

The Amazing World
of the
Unsalted Seas



Great Lakes Aquarium
At Lake Superior Center

Snapshots...



Photo Credit: crabchick



Photo Credit: Kyoww



Photo Credit: Sharada Prasad CS

Lake Baikal

Lake Baikal is home to more than 2,000 species, many of which exist nowhere else on the planet. It is the most biodiverse lake on earth. Included in this assemblage are several hundred species of amphipod (a type of crustacean), and nearly transparent fish called the omul, a unique species of sturgeon, and the only freshwater species of seal, the nerpa seal.

Lake Malawi

The largest African Rift Lakes, Malawi, Victoria and Tanganyika are home to a wide variety of cichlids. Of the thousands of species of fish living in these watersheds, there are hundreds of unique types of cichlid that evolved from a handful of original species. They have adapted quickly over 100,000 years to occupy very specific niches throughout the lakes. These lakes are also home to crocodiles, hippos, and a wide variety of bird species.

Lake Okeechobee

This large shallow lake is in southern Florida and is connected to the larger everglades wetlands system. Lake Okeechobee is a vital freshwater resource for both people and wildlife in the region. It is known for its bass and black crappie populations but serves as breeding grounds for a wide diversity of species. Recent droughts and strong storms have impacted aquatic vegetation, wildlife, recreation and water use.

Lake Loktak

Located in northern India, this lake has unique vegetation mats called Phumdis that cover much of its surface. The lake plays a vital role in the communities of people living on its shores. Residents cut unique patterns out of the vegetative mats as fishing enclosures. Lake Loktak is also home to the only floating National Park in the world. It is home to unique species such as the Indian python and barking deer.

Lake Biwa

Lake Biwa is a large inland lake on the island of Japan. It is home to several species of carp, loach, goby and minnows found only in its waters. The lake also supports a commercial pearl industry. It is an ancient lake and has a rich geologic and cultural history. Seasonal flooding changes the water level significantly each spring as meltwater flows into it.

Overview

The large lakes of the world hold more than two-thirds of the freshwater on the planet.

There are 253 large lakes around the world designated as being a large lake, or lake of more than 500 km² (193 square miles) in size. They are home to diverse populations of people, plants and wildlife. These bodies of water will become an increasing important part of the conversation in coming years. Global water resources are limited. Access to safe drinking water and aquatic food sources is already a concern for millions of people. The severity of this issue will likely increase due to the impacts of climate change, increased water use, and the contamination of waterways in the future. It is vital that our global community recognizes and celebrates the value of freshwater in the world, taking actions to preserve, clean and protect it.



Lake Superior Center dba Great Lakes Aquarium is ready to share this story.

We are located in Duluth, Minnesota on the shores of Lake Superior. Duluth is also the home to the Large Lakes Observatory, the only research institute in North America focused on observing and understanding large lakes of the world. With fifteen years of storytelling, water education and exhibit design experience, our organization has a successful track record of producing high quality products. *This story, this location, this collaboration and application of time and resources is a natural fit.* The proposed exhibit will occupy a 3,300 square foot gallery that overlooks the Duluth-Superior Harbor and Duluth's historic Aerial Lift Bridge. The gallery features floor to ceiling windows that provide significant natural light and an excellent view of and access to the waterfront.

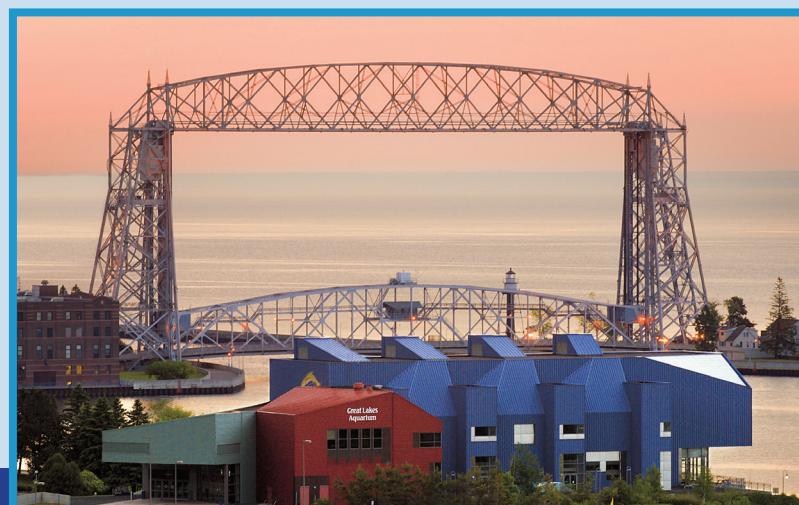


Exhibit Big Ideas

Large lakes could be examined from a variety of angles. From water chemistry to cultural significance to geologic history, the inquiry could span multiple disciplines. The proposed exhibit will focus on the following four main themes and concepts. These concepts will be presented through a combination of multi-media presentations, static interpretive panels, hands-on interactive exhibits and live animal displays.

FRESHWATER RESOURCES

- Water is necessary for life.
- Access to fresh water varies globally.
- The sustainable use of fresh water is key to the future of human civilization on Earth.
- Global large lakes play an important role in the lives of people and wildlife.
- The Laurentian Great Lakes are globally significant.

Visitors will be introduced to the global and regional significance of large lakes. They will be encouraged to reflect on the use of water in our daily lives and the role humans play in conserving and protecting water resources. The expansive window view of the Duluth-Superior harbor as well as access to an outdoor deck will further enhance the connection to global waterways.



Photo Credit: Vménkov



Photo Credit: Oxfam East Africa

CLIMATE CHANGE

- Large lakes record and display the effects of past and modern climate change.

Changes in temperature, water levels, wildlife populations and storm severity have been noted in and around large lakes. The sediment at the bottom of each lake are a time capsule containing clues to understanding the past and information to put current climate characteristics in perspective. Visitors will receive an introduction to the concept of climate change. They will engage with interpretive panels, large scale graphics and interactive displays that demonstrate the impacts of climate change on large lake systems. Direct connections will be made to regional communities in Minnesota, the mid-west and Great Lakes Basin.



Photo Credit: UK Dept. for International Development



Photo Credit: Rod Waddington



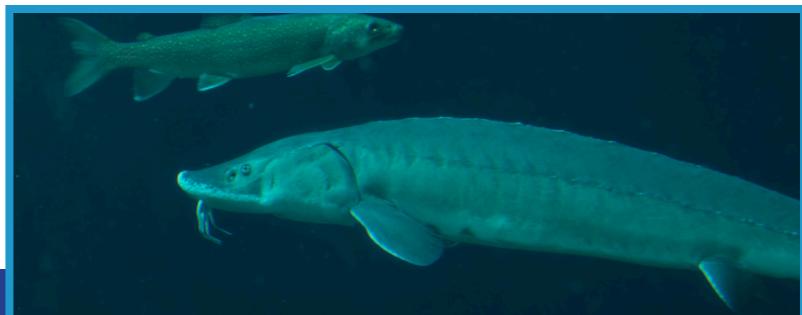
Photo Credit: Vménkov



BIODIVERSITY

- Large lakes are evolutionary hotspots and display a range of biodiversity that varies with lake age and location.

Large lakes present unique habitat for living things. Many of these lakes are ancient and isolated from other bodies of water. Species in the lakes have adapted to very particular niches within these ecosystems. Lakes such as Lake Baikal and Lake Malawi are home to thousands of species found only in those locations. Visitors will explore the astounding diversity of life found around the world in large lakes. Live animal displays will feature a wide variety of African cichlids. A central touch tank will invite visitors to touch and interact with large lake sturgeon. Interpretive displays will highlight the 29 species of sturgeon found around the world.



UNDERSTANDING LARGE LAKES

- Much remains to be learned about large lakes.
- The Twin Ports of Duluth and Superior are home to unique organizations that investigate questions related to and educate about large lakes.

Large lakes are both time capsules and canaries, offering clues from the past and serving as predictors of larger scale global changes afoot. People around the world are interested in understanding how large lakes formed and how they function, how the wildlife within them interacts, how people interact with lakes, and how lakes are connected to the waters of the world. Visitors will be invited to follow and participate in demonstration projects that showcase real questions, tools, data and results from current large lakes research. This will be presented in the setting of a highly interactive model of the Large Lakes Observatory's research vessel, the R/V Blue Heron. As scientists and crew members on board the model ship, visitors of all ages will practice asking questions, selecting tools to gather evidence and examine the evidence for greater understanding and continued questioning. It is important for the public to understand how science works in order to value and seek out high-quality information for use in their personal decision making. The people and work of Large Lakes Observatory and other aquatic science organizations will be prominently featured.

Exhibit Floorplan

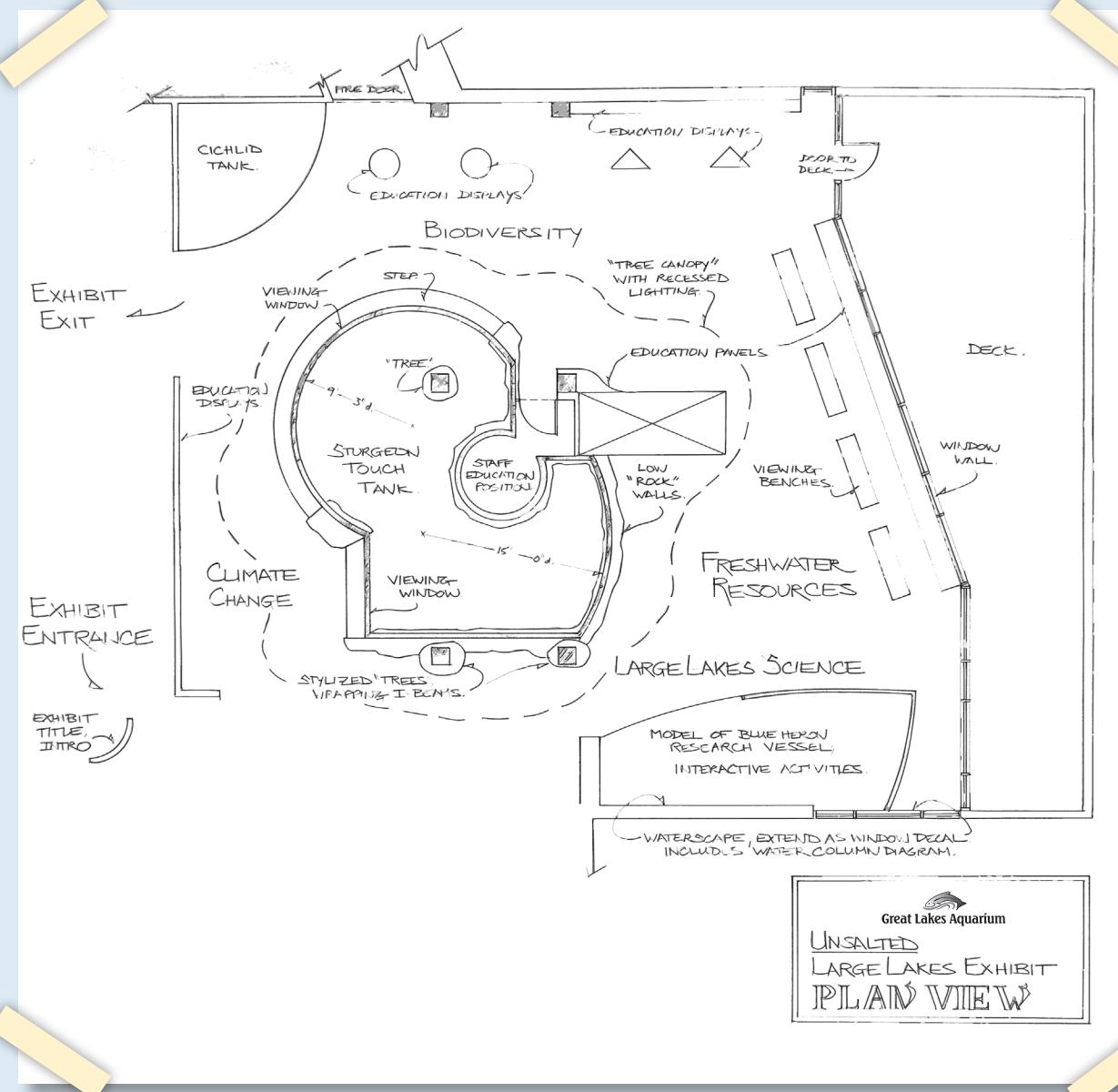


Exhibit Elevation



A feature exhibit component will invite visitors to interact with one of the Great Lakes iconic species, the lake sturgeon. This experience provides a unique entry point to engage the public on all main topics addressed in the gallery. Visitors will also be introduced to sturgeon from around the world through engaging interpretive signage and public programming. The low profile of the tank will preserve the dramatic views of the Duluth-Superior Harbor while theming will be used to mask existing HVAC and required life support components.

The Amazing World of the Unsalted Seas - Proposed Budget

Gallery Preparation (site prep, floor and window treatments, and structural engineering): \$215,000

Biodiversity (theming, tanks, animal acquisition, interactives, exhibit signage): \$58,600

Freshwater Resources (theming, interactives, exhibit signage): \$21,000

Climate Change (theming, exhibit signage, interactives): \$22,000

Large Lakes Science (theming, exhibit signage, interactives): \$77,000

Sturgeon Touch Tank (theming, tank, animal acquisition, life support, signage): \$184,000

Introduction to Large Lakes (video production, signage): \$28,900

Legacy Fund Request: \$325,000

Matching Funds: \$200,000

GLA Cash In-kind Contribution: \$201,500

Project Total: \$726,500



Photo Credit: Toby Hudson

Research and Design: Fall 2015 through Summer 2016

Grant Agreement Completion: Summer 2016

Gallery Preparation: Fall 2016

Construction and Fabrication: Fall 2016 through Spring 2017

Grand Opening: Summer 2017



Photo Credit: Yoni Lerner





Great Lakes Aquarium

At Lake Superior Center

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