

# Seed grant funding helps projects bloom

Just as a gardener hopes that their scattered seeds will eventually bloom into a lush garden, IISG awards development grants, or “seed” grants, to a number of projects in the

hopes that the initiatives will grow into something larger. Here is a look at three of the 16 projects that were funded in 2010:

## Replacing fish meal in hybrid striped bass diets



Fish swim in a Southern Illinois University Carbondale lab where researchers studied the use of ethanol yeast as a fish meal replacement for hybrid striped bass.

Courtesy of Jesse Trushenski

Recently, fish meal has become economically and environmentally unsustainable as a primary protein source for fish farming. This led to a project to search for alternative sources.

Jesse Trushenski, an aquaculture nutritionist with Southern Illinois University Carbondale, studied the use of ethanol yeast as a fish meal replacement in feeds for hybrid striped bass. Trushenski said the yeast is left over from bio-ethanol production, so she sees the idea as a “win-win” solution.

“From an aquaculture perspective, we are always protein hungry. However, the sources we traditionally used to provide protein are not going to meet the industry’s growing demand,” she said. “We are always looking for protein-dense ingredients that we can use in feeds.”

Trushenski said ethanol yeast will not completely replace fish meal, but it can significantly reduce the amount needed. The study showed that fish meal can be reduced as low as 7.5–15 percent in ethanol yeast-based feeds without having negative side effects.

The project was done as a collaboration with Archer Daniels Midland, which is funding further research on the topic now that this project has been completed.

“In Illinois, we raise more than 100,000 pounds of hybrid striped bass each year. More cost-effective feeds can help our aquaculture industry grow. So in a sense, these seed dollars are transitioning into economic development for our region,” Trushenski said, adding that saving money on fish food would greatly cut down on expenses. “Feed can represent 50 percent or more of the cost of production, so anything we can do to help our growers use regional resources to reduce costs is a move in the right direction.”

## Toxic by-products in disinfected drinking water

University of Illinois geneticist Michael Plewa studied how pharmaceuticals that accumulate in drinking water sources can create toxic side effects when the water is disinfected.

The study found that water near hospitals can contain disinfection by-products due to iodinated x-ray contrast media (ICM) that is found in wastewaters from hospitals. ICM is a substance people consume to enhance medical imaging. It is usually excreted within 24 hours, but treatment plants are unable to completely remove it from drinking water.

“These drugs serve as a catalyst for chemical reactions when you use disinfectants, such as chlorine,” Plewa said.

Plewa is not suggesting that we stop disinfecting drinking water, but he said these studies have opened a whole new chapter in exploring how we should do so while protecting the environment and public health. He has submitted a federal grant proposal to continue the research.



## Land use can impact stream fish physiology

U of I biologist Cory Suski said the ever-increasing restoration initiatives in North America propelled him and his co-principal investigator, Zachary Blevins, into studying how land use impacts fish physiology.

“We studied the relationship with fish’s internal biochemistry and the links from land-use patterns,” Suski said. “Ultimately, we hope to understand the implications of conservation and restoration.”

The major finding of this study was that creek chub that live in agricultural watersheds are more tolerant to high temperature spikes, while those that live in forested watersheds are more physiologically impacted by changing temperature. Other than this, the two types of creek chub had very few differences.

“Watersheds that are more forested are cooler and have fewer temperature spikes,” Suski said. “These fish’s functions are not from being born in a different watershed; it is a function of being exposed to different environmental conditions.”

Suski said this information will serve as a foundation for future research on the effects of changing stream ecosystems.



Courtesy of Cory Suski

Shown is an east central Illinois stream where researchers studied creek chub to see how land use impacts fish physiology.

## New seed projects enhance key IISG issues

The latest group of scientists and graduate students awarded IISG seed grant funding represents seven institutions in Illinois and Indiana. In the past three years, IISG has funded 35 development research projects.

The nine new projects cover a range of topics and many relate closely to key concerns that IISG is committed to address. For example, David Wahl of the Illinois Natural History Survey is examining current and historic aquatic animals to assess the impacts of Asian carp on native food webs. Melody Bernot, a Ball State University biologist, is determining the location and persistence of pharmaceuticals in Lake Michigan’s near shore. In the

area of land use planning, Laurent Ahiablame, a Purdue University graduate student, is modeling the effects of low-impact development. Another Purdue researcher, David Ortega, is assessing consumer preferences and demand for fish in the Midwest to provide domestic aquaculture farmers with the tools they need to remain competitive in a global market.

Other projects will address the health of wetlands, urban fish populations, coastal pine species, and aquatic microbial communities.

For more information about IISG-funded research, visit [www.iisgcp.org/research/topics\\_research.html](http://www.iisgcp.org/research/topics_research.html).