



UNIVERSITY OF WISCONSIN SEA GRANT INSTITUTE

CONTACT  
Maira Harrington  
maira@aqua.wisc.edu  
608-263-5371

## Science for the Sustainable Use of Wisconsin's Great Lakes Resources

Wisconsin holds a wealth of water. With nearly 1 million acres of inland lakes and more than 5 million acres of wetlands, Wisconsin ranks among the top in the nation for water resources. There are roughly 6.4 million acres of lakes Michigan and Superior in the state's boundaries and a third of Wisconsinites live in the counties along Lake Michigan. And that is just the influence of water above the ground. Wisconsin has about 1.2 quadrillion gallons of water underground.

It's important to keep this water clean and to use it wisely. The University of Wisconsin Sea Grant Institute supports multidisciplinary research, education and outreach to protect and sustain Wis-

consin's water resources. This highly efficient and cost-effective federal-state program draws from the best of Wisconsin's aquatic scientists and outreach professionals.

Clean water resources are not only necessary for life, they support the economy and a high quality of life. The Great Lakes drive one of the world's largest regional economies, including an annual \$7 billion fishery and a \$16 billion tourism industry. A 2011 analysis concluded that the Great Lakes generate \$62 billion in wages each year and that more than 1.5 million jobs are directly connected to the waterways.

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Asian carp



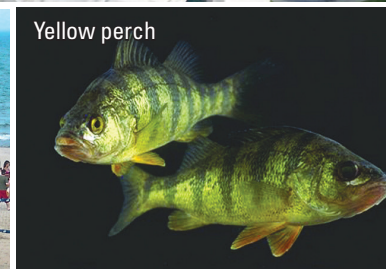
Wetlands



Lake sampling



Beach restoration



Yellow perch



Lake Sturgeon Bowl



## RESEARCH AND OUTREACH IMPACTS

### RESEARCH IMPACTS

- Yellow perch is a staple of Wisconsin's iconic Friday-night fish fry. Great Lakes commercial fishing for yellow perch is all but closed due to depleted stock. In 2011, a Sea Grant researcher was awarded a U.S. patent for his work to encourage perch to spawn out of season. Now the fish are produced through aquaculture operations. One company using the spawning method expects annual profits of \$10.8 million.
- Clean beaches are important for tourism. A Sea Grant researcher has developed a rapid testing method using DNA sequencing of sand and water samples to clean up beaches and enhance recreational tourism. This research led to a beach improvement project at Milwaukee's Bradford Beach for \$1.5 million in combined public-private money to address contaminant sources. A summer's day at Bradford Beach now draws hundreds to the Lake Michigan shore who would have otherwise stayed away, and it has revitalized beach-related businesses. Bradford Beach has earned a coveted national Blue Wave certification since 2008 from the Clean Beaches Coalition for its adherence to environmental ethics.
- Wisconsin Sea Grant has contributed to a robust commercial wild rice industry by aiding in the restoration of the wild population, which is threatened by inbreeding and habitat degradation. Sea Grant researchers mapped the genetic structure of wild rice to preserve healthy traits and guide management practices. The 2011 estimated national commercial wild rice harvest is 40 million pounds, worth \$15-25 million. In Wisconsin, the harvest in 2009 was 115,000 pounds.
- A risk assessment model developed by Sea Grant researchers is protecting human health and the viability of wild fish populations. Adopted by the World Health Organization, the model assesses toxicity from exposure to dioxins.

### OUTREACH AND EDUCATION IMPACTS

- More than 180 non-native species now call the Great Lakes home, causing economic and environmental disruption and threatening a \$7 billion annual fishery. Sea Grant employs many methods to counter the effects of invasive species, including the work of one staff member who is integral to the battle to keep Asian carp out of the lakes.
- Marinas and related industries and services contribute more than \$2.7 billion to Wisconsin's economy. The voluntary, industry-led Clean Marina Program ensures clean boating practices that benefit the environment and marinas alike. The Wisconsin Marina Association manages the program and Sea Grant provides training and technical assistance to make the program successful. Sea Grant has certified 17 state marinas to-date.
- Wisconsin is proud of its National Ocean Sciences Bowl champions, including the students at Marshfield High School who, for four years running, have won the competition. Their rigorous preparation for the national competition, besting hundred of ocean-based students, is proof that Sea Grant investments in marine-science curriculum better prepare young people for scientific careers.
- A powerful decision-support tool known as the Wisconsin Coastal Atlas is helping communities along Wisconsin's Great Lakes coasts. Planners and emergency-response officials are faced with daily decisions about how to manage land or plan for possible flooding or other disasters. The atlas developed by Sea Grant offers online data through a geo-portal that makes planning and emergency response easier.