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As the weather gets wilder, we are winding down our field work for the year at the Coastal Centre. This past month we have been very busy working to **restore Lake Huron's sand dunes** by removing invasive species, planting native dune grasses, and installing sand fencing to encourage dune growth. If the water levels continue to drop, which we know many of you are hoping, the next couple of years will be a great time to work on enhancing sand dune habitat along the shoreline, to make the coast more resilient to future changes.

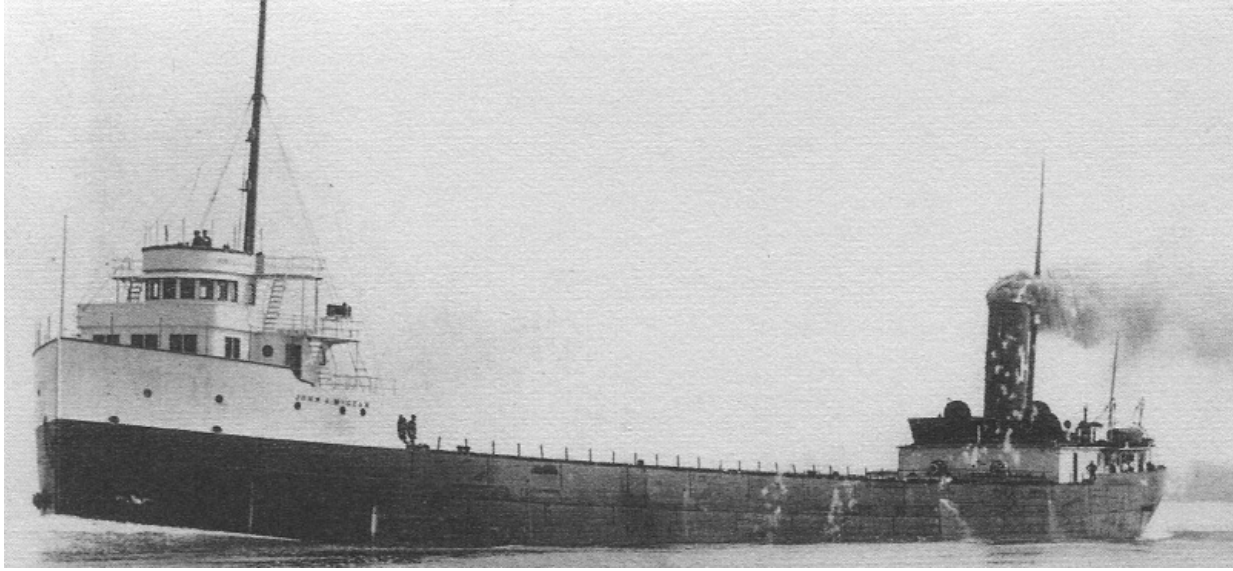
We would like to say a huge **THANK YOU** to the dozens of incredible volunteers who helped to make this happen this fall.

**We couldn't have done it without you!**



*Pictured: Volunteers at Point Clark dune restoration event*

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*John A. McGean* by Brown, David G. 2002. Historical Collections of the Great Lakes, BGSU.

## The Great Lakes Storm of 1913

*And how healthy, intact dunes help protect the Lake Huron shoreline from extreme weather*

As the Great Lakes' temperatures drop and water begins to freeze, the month of November is widely regarded as the most dangerous time to be on the lakes. This November marks the 108<sup>th</sup> anniversary of the storm that remains the Great Lakes region's deadliest and most destructive natural disaster on record. The extratropical cyclone, nicknamed the "White Hurricane", "Freshwater Fury", and "Big Blow", lasted a total of six days, forming on November 6<sup>th</sup> and dissipating on November 11<sup>th</sup>.

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### November 6<sup>th</sup>

Weather forecasts called for moderate to brisk winds and a mix of rain and snow as an **Alberta clipper** blew onto the shores of Lake Huron. With no access to modern-day forecasting technologies such as satellites and radar, meteorologists were limited to assessing only localized conditions. Notably, observations were collected only twice daily, and by the time this data was collected and hand-drawn maps were created, the information broadcasted was already hours behind actual weather conditions. The widespread devastation that followed the unfavourable weather on November 6<sup>th</sup> couldn't have been predicted or avoided.

### *What is an "Alberta clipper"?*

*Also known as an "Canadian clipper", this fast-moving, low-pressure system originates in the lee of the Canadian Rockies and tracks southeastward across southern Canada and the northern U.S.A.*

### November 7<sup>th</sup>

A second storm formed in the U.S.A. and began moving northeastward, toward the Great Lakes region.

### November 8<sup>th</sup>

#### *What is a "gale"?*

*A gale is a strong wind, typically used as a descriptor in nautical contexts. The U.S. Weather Service defines a gale as 34 - 47 knots (39 - 54 miles per hour or 63 - 87*

The Alberta Clipper's status was upgraded to "severe" with winds reaching **gale** strength. Warnings were sent out by telegraph to more than 100 stations along the Great Lakes shores, where volunteers would display flags and lanterns to warn

*kilometres per hour) of sustained surface winds. Red, triangular flags are used as gale warnings.*

nearby sailors of deteriorating conditions.

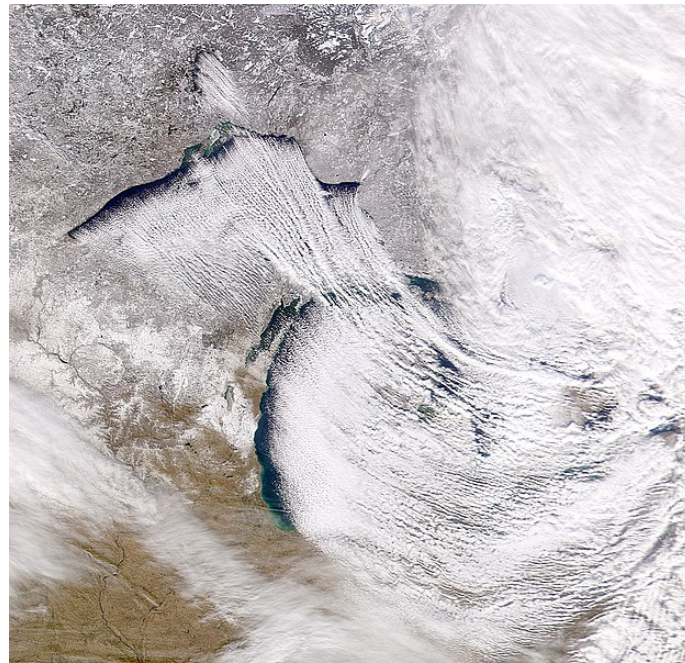
Later in the day, the conditions appeared to improve and ship traffic began flowing again.

## November 9<sup>th</sup>

The two storm systems merged and intensified over the Great Lakes. The combination of cold, dry air from the northern system and warm, moist air from the southern system forced air temperatures down, sparked winds that reached speeds of nearly 90 miles per hour (greater than 140 kilometres per hour), and created waves up to 35 feet (more than 10 metres). On both sides of the Canadian-USA border, 4 feet (over half a metre) of **lake-effect ice and snow** smothered cities and towns surrounding the Great Lakes. Sailors and their families inland both experienced blizzard-like precipitation and hurricane-like winds, what meteorologists today refer to as a “weather bomb”.

### ***What is "lake-effect snow"?***

*Lake-effect snow forms when cold air passes over the unfrozen and relatively warm waters of the Great Lakes. The warmth and moisture are transferred into the lowest portion of the atmosphere and cause clouds to form, dropping heavy bands of snow downwind of the lakes.*



*Satellite image of lake effect snow over the Great Lakes. SeaWiFS Project, NASA, 2000.*

## November 10<sup>th</sup>

Despite great advances in ship building and design, as well as navigation technologies, the strategies for ship-to-ship and ship-to-shore communications and tracking were primitive. As the “White Hurricane” progressed across the Great Lakes region and snow squalls developed, it became increasingly difficult for captains and crews to see other freighters, lightships, and lighthouses. The accumulation of ice on the ships and whiteout conditions is what made a dangerous situation a deadly one. The “false lull” on November 8<sup>th</sup> encouraged many captains and crews to depart ports despite the weather warnings along the shoreline. Consequently, those ships were caught in the worst of the storm. In total, 12 freighters sank, more than 20 were wrecked, and between 250 and 300 sailors died.



Shipwrecks during the Great Lakes Storm of 1913. "White Hurricane", by David G. Brown, 2002. Historical Collections of the Great Lakes, BGSU.

## November 11<sup>th</sup>

By the sixth day, the "Freshwater Fury" was rapidly moving across eastern Canada but without warm lake waters, it lost its energy quickly. As it moved away from the lakes, winds and precipitation decreased. Ships and sailors continued to drift to shore and shipping halted. Inland, all power was shut down cutting off communication and roads were blocked with snow and debris.

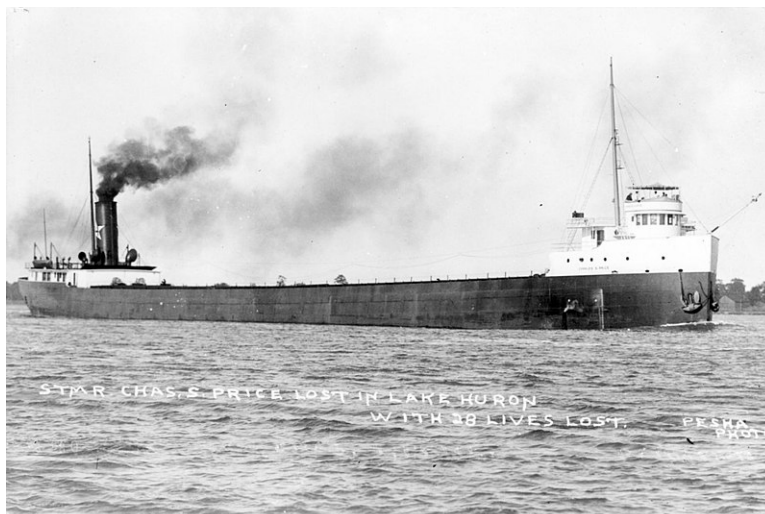


A funeral procession moves through the town square in Goderich, Ontario. The horse-drawn hearses bear the bodies of 5 unknown sailors, victims of the Great Lakes Storm of 1913. Author unknown. Source photo at the Institute for Great Lakes Research, Bowling Green State University.

## Lake Huron's Losses

What started as an Alberta Clipper ended with the loss of approximately 200 lives and 8 ships in the Lake Huron region. A total of 60 victims floated ashore from Kettle Point, up to Goderich, and through to Kincardine.

Many ships hauling coal, grain, and iron ore across Lake Huron were lost during the “Big Blow” including the *Argus* piloted by Captain Paul Gutch, the *James Carruthers* piloted by Captain William H. Wright, the *Hydrus* piloted by Captain John H. Lowe, the *John A. McGean* piloted by Captain Chauncey R. Ney, the *Regina* piloted by Captain Edward H. McConkey, the *Isaac M. Scott* piloted by Captain A. McArthur, and the *Wexford* piloted by Captain Bruce Cameron.



The *Charles S. Price* before it foundered during the 1913 storm. Louis J. Pesha, 1868 - 1912.

The 504-foot, 6 322-ton steel bulk freighter, *Charles S. Price*, which was widely considered to be "one of the sturdiest vessels" on the Great Lakes at the time, was hauling coal in Lake Huron when it was turned completely upside down during the storm. The 3-year-old vessel was found on November 10<sup>th</sup> floating with the hull's bilge exposed. Captain William A. Black and 27 of his crew did not survive the storm, and later washed ashore.



Cover of the Detroit News on November 13, 1913, detailing the Great Lakes Storm of 1913. The mystery boat in the photo was later identified as the *Charles S. Price*.

The only boat to sink in Lake Erie was the U.S. Coast Guard *Lightship 82*, taking all 6 hands aboard. Five of the 12 ships that sank during the storm have never been found: the *Henry B. Smith* (Lake Superior), the *Leaffield* (Lake Superior), the *James C. Carruthers* (Lake Huron), the *Hydrus* (Lake Huron), and the barge *Plymouth* (Lake Michigan).

### The Sephie: A Coastal Centre Connection

The Sephie was built at Goderich, ON, and "for years was considered the best schooner along the east coast of Lake Huron". She was mainly involved in the lumber trade between Sarnia and Georgian Bay. For many years she was sailed by Captain Hugh MacKinnon who, according to newspapers, was known as "hollering Hughie", on account of his "great lungs".



Captain Hugh also happens to be great-great-grandfather to our Executive Director, Erinn Lawrie!

The Sephie was one of the few sailing vessels to survive the storm of 1913. It is thought that when the storm broke Captain Hugh headed his little schooner for shelter at Cape Smith. Stories say that Captain Hugh intentionally ran the Sephie aground to save the lives of those aboard. The Sephie waterlogged near Cape Smith, on Manitoulin Island, and Hughie left her, with his crew of six and female cook. They all got ashore safely, and the Sephie herself was picked up afterwards near Cove Island and towed in.

According to the Port Huron Times-Herald of November 11, 1913 (pictured), "Captain McKinnon is one of the old type of mariners and has hosts of friends at the various ports along the great lakes. Anxious inquiries were made on Monday regarding his safety and

when the word came this morning that he was safe there were many glad hearts."

## The Aftermath

The storm's destruction was not limited to the ships on the water and the harbors lining the Great Lakes, it also smothered cities and towns, damaging buildings, roads, and utility lines, eroded and flooded vast stretches of the shoreline, and flattened 75% of the forests between the areas north of Lake Superior and southeast of Georgian Bay. The large loss of cargo, including coal, grain, and iron ore resulted in short-term rising prices for consumer products throughout North America and the financial loss in vessels alone was equal to \$100 million present-day U.S. dollars.

Maitland Cemetery, on the hill in Goderich, back of the Sephie's launching place, has a big granite monument simply inscribed "SAILORS," above a dozen plain headstones and footstones, marking the last resting place of unidentified victims of that storm's fury.

## Today

The "White Hurricane" is an unfortunate example of how perfect storms occur. Many variables came together in the same place, at the same time, resulting in the ultimate storm which was more impactful than the sum of its parts. Over a hundred years later, the National Oceanic and Atmospheric Administration in the Great Lakes is commemorating the Great Lakes Storm of 1913 for its enduring influence. Modern-day systems of shipping communication, vessel design, city planning, weather prediction, and storm warnings and preparedness have all been fundamentally shaped by the catastrophic events that took place that November.

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Which nickname for the Great Lakes Storm of 1913 is your favourite?

White Hurricane

Select

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Freshwater Fury

Select

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Big Blow

Select

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## The 1996 Lake Huron Hurricane(ish)

In mid-September of 1996, a normal low-pressure storm formed and moved southeastward across the Great Lakes where it stalled over Lake Huron. Since the lake is at its warmest between August and September, the lake began feeding the storm warm, moist air and a cyclone with the structure of a true tropical storm formed hundreds of kilometres away from the tropics. The cold centre of the storm became warm and formed a rising air column that fueled a spiraling system of storm clouds with an eye. The cyclone briefly produced tropical storm-force winds and excessive rain that caused flooding. In satellite images, the storm closely resembled a category 1 tropical hurricane.

## Extreme Weather Events in the Great Lakes Region

In last month's newsletter, the impacts of climate change due to rising levels of atmospheric carbon dioxide was discussed. As global temperatures continue to rise, lake waters are less likely to freeze, allowing low-pressure storms to make use of open waters for energy, increasing the frequency and intensity of extreme weather events. In the Great Lakes region, intense storms can have detrimental effects on fragile freshwater ecosystems and shoreline properties. Intense rain storms can erode shoreline banks and sand dunes, stir up bacteria on the bottom of the lakes, and increase runoff which can

introduce contaminants to the Great Lakes.

## Become an Extreme Weather Warrior

The Coastal Centre's Green Ribbon Champion program was designed to help landowners restore sand dunes along the Lake Huron shoreline. The Great Lakes beach-dune ecosystems keep sand and native beach vegetation in place, protecting the shoreline from wind and storm surge erosion and conserving the habitat necessary to support various plant and animal species-at-risk, like the Monarch Butterfly, the Pitcher's Thistle, and the Piping Plover. Healthy, intact sand dunes also provide a natural filtration system for inland water inputs and can help protect properties along the shoreline from flooding during high water and wave events.



Our restoration team has been working alongside landowners and volunteers to install sand fences and plant native Marram Grass (American Beach Grass) to help develop sand dunes in vulnerable areas between Point Clark and Southampton. The restoration season is coming to a close in the next couple of weeks. We would like to take this opportunity to thank all of our Green Ribbon Champion

stewards and hard-working volunteers for making this year's program successful. If you live along the shoreline in the Township of Huron-Kinloss, the Municipality of Kincardine, or the Town of Saugeen Shores, click [here](#) to find more information on the program and register to become a Green Ribbon Champion next year!

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This year's Green Ribbon Champion restoration work would not be possible without the help of our volunteers and partners.

Thank you especially to:



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*The Lake Huron Centre for Coastal Conservation is a registered charity founded in 1998 with the goals of protecting and restoring Lake Huron's coastal environment. We are the voice for Lake Huron.*

**DONATE TODAY!**



[www.lakehuron.ca](http://www.lakehuron.ca)