

TEACHING WITH LAKE SUPERIOR CONFERENCE



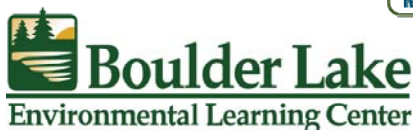
Great Lakes Aquarium

FEBRUARY 11

9AM - 4PM



NATURE AS A RESOURCE





★ Conference sessions take place in the lobby (1st floor); Board Room (1st floor) and Discovery Center classrooms—Water, Wind and Sun (2nd floor)



Light breakfast served in lobby (coffee, fruit, cinnamon rolls)

Lunch served in lobby (sandwiches, soup and blueberry bars)

Water fountains and sinks available on each level and in some session rooms







Snacks available in each session room in the afternoon

Additional snacks and beverages available for purchase in the Explorer's Cove Gift Shop (1st floor)



SCHEDULE



Registration Open 8:15	Water Classroom	Wind Classroom	Sun Classroom	Board Room	Lobby
WELCOME!					
8:40 – 8:55					
9:00 - 10:00 Session 1	Flooded: Using data to understand a changing Lake Superior	Leave the teaching to the birds	Discover the Smallest Life in the Great Lakes	See the Forest for the Tools: Traditional Technologies 	
10:15 -11:15 Session 2	Flooded: Using data to understand a changing Lake Superior	Taking flight with the birds: from classroom to field	Is your Lake Healthy? 	See the Forest for the Tools: Traditional Technologies 	
11:15–12:10					
Lunch			Explore		
12:15 - 1:15 Session 3	Capturing the Story of our Place (Elementary)	Rock Stories	Is your Lake Healthy? 	The Big Lake's Weather Challenges	Behind The Scenes Tour GLA Staff Grades 3-12
1:30 - 2:30 Session 4	Capturing the Story of our Place (Middle/High)	Lake Superior Rocks	Using school yard trees to teach carbon cycle and sequestration 	The Big Lake's Weather Challenges	Water Stories in the GeoDome
2:45–3:45 Session 5	Lake Superior 101	PANEL: Innovations in material re-use and natural resource modifications	Using school yard trees to teach carbon cycle and sequestration 		Water Stories in the GeoDome
4:00					
Please turn in evaluations!					



= Prepare to be Outside

Pre-K-5th Curriculum

6-12th Curriculum

Relevant to all ages

SESSION 1 — 9:00-10:00

Discover the Smallest Life in the Greatest Lake (Grades K-12)

Sun Room

Marte Thabes Kitson, Minnesota Sea Grant; Elizabeth Alexson, Natural Resources Research Institute; Tom Hollenhorst, Environmental Protection Agency; Michelle Gutsch, Environmental Protection Agency

Although it may be the three quadrillion gallons of water in Lake Superior that takes your breath away, it's the small things that form the base of Superior's food web. Participants in this session will learn about diatoms and other common plankton - the flora and the fauna - found in Lake Superior through hands-on familiarization with a plankton kit, complete with plankton net, microscope and camera. The kit, originally designed for detecting harmful algal blooms, will be available for checkout through Minnesota Sea Grant after the workshop.

Flooded: Using Data to Understand a Changing Lake Superior (Grades 6-12) **Water Room**

Deanna Erickson, Education Coordinator, Lake Superior National Estuarine Research Reserve

Did you wake up last July during a thunderstorm and the next morning see images of flooded Wisconsin rivers in the news? Floods like these could have a big impact on the Lake Superior of the future. Take a look at play-by-play data from the National Oceanic and Atmospheric Administration, National Park Service and US Geological Survey to help you and your students make sense of big picture impacts to our watershed and our communities.

See the Forest for the Tools: Traditional Technologies (Grades 6-10)



Board Room

Marne Kaeske, Cultural Preservation Specialist/Education and Outreach, 1854 Treaty Authority

The landscape in Northeastern Minnesota has always provided everything that people needed to survive. *Traditional ecological knowledge* shares a wealth of technologies used in traditional harvest. The virtues of wood from different tree species deliver an opportunity for place-based learning; bark, fibers, sap and wood provide tools needed for subsistence fishing, hunting and gathering. Applications to natural resource management today, such as climate change and invasive species, allow us to maintain our cultural heritage – by caring for the landscape that cares for us.

Leave the Teaching to the Birds (Grades preK-12)

Wind Room

Janelle Long, Executive Director, Hawk Ridge Bird Observatory

Margie Menzies, Hawk Ridge Bird Observatory

Birds have countless lessons to teach us! Join Hawk Ridge to learn about a wide variety of fun birding activities, field trips, education resources, volunteer opportunities, and tools available for the classroom, school forest, and beyond! Hawk Ridge Bird Observatory is helping to protect birds in the Western Lake Superior Region through research, education, and stewardship. Thousands of students of all ages have participated in education programs offered at schools and Hawk Ridge Nature Reserve.

SESSION 2 — 10:15-11:15

Is Your Lake Healthy? (Grades K-5)



Peter Harris, Science and Research Coordinator, Wolf Ridge Environmental Learning Center

While a lake can't stick its tongue out and say "ahhh," scientists can give a lake or stream an exam. Join Peter Harris in exploring the chemical, physical and biological conditions of local aquatic ecosystems. Peter is responsible for incorporating citizen science projects into the curriculum at Wolf Ridge Environmental Learning Center. We will use the Wolf Ridge ELC Stream Study and Lake Study curriculum to explore the health of the Lake Superior Aquarium's aquatic ecosystems. Try out a variety of different water sampling tests along with using the TRACKER digital data sheet to get an immediate analysis of the health of the lake. Learn and share information on water quality citizen science projects available to you and your students.

Flooded: Using Data to Understand a Changing Lake Superior (Grades 6-12) **Water Room**

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Taking flight with the Birds: From Classroom to Field (Grades preK-12) **Wind Room**

Janelle Long, Executive Director, Hawk Ridge Bird Observatory

Margie Menzies, Hawk Ridge Bird Observatory

Birds are everywhere and provide a great connection to nature-based learning. Step outside with Hawk Ridge in this exciting hands-on session to learn about birding and how to engage your students with examples of fun, educational activities. Basic tools and topics will range from using binoculars, ID techniques, behaviors, and adaptations. Hawk Ridge Bird Observatory is helping to protect birds in the Western Lake Superior Region through research, education, and stewardship. Thousands of students of all ages have participated in education programs offered at schools and Hawk Ridge Nature Reserve.

See the Forest for the Tools: Traditional Technologies (Grades 6-10) **Board Room**

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SESSION 3 — 12:15-1:15

16 Stones. 16 Stories. (Grades 6-12)

Wind Room

Dr. Andy Breckenridge, Associate Professor of Geology, University of Wisconsin - Superior

Every stone tells a story. Explore a collection of 16 different stones from Lake Superior, plus others from the greater area. We'll fit these into the larger narrative of Earth's history, from the evolution of photosynthesis to the industrial age. This spring, UWS introductory geology students will create rock collections to provide each participant a reference suite of local rocks for their classroom.

Is Your Lake Healthy? (Grades 6-8)



Sun Room

Peter Harris, Science and Research Coordinator, Wolf Ridge Environmental Learning Center

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Behind the Scenes Tour (Grades 3-12)

Meet in Lobby

Sarah Erickson, Education Director, Great Lakes Aquarium

Join an Aquarium educator to see the science behind keeping our animal collection happy, healthy, and in clean water. This tour will stop in the kitchen, dive room, life support, and holding! This is a sample of a class available to 3rd-12th graders on Aquarium field trips.

Capturing the story of our place (Grades K-5)

Water Room

Joe Walewski, Director of Naturalist Training, Wolf Ridge ELC

As a Wolf Ridge Naturalist since 1988 and author of *Lichens of the North Woods* (2007) and *Ferns of the North Woods* (2016), Joe Walewski has observed and documented the story of Lake Superior's North Shore with notebook, camera, and collection bags. His most recent project - begun Dec 31, 2015 - required him to explore internet-based tools including iNaturalist and the world of blogging. You will learn about a variety of ways to engage students in the world of nature journaling.

The Big Lake's Weather Challenges (Grade 6-12)

Board Room

Carol Christenson, Warning Coordination Meteorologist, National Weather Service

Lake Superior gives meteorologists forecasting challenges. Learn how the lake affects our weather and how you can learn more about weather forecasting and other factors that affect our daily and long term weather. We will also talk about how Lake Superior how climate change could affect Lake Superior. If time, we will also demonstrate ways to measure the weather.

SESSION 4 — 1:30-2:30

Water Stories in the GeoDome (Grades K-8)

Lobby

Marc Seigar, Director, and Jim Rock, Program Director, UMD Alworth Planetarium

Join Jim and Marc inside UMD's GeoDome Theater, the traveling planetarium. We will explore the Earth and its waters, the Great Lakes of North America and the oceans of the world. We will take you on a journey to Mars, where scientists believe that water once flowed freely, just like it does on Earth.

Capturing the story of our place (Grades 6-12)

Water Room

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Lake Superior Rocks – (Grades 1-6)

Wind Room

Emma Pardini, Educator, Great Lakes Aquarium; Megan Allen, Partners in Education (PIE) Coordinator

Explore the free teaching kits, equipment and curriculum of Great Lakes Aquarium's Teacher Resource Center by participating in one of our favorite lessons. Rock out with our "Geo-theater" to discover the story behind the formation of Lake Superior. This kit brings rocks alive as you move to the rock cycle and become a rock picker to ID local rock samples. This session is a demonstration of a lesson available Spring 2017 as a free outreach lesson for 3rd-5th graders in Twin Ports schools through the PIE Program.

Using School Yard Trees to Teach Carbon Cycle and Sequestration (Grades 6-12) **Sun Room**

John Geissler, Program Director and Nick Wagner, Intern, Boulder Lake Environmental Learning Center

We will start outside with a quick introductory activity illustrating where carbon is in the forest and how it moves. Participants will then learn how to use tools to mark forest plots with GPS and identify, calculate age, and measure the diameter of trees within plot. The session will conclude inside with a demonstration of how to enter the data we've collected into online tools to estimate how much carbon is in living trees in our plot and total forest carbon as well as load GPS plot points on aerial photo in Google Maps.

SESSION 5 – 2:45-3:45

Water Stories in the GeoDome (Grades K-8)

Lobby

Marc Seigar, Director, and Jim Rock, Program Director, UMD Alworth Planetarium

Join Jim and Marc inside UMD's GeoDome Theater, the traveling planetarium. We will explore the Earth and its waters, the Great Lakes of North America and the oceans of the world. We will take you on a journey to Mars, where scientists believe that water once flowed freely, just like it does on Earth.

Lake Superior 101 (Grades preK-12)

Water Room

Sarah Erickson, Education Director, Great Lakes Aquarium

Join Aquarium staff for a primer on all things Lake Superior. Learn how to identify fish found in the lake, discover unique lake features and try a smorgasbord of activities you can use in your own Lake Superior teaching and learning.

Using School Yard Trees to Teach Carbon Cycle and Sequestration (Grades 6-12) **Sun Room**

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Panel: Innovations in Material Re-use and Natural Resource Modifications (Grades 6-12)

Wind Room – Moderator – Emma Pardini, Educator, Great Lakes Aquarium

Coke Bottle Concrete: Using waste glass to make building materials

Dr. Mary Christiansen – Assistant Professor in Civil Engineering, UMD

Educators can expect to learn the basics of concrete and about the little-known but tremendous environmental impact its production has on the environment as well as how the use of waste materials, such as ground up glass bottles, can reduce the impact. Concrete is way more fun than you think!

Being Resourceful: Making the most of taconite tailings and dredged sediment

Larry Zanko – Senior Research Program Manager/Minerals, Natural Resources Research Institute

We will focus on investigating and finding good uses for materials such as taconite tailings generated by our iron mining industry and sediment dredged and removed from the Duluth-Superior harbor. Let's explore both resources (yes, they are resources) and how they have been and can be used beneficially. We will discuss the importance of getting the most out of resources we generate.

Enhancing the Value of the Region's Wood Resources

Matthew Aro – Research Program Manager, Wood Products, Natural Resources Research Institute

We will discuss wood thermal modification technology and how it can improve the properties of our regional wood species without chemicals to allow more of our wood to be used in high value applications. Educators will gain an appreciation for how important the wood products industry is to our regional economy, how much wood we have available, why we don't use more of it and what we can do to change that.

OTHER DETAILS

- Lunch will be served from 11:15-12:10 in the lobby. Please feel free to explore the Aquarium before or after lunch. Food should remain in the lobby. You are also welcome to stay and explore after the conference. The last interpretive program of the day is at 5 p.m.
- Looking for a private space to pump breast milk or nurse? Please ask one of our staff. We are happy to provide a clean, warm location.
- The Teacher Resource Center will be open throughout the day. Please ask an Aquarium educator for assistance if you would like to examine or check out materials. There is also a complete catalog of materials and request forms on our website at www.glaquarium.org/resources.
- After the conference, Aquarium staff will send a follow-up email with resources, answers to questions and other requested information. Please reach out at anytime for advice, support, resources, brainstorming and assistance making connections in the community.
- **A CEU certificate WILL BE INCLUDED IN YOUR CONFERENCE PACKET!** If you need additional or different documentation to verify your participation at the conference, please email our education team at education@glaquarium.org or call us 218-740-2027.