures light penetration in water, as well as the proper technique for using one.

Science Workshops are supported by the National Science Foundation and NOAA-Sea Grant. This workshop was conducted in partnership with U.S. EPA Great Lakes National Program Office, which provided the use of the Lake Guardian research vessel.

Photos courtesy of COSEE Great Lakes



Stephanie Crook, a Portage, Indiana high school teacher, provided mentoring to the educators on this trip and was also the official workshop blogger.

IISG, P²D² unite to stop improper medication disposal

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“We know education. Sea Grant brings the science.”

IISG had been combating improper medication disposal for years through their toolkit and workshops when they joined forces with Ritter and P²D². IISG is able to help P²D² by providing outreach and funding, while P²D² serves as another outlet for IISG resources. “Paul wanted information to give out to communities,” said Susan Boehme, IISG coastal sediment specialist. “IISG is able to provide information that is relevant and accurate.”

For example, IISG’s toolkit—*Disposal of Unwanted Medicines: A Resource for Action in Your Community*—provides the necessary information for a community to start up a collection program. That includes case studies, outreach materials, and state laws on medicine disposal.

IISG has also been instrumental in Ritter’s efforts to establish drop boxes in communities for medication collection, providing funding for nine of the 30-50 boxes established nationwide by P²D². In LaSalle County, Illinois, drop boxes have been established in three locations with four more in the works. Thus far, 1,000 pounds of pharmaceuticals have been collected throughout the county.

Furthermore, IISG has provided drop-off boxes for unwanted medicines for several police stations in Illinois. Police station collections allow people to drop off controlled substances, which would otherwise involve complex legal issues.

The latest resource to come out of the symbiotic partnership is a multi-disciplinary service-learning curriculum—*The Medicine Chest*—which is designed to educate students about improper medication disposal and give them the tools to inform their communities. IISG developed it around the desire to distribute Ritter and Bohm’s lesson plans, which serve as the centerpiece of the publication, to a larger audience. “Their impact is immeasurable,” Ritter said of IISG. “They’re involved in so many aspects. I am truly thankful for their help and support.”

Boehme similarly had high praise for Ritter, stressing how important his energy and dedication are to both organizations’ efforts to curb improper medication disposal. “Paul is able to connect directly with communities beyond the reach of IISG,” Boehme said. “We make each other’s programs better.”

For a copy of *The Medicine Chest* or the toolkit, contact Susan White (217-333-9441 or white2@illinois.edu) or download them from the IISG website (www.iiseagrant.org).

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

For more information on P²D², visit www.p2d2program.org.



Photo courtesy of P²D²

Staff Update



IISG and IWRC Share Director

Brian Miller, IISG director, has added to his duties since being appointed interim director of the Illinois Water Resources Center (IWRC). IWRC and IISG have been closely connected over the years. With similar missions—to promote research and outreach related to water in the region—the two organizations share personnel and, frequently, a director.

IWRC is part of a nationwide network of university-based water centers funded by the U.S.

Geological Survey. The program funds graduate student work related to Illinois water resource issues. IWRC also convenes the biennial Illinois Water Conference and co-sponsors the Governor's Conference on Management of the Illinois River. IWRC provides oversight for the U.S. EPA-funded Midwest Technology Assistance Center for Small Public Water Systems. The program participates in the State of Illinois water supply plan task force, assists student groups in promoting water resource information, and collaborates at outreach venues as they occur.



New Program Specialist

Carla Blue has joined the IISG family as program specialist. Carla's time will be split between IISG and IWRC. For IISG, she will be tackling some of the information requests from the National

Sea Grant Office, project reporting, working with the IISG advisory committees, and making sure products get out to IISG partners and advisory groups.

Carla has 20 years of experience as an event and program coordinator. She comes to IISG from the University of Illinois Department of Civil and Environmental Engineering where she coordinates alumni events and activities. Carla also spent several years working at the Waste Management and Research Center (now the Illinois Sustainable Technology Center) coordinating events for pollution prevention programs in Illinois and the Great Lakes.

IISG Impacts: Today and Tomorrow

Did you know that Illinois-Indiana Sea Grant played a key role in the collection of four million medicine pills and four million pounds of ewaste in the Great Lakes region? Did you know that IISG's educational website *Nab the Aquatic Invader!* is featured at the Smithsonian Museum?

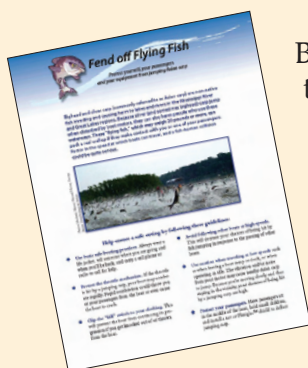
IISG has four new impact statements that describe program actions, success stories, and new projects related to critical coastal issues. The publications—*Sustainable Development*, *Aquatic Invasive Species*, *Medicine Collection Programs*, and *Water Resources*—cover issues from Asian carp to smart growth, as well as water supply and pollution prevention. Learn about IISG's research, outreach and education projects that empower local communities and individuals to sensibly manage southern Lake Michigan natural resources.

To download or order a free copy of these new publications, visit our program page in our Products section.



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Fend off Flying Fish



Bighead and silver carp (aka Asian carp) don't just pose an ecological threat, they pose a safety threat to boaters especially in waters where their numbers are thick. Because Asian carp often jump several feet in the air when disturbed by boat motors, they can harm people who travel in infested waters.

IISG has a new factsheet that provides nine practical safety tips for boating in Asian carp waters that can help you protect yourself and your passengers.

Asian Carp Cuisine

In many parts of the world, Asian carp are known as dinner—these fish have a mild flavor that belies their unfortunate name. So perhaps we can try and eat our way out of the ecological threat they pose. IISG has created a publication that provides a variety of recipes for preparing bighead and silver carp, including Jamaican Jerk Carp, and Silverfin Cakes, as well as smoked and fried Asian carp.



You can find these publications on the IISG website at www.iiseagrant.org/catalog.