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GREAT LAKES PROGRAMS AT SHEDD AQUARIUM

“Shedd Aquarium’s commitment to conservation starts right here, in our own backyard. Shedd is uniquely positioned among Great Lakes organizations to inspire change across multiple platforms.”

Ted Beattie, President/CEO, John G. Shedd Aquarium

Shedd Aquarium’s Great Lakes Program

Shedd is committed to protecting the Great Lakes by conducting science and research through collaborative efforts with other Great Lakes organizations, facilitating work between Great Lakes leaders that will develop solutions for tomorrow’s conservation challenges, and offering immersive learning programs and outreach for all ages. Shedd is an official Observer of the [Great Lakes Commission](#) and past representative on [U.S. Commission on Ocean Policy](#) representing the Great Lakes.

For more information about Great Lakes conservation at Shedd, please visit www.sheddaquarium.org/greatlakes or join the conversation online through Shedd’s Great Lakes [Twitter](#) and [Facebook](#) pages.

Numbers Tell the Story.

The people and animals of the Great Lakes region make up **a rich living system** that stretches from the urban edges of Lake Ontario to the wild western shores of Lake Superior. The lakes drive vibrant economies that extend far beyond the Midwest, rippling throughout the shipping, agriculture, tourism, recreation and manufacturing industries.

- The Great Lakes boast **more than 10,000 miles of coastline** and **20 percent of the world’s surface freshwater** supply. More than **42 million people** in the United States and Canada depend on the lakes for drinking water.
- The lakes are the world’s largest freshwater ecosystem and support **more than 200 globally rare plants and animals**.
- If the Great Lakes region was a nation, its Gross Domestic Product (GDP) would be the fourth largest in the world.

The lakes give so much to us, but **enormous conservation challenges lie beneath the surface.**

- *How do we protect the lakes from invasive species?* More than **180 invasive species** have become established in the Great Lakes basin. New non-native species are introduced as often as **once every 8 months.**
- *How do we prevent the introduction of [Asian carp](#) to the lakes?* These voracious filter feeders **threaten a \$7 billion fishery** as well as the integrity of Great Lakes ecosystems.
- *How do we preserve the integrity of our region's ecosystems?* The lakes are home to **more than 200 globally rare species**, but many are at risk from habitat loss, pollution, climate change, and out-competition from introduced species.
- *How can we protect Great Lakes habitat?* Beaches, wetlands, and other critical areas are at risk. In some areas, **more than 90 percent of wetlands are gone.** The loss impacts wildlife and destroys natural flood controls for human communities. In the future, lower lake levels could dry up many of the important wetlands that remain.

Key Issue Areas in Great Lakes Conservation

Shedd Aquarium focuses on **four issues of concern** that affect everyone and everything in the Great Lakes region, from the smallest freshwater mussel to the largest city on the shoreline:

Issue: Ecological Separation: Physical separation of habitats to prohibit aquatic life from moving between the Great Lakes and other watersheds.

Shedd uses its trusted voice to build public understanding of ecological separation by presenting a comprehensive view of the issues and potential solutions through learning programs, media outreach, and collaboration with other Great Lakes organizations.

Issue: Invasive Species: Great Lakes ecosystems are threatened by the introduction of non-native species that have the potential to kill or outcompete native wildlife.

Shedd contributes to research that leads to solutions for invasive species issues by studying nonnative species, building research partnerships, and sharing invasive species prevention messages with the public.

- Shedd studies the biology of the non-native weatherfish and the invasive round goby to inform management recommendations.
- Shedd supports the [University of Notre Dame](#) in a [Great Lakes Restoration Initiative](#) program to understand whether baitfish can be a vector for Asian carp introductions. Beginning in 2013, Shedd will educate bait shops and recreational fishers about how to prevent the accidental spread of Asian carp by properly disposing of unwanted bait.
- Shedd supports short and long-term restoration efforts on Chicago's Northerly Island, providing the aquarium's biodiversity data to guide aquatic habitat projects that can attract endangered and native species.
- Through its Great Lakes outreach programs, **Shedd has held one-on-one conversations with more than 75,000 people** about how to stop the spread of [invasive species](#).

Issue: Native Species: Of the more than 1,000 species living in or near the lakes, over 200 are globally rare.

Shedd protects and promotes native Great Lakes wildlife by studying native species to help prevent new and escalated threatened or endangered listings. Shedd also creates meaningful experiences for people to connect with and celebrate native Great Lakes species.



- Shedd’s scientists are developing a state-wide distribution map of Illinois’ threatened and endangered fishes that will help identify gaps and prioritize areas for conservation and regional aquatic management plans.
- Shedd is conducting research to understand why breeding migrations have reappeared for some populations of lake whitefish in Lake Michigan. Findings for this species—the most commercially important native fish in the Great Lakes—will inform management strategies for other migratory species in and beyond the Great Lakes.
- In order to understand how dam removal impacts local fish populations, Shedd works with university researchers and government agencies to study species composition and habitat change on Wisconsin’s Duck Creek, where two dams were removed in 2012.
- Each year, 2.1 million guests can meet more than 60 native and invasive [Great Lakes species](#) in Shedd’s Waters of the World galleries, Great Lakes Outreach Exhibit, and Animal Programs encounters.
- Shedd’s Learning Programs create opportunities for children, teens, and teachers to celebrate local wildlife and engage with conservation in their own backyards.

Issue: Habitat Restoration: Areas that provide critical habitat and ecosystem services are under pressure from development, pollution, and climate change.

Shedd accelerates habitat restoration to support Great Lakes wildlife by lending its expertise and resources to support restoration projects and collaborations.



- Since 2002, volunteers with Shedd’s Great Lakes program have removed trash from 12th Street Beach during the Alliance for the Great Lakes’ [Adopt-a-Beach](#)[™] program. Since 2010, **more than 1,000 volunteers have cleared more than 1,000 pounds of debris.**
- Shedd brings volunteer teams to restoration sites along the shorelines of Lake Michigan to improve habitat for fish and wildlife.
- Beginning in spring 2013, Shedd will partner with the National Parks Service to restore critical habitat at [Indiana Dunes National Lakeshore.](#)
- Shedd supports short and long-term restoration efforts on Chicago’s Northerly Island, providing the aquarium’s biodiversity data to guide aquatic habitat projects that can attract endangered and native species.
- As part of the [Illinois RiverWatch Network](#), Shedd has adopted several sites where staff members, volunteer and program participants gather data on macroinvertebrate populations to help assess stream health.

Great Lakes Conservation in Action at Shedd

Shedd Aquarium is committed to protecting the Great Lakes by conducting **science and research** with our partners, offering immersive **learning programs and outreach** for all ages, and **facilitating work** between Great Lakes leaders to develop solutions for conservation challenges.

Advancing Great Lakes Conservation Science

At Shedd, Great Lakes science advances the understanding of aquatic wildlife and habitats of local waters in order to develop effective management strategies.



Great Lakes Fisheries

- In 2008, Shedd partnered with [Northwestern University](#) and Monterey Bay Aquarium to assess the sustainability of economically significant Great Lakes fisheries.
- Shedd is updating the sustainability assessments of yellow perch, lake whitefish, lake trout, rainbow smelt and walleye, which will be presented in 2013. Shedd also assessed closed-system farmed yellow perch.
- The information will update sustainable seafood awareness programs, including Shedd's popular *Right Bite* [sustainable seafood wallet guides](#).
 - *Partners:* [David Suzuki Foundation](#), [Monterey Bay Aquarium](#)

Illinois Endangered and Threatened Aquatic Species List

- Illinois lists **31 species of fish as endangered or threatened** in the state.
- Shedd is supporting the [Endangered Species Protection Board](#) of the [Illinois Department of Natural Resources](#) as it reviews and updates the list. Shedd scientists are developing a state-wide distribution map of Illinois' threatened and endangered fishes that will help identify gaps and prioritize areas for conservation and regional aquatic management plans.
- Shedd will also study the population dynamics of rare fishes and the roles that habitat destruction, climate change, and other factors might play in their distribution.
 - *Partners:* [Illinois Endangered Species Protection Board](#), [Illinois Department of Natural Resources](#), [U.S. Army Corps of Engineers](#), [Illinois Natural History Survey](#)

Introduced Species

- Shedd studies the non-native [weatherfish](#), a species that arrived in Illinois through the aquarium pet trade, to understand how they might affect local wildlife and habitats. Shedd's research will inform policy and management recommendations to control weatherfish populations and prevent their future spread. Projects include:
 - Surveys of local waters to understand where the weatherfish population has spread
 - Studies of weatherfish diets to find out if they are competing with or eating native species
 - Reproductive research to learn how rapidly weatherfish populations might increase.
 - *Partners:* [Loyola University](#), [Western Illinois University](#)
- Shedd is partnering with Loyola University in an on-site study at the aquarium to monitor the feeding behaviors of



the **round goby**, a widespread invasive species in the Great Lakes.

- *Partners:* [Illinois Department of Natural Resources](#), [Forest Preserve District of Will County](#), [Loyola University](#)



Reemergence of Lake Whitefish Migrations

- Much remains unknown about fish migration in the Great Lakes, making it difficult for policy makers to understand how management plans on land could impact migratory routes in the water.
- Shedd is partnering with the Center for Limnology at the University of Wisconsin-Madison to answer key questions about the reemergence of breeding migrations in lake whitefish.
- Lake whitefish is the most commercially important native fish in the Great Lakes. In the early 20th century, breeding migrations declined as human activity impacted local habitats. Understanding why the migrations have reemerged will inform conservation and management strategies of other migratory species in and beyond the Great Lakes.
- *Partners:* [Center for Limnology at the University of Wisconsin-Madison](#), [Wisconsin Department of Natural Resources](#), [Michigan Department of Natural Resources](#), [U.S. Geological Survey-Great Lakes Science Center](#), [University of Michigan Museum of Zoology](#)

Dam Removal and Migratory Fish Recruitment

- Dam removal is a hot topic with economic, political, and ecological ramifications.
- Shedd will study the effects of dam removals along Duck Creek, Wis., on Great Lakes migratory fishes. Findings will inform management decisions by helping stakeholders understand how quickly local fish populations begin to use new habitats after dams are removed.
- *Partners:* [Center for Limnology at the University of Wisconsin-Madison](#), [Wisconsin Department of Natural Resources](#)

Building Great Lakes Connections

Through hands-on learning experiences, immersive exhibits and public awareness campaigns, Shedd Aquarium connects diverse audiences to Great Lakes animals and conservation issues:

Inspiring Aquarium Guests

Each year, Shedd's 2.1 million guests have opportunities to explore native and non-native species in the Local Waters gallery, where they can receive tips on how Great Lakes communities can help keep invasive species out of local waters. Click here for a full list of [Great Lakes Species](#) at Shedd.

- Shedd's *Invasive Species* exhibit marked the first time in Chicago that the public could get eye-to-eye with Asian carp, round gobies, and many other non-native plants and animals.

Great Lakes Animal Facts

- The largest and longest-living fish in the Great Lakes, lake sturgeon were swimming around when dinosaurs walked the earth. Their populations are slowly making a comeback in the region.
- Male pumpkinseed sunfish build nests for their young and protect hatchlings in the days after their birth, carrying fry back to the nest in their mouths if the youngsters wander.

- Walleyes have a light-gathering layer in their eyes that lets them see in rough water and dark conditions. Their eyes reflect white light, and this “eyeshine” gives them their common name.
- The last living family of an ancient order of fishes, bowfin can use their gas bladders to breathe air. Farmers in Mississippi reported finding [live bowfin](#) in their muddy fields after floodwaters receded.
- The nostrils of common snapping turtles are found at the tips of their noses and are used like snorkels while the turtles wait for prey beneath the water’s surface.
- American bullfrogs are the largest frogs in North America. These voracious amphibians will eat almost anything they can swallow, including other frogs and small mammals.

Developing Great Lakes Conservation Leaders

Shedd offers [numerous learning experiences](#) that connect diverse audiences to Great Lakes animals and issues. Since 2005, Shedd’s education specialists have engaged **more than 26,000 participant contacts** in Great Lakes learning programs:

- Great Lakes Learning Labs
- High School Lake Ecology
- IL virtual school
- Shedd Explorers: Summer Road Trip
- Shedd Stewards
- Submerged in Science online program
- Summer Worlds Tour camp
- Teacher exhibit guides
- Teen Work-Study programs



Program Profile: High School Lake Ecology (HSLE)

[HSLE](#) began as a small pilot program in 2006. Since then, it has evolved into a one-of-a-kind experience for teens who love to explore. Participants on this extended field experience challenge themselves to experience nature in new ways, whether they’re kayaking in Lake Superior or setting up camp on the Apostle Islands. Along the way, teens explore the local, regional and even global connectivity of plant, animal and human systems. The program is designed to be accessible for all teens, whether they have a suite of camping gear at home or are just getting started.

○ In their own words:

“One of the best parts of the trip was meeting a lot of new people with different personalities and finding a way to work together. I really think I applied a lot of the skills I learned...in my day-to-day life. I’m glad I was able to participate in this program because I got to do something I may never have had the opportunity to [do] otherwise.” –2012 participant

Program Profile: Summer Road Trip

In this program, middle-school students use Shedd as a home base for weeklong adventures in the Great Lakes. Each day brings a new destination, new outdoor activities, and new environmental investigations that open young minds to the connections between the lakes and their lives. The week culminates with an overnight stay at the aquarium.

○ In their own words:

“We learned so much that I want to know more. We learned that being outside and getting dirty can be fun.” –2012 participant

“I’m going to try all of the things that we did this week with my family.” –2012 participant

Supporting Great Lakes Seafood

When people think about seafood, images of fishing boats along the Atlantic or Pacific coasts often come to mind. Yet the Midwest is home to several Great Lakes commercial fisheries and a thriving aquaculture industry, which offer distinctive flavors found nowhere else. Shedd’s sustainable seafood program, [Right Bite](#), works to support strong sustainable fisheries in the Great Lakes region:

Supporting Great Lakes Research

Shedd works locally to protect its own backyard – the Great Lakes, and issues related to fisheries in the region. *Right Bite* facilitates cutting-edge sustainability assessments of Great Lakes fisheries. In 2008, these assessments determined that yellow perch and trap net-caught lake whitefish are best choices for sustainability; walleye and yellow perch are good alternatives. Shedd expects to have the new sustainability status of the fisheries available for public awareness efforts by 2013.

Promoting Sustainable Local Fish

Right Bite staff has visited several regional fish farms and regularly features their products at Shedd events. Sustainably farmed paddlefish caviar (from Big Fish Farms in Bellevue, Ky., and farmed rainbow trout (from Rushing Waters Fisheries in Palmyra, Wis.) are both staples of Shedd special events.



Tackling Asian Carp

Shedd is exploring the idea of eating Asian carp, an invasive species, to help control its population. In July 2012, *Right Bite* worked with the Illinois Department of Natural Resources and Dirk’s Fish & Gourmet Shop [to offer Asian carp burgers](#) at the Taste of Chicago. While many federal, state and international agencies and organizations continue working towards a permanent solution for this complex issue, creating a Midwest carp market is one way to address the current ecological conditions that we face in our region.

Great Lakes Collaborations

In order to develop robust conservation programs, Shedd Aquarium has built relationships with many research partners, government agencies, nonprofits and other organizations that are committed to supporting healthy Great Lakes. Current partners, supporters, and friends include:

Education Organizations

[COSEE Great Lakes](#)

[Illinois Virtual School](#)

[Wilderness Classroom](#)

[Wilderness Inquiry](#)



Government agencies

[Asian Carp Regional Coordinating Council](#)
[Chicago Park District](#)
[Council on Environmental Quality](#)
[Forest Preserve District of Cook County](#)
[Forest Preserve District of Will County](#)
[Illinois Department of Natural Resources](#)
[Illinois Endangered Species Protection Board](#)
[McHenry County Conservation District](#)
[Metropolitan Water Reclamation District of Greater Chicago](#)
[Michigan Department of Natural Resources](#)
[National Parks Service](#)
[U. S. Army Corps of Engineers](#)
[U.S. Environmental Protection Agency](#)
[Wisconsin Department of Natural Resources](#)

Nonprofit organizations

[Alliance for the Great Lakes](#)
[David Suzuki Foundation](#)
[Great Lakes and St. Lawrence Cities Initiative](#)
[Metropolitan Water Reclamation District of Greater Chicago](#)
[Monterey Bay Aquarium](#)
[National Parks Conservation Association](#)
[Openlands](#)

Research institutions

[Center for Limnology, University of Wisconsin-Madison](#)
[Illinois Natural History Survey](#)
[Illinois-Indiana Sea Grant](#)
[Loyola University](#)
[Midwest Invasive Species Identification Network, Michigan State University](#)
[National Great Rivers Research and Education Center](#)
[U.S. Geological Survey-Great Lakes Science Center](#)
[University of Michigan Museum of Zoology](#)
[Western Illinois University](#)
[Wisconsin Aquatic Technology and Environmental Research \(WATER\) Institute – University of Wisconsin-Milwaukee](#)

Great Lakes Experts at Shedd

Roger Germann

Executive Vice President, Great Lakes & Sustainability, External Affairs, Communications & PR

Roger Germann is a member of the executive leadership team and oversees the aquarium's governmental affairs, communications, Great Lakes conservation initiatives and sustainability programs. Roger works closely with federal, state and local government officials and policy

influencers on issues ranging from invasive species, to oil spill-related wildlife rescue and rehabilitation, to ocean policy and Great Lakes conservation. A recognized zoological and museum industry leader, he serves as an aquarium spokesperson on major topics, including Great Lakes. He earned his bachelor's degree in communications from the University of Illinois-Chicago.

Michelle Parker

Vice President, Great Lakes and Sustainability

Michelle Parker oversees Shedd's Great Lakes program, as well as *Right Bite*, Shedd's award-winning sustainable seafood program, and sustainability efforts at the aquarium. Michelle guides strategic planning for Shedd to make meaningful contributions in Great Lakes science, education and conservation. She is passionate about Great Lakes animals and serves as a Shedd spokesperson on regional wildlife and habitat issues. A respected member of the sustainability and sustainable seafood movements, Michelle served on the Steering Committee for the Conservation Alliance for Seafood Solutions and as the elected Chair of the Association for Zoos and Aquarium's Green Scientific Advisory Committee. Before joining Shedd, Michelle worked closely with scientists worldwide to develop volunteer-based research expeditions for the international non-profit, Earthwatch Institute. Michelle graduated from the University of Wisconsin-Madison with a degree in Conservation and holds a Masters of Zoology from Miami University of Ohio.

Jim Robinett

Senior Vice President, External and Regulatory Affairs

Jim Robinett works to form partnerships between Shedd and individuals or organizations involved with local conservation efforts. A Great Lakes fish and environment expert, Jim's expertise includes Asian Carp and other aquatic invasive species. Jim also monitors and develops animal related legislation and regulation relevant to Shedd Aquarium's work. As the external liaison to the Association of Zoos and Aquariums, Mr. Robinett is Marine Mammal TAG Chair and former Accreditation Commissioner. He also serves as the liaison to the Alliance of Marine Mammal Parks and Aquariums where he is Co-Chair of the Animal Management Committee, and Alliance representative to the American Veterinary Medicine Association's Aquatic Veterinary Medicine Committee.

Chuck Knapp, Ph.D.

Vice President of Conservation & Research, Louis Family Conservation Chair, Daniel P. Haerther Center for Conservation and Research

Dr. Knapp develops and implements strategies to increase the positive impact of Shedd's field-based conservation and on-site research programs. Dr. Knapp's extensive research has taken him to the Bahamas, Costa Rica, and Dominica to study the ecology, and implement conservation initiatives for endangered iguanas. Dr. Knapp also studies the reproductive biology and trophic ecology of the nonindigenous weatherfish in Illinois, as well as assessing aquatic biodiversity in Guyana, South America. Dr. Knapp has taught and guest lectured at the University of Florida on topics such as research techniques, tropical wildlife, and conservation biology. Dr. Knapp received his Ph.D. in Wildlife Ecology and Conservation at the University of Florida.

Allen LaPointe

Vice President, Environmental Quality

Allen LaPointe is responsible for maintaining and monitoring all animal habitats and environments at Shedd. In addition to his work at the aquarium, La Pointe was recently appointed to Lt. Governor Sheila Simon's Science Advisory Committee – an expert panel that will assist Simon in her efforts to

protect Illinois' rivers from potential threats and reduce flood damages. Allen is also a member of the American Chemical Society and on the Aquality Board of Directors. He received his bachelor of science degree in aquatic zoology at Southern Illinois University and his M.B.A. at the University of Phoenix.

Phillip Willink, Ph.D.

Senior Research Biologist

Phil Willink joined Shedd in 2012 as Senior Research Biologist for the aquarium's Daniel P. Haerther Center for Conservation and Research, leading Shedd's efforts to develop a comprehensive evaluation of the state's list of threatened and endangered species through on-the-ground population assessments. Dr. Willink has more than 20 years of experience in research, teaching, and global expeditions studying fish biodiversity as well as endangered and invasive species. His work includes studies on the Great Lakes, examining the genetics of invasive species and the impact of development and invasive species on native fish populations, as well as a project to publish a field guide of Chicago lakefront fishes. Dr. Willink holds a doctorate in ecology and evolutionary biology from the University of Michigan.

Solomon David, Ph.D.

Postdoctoral Research Associate

Solomon David joined Shedd in 2012 as a postdoctoral research associate in the Daniel .P. Haerther Center for Conservation and Research. His work focuses on migratory patterns of near shore fishes in Lake Michigan and the importance these migrations play in the Great Lakes ecosystem. Dr. David's work is part of a joint position between Shedd and the University of Wisconsin-Madison Center for Limnology. Dr. David comes to Shedd from a postdoctoral research fellowship at the University of Michigan's School of Natural Resources & Environment (U-M SNRE) where he studied aquatic conservation ecology and sustainable aquaculture. He received his M.S. and Ph.D. from U-M SNRE studying conservation ecology of Great Lakes fishes, including projects focused on lake trout, Chinook salmon, and the spotted gar.

Sam Bugg

Coordinator, Great Lakes and Sustainability

Sam Bugg oversees Shedd's community engagement programs for Great Lakes and sustainable seafood, leading volunteer restoration teams, writing about sustainable seafood issues, and exploring Great Lakes habitats with high school students. Sam is a charismatic spokesperson on Great Lakes issues and is passionate about sparking a love for the lakes in others. Prior to arriving at Shedd, Sam worked in water compliance and public communications for an Ohio environmental consulting firm. Sam received a Masters of Environmental Science in 2008 with a concentration in Public Information from Miami University of Ohio.

Kurt Hettiger

Senior Aquarist

Kurt Hettiger is the Senior Aquarist for the local waters exhibit at Shedd Aquarium. An expert on Asian carp and Great Lakes fish, Kurt assists federal and state agencies with the growing invasive species issue. At the aquarium, Kurt also oversees the health, care and general husbandry of fish and reptiles found in North America. Kurt is a River Watch monitoring leader, member of the North America Native Fish Association and the American Fisheries Society, and a graduate of the University of Wisconsin-Stevens Point, where he received a degree in fisheries biology.

Eve Barrs***Aquarist***

Eve Barrs is an aquarist on the Quarantine Team in the Fishes Department at Shedd Aquarium where she implements her knowledge of freshwater fish husbandry to the native species arriving into the building. Eve teaches the public about preventing the spread of invasive species by travelling with Shedd's Great Lakes Programs to boat and fishing shows. In partnership with Shedd's Education Department, Eve teaches a Great Lakes fishes course, and explores with both students and teachers during freshwater ecology fieldtrips as she teaches them how to seine for fish and collect aquatic invertebrates. At the aquarium, Eve is a River Watch leader, a member of Shedd's Sustainability Engagement and Awareness Team, and a member of the North American Native Fish Association. She earned her degree in Zoology specializing in Aquaculture from Southern Illinois University, Carbondale.