



TODAY'S WEATHER

www.wunderground.com/us/mi/kewadin

STORM CENTRAL

www.gtlakes.com/storm-central/

TNN 2020 – PLEASE DONATE

Together we advance local alongshore interests in stable beaches, cleaner water, and a more natural water level range. TNN advocates watershed prosperity, blended natural and engineered shoreline solutions.

HIGH WATER + GALE WINDS = EROSION

TNN lends its voice to a chorus calling for reduced water levels to ease shore erosion. TNN estimates the number of sea walls has doubled from those built in the mid-1980's. Yet authorities do not stop manmade inflows into L. Superior and send the excess into L. Michigan-Huron at a 32 - year high rate.

TNN PARTNERS: SCHOOLS, SCIENTISTS, STEM ADVOCATES, VOLUNTEERS

TNN pilot study defined aquatic life at one EASTB site alongshore. Student interns did field work guided by an area scientist and partnered with Newton's Road. Plan: 2020 site studies from Elk Rapids to Norwood.

EASTB COASTAL/WATERSHED POLICIES

Reflect local residents' interests. Assess: run-off, threats to reefs, sand supply, shore birds, aquatic life. Supervisors buy into process. Partnered with Watershed Center

AS ALWAYS Kids deserve the joy of beach play with critters AND human waste Must Always be treated Not land disposed.

PLEASE STRETCH YOUR DONATION.

Please make a tax - deductible donation to TNN. Any amount is welcome, gifts of \$200, \$100 or more will move your TNN AGENDA. Apply for employer match. **Please Use the attached form.**

WHAT HAPPENS WHEN LAKE SUPERIOR HAS TOO MUCH WATER? IT DUMPS IT INTO AN ALREADY OVERFLOWING LAKE MICHIGAN.

BY: Tony Briscoe, Chicago Tribune July 13, 2018 – EXCERPT: Read article at the link below.

For nearly a century, a dam at the head of the St. Mary's River near Sault Ste. Marie, Mich., has been used like a faucet, controlling the amount of water flowing from Lake Superior into lakes Michigan and Huron.

In the past five years, following a swift rise in lake levels, the relatively obscure Lake Superior board that regulates the amount of water released has stepped up these discharges, raising an outcry from a group representing property owners along the shoreline of Lake Michigan and potentially harming seasonal tourism.

Several factors have contributed to rising water levels and shoreline erosion, including increased precipitation and runoff. But Lake Superior outflow is exacerbating the problem, data from the National Ocean Atmospheric Administration and the Int'l Lake Superior Board of Control show: **Last year, the amount of water released from Lake Superior into Lakes Michigan and Huron was the highest in 32 years.**

<http://www.chicagotribune.com/news/ct-met-lake-michigan-superior-water-levels-20180709-story.html>

WATER DIVERSIONS INTO THE GREAT LAKES BASIN

BY: U.S. Army Corps of Engineers Detroit - April 2009. EXCERPT: Please read complete article.

Control of water diverted into L. Superior lies solely with the Canadian Government, although during times of emergency there have been consultations between the U.S. and Canada. **Examples of cooperation occurred in 1952, 1973 and 1985, when Canada temporarily halted the diversions to combat problems caused by high water. Canada has not acted this year.**

<https://www.lre.usace.army.mil/portals/69/docs/greatlakesinfo/docs/updatearticles/update175.pdf>

CRISIS HIGH WATER - HIGH WINDS - HOMEOWNERS BUILD SEA WALLS.

TNN Report and Photos of selected shore parcels

Local shore owners along the EASTB coast were forced to make major investments in new sea walls (see photo) to protect homes and property. The number of seawalls doubled this season from the number built in the mid 1980's. Home-owners report spending upwards of \$20,000 including local, state and federal permits.

New sea walls prevailed on headland parcels not shielded by the Old Mission wind shadow. Such parcels take the brunt of greater fetch, the open water distance for winds to gain strength. Bluff parcels seem to be more vulnerable. Parcels with gentle slopes were less eroded. Some 'soft-scaped' parcels gained sand from southwest winds while similar parcels eroded.



Report erosion to the IJC: <https://ijc.org/en/glam/watershed/questionnaire/high-water-levels-2019>



QUAGGA MUSSEL CONTROL

BY: Invasive Mussel Collaborative
<https://invasivemusselcollaborative.net/imc-project/dreissenid-mussel-control-demonstration-project/>

TNN NOTE There have been several such demonstration projects in Lake Erie (2015) and Bear Lake (2018). Conclusions are always the same. **No Action - More Study**

The only hope is that there is now an umbrella organization and finally a project in Lake Michigan. The worry is that the bureaucracy is unable to make decisions. (e.g. 17 years to enact bilge water controls for ocean ships in the Great lake).

Another Demonstration Project

A Quagga and Zebra mussel (*Why? – Zebra mussels are gone from L. Michigan*) demonstration project is underway in Good Harbor Bay near the Sleeping Bear Dunes National Lakeshore, Empire, Michigan.

The goal is to evaluate the feasibility and effectiveness of control methods for invasive dreissenid mussels in a Great Lakes coastal environment.

- Develop delivery and application methods that can be applied to and target mussels with chemical concentrations maintained in various habitats and depths
- Evaluate the feasibility, effectiveness and impact on non-target native species by toxicants. Assess chemical methods effectiveness across a range of water temperature, weather, waves, currents, and co-location of sensitive biota
- Evaluate potential for integrating multiple control methods to sustain benefits and minimize recovery of quagga populations.

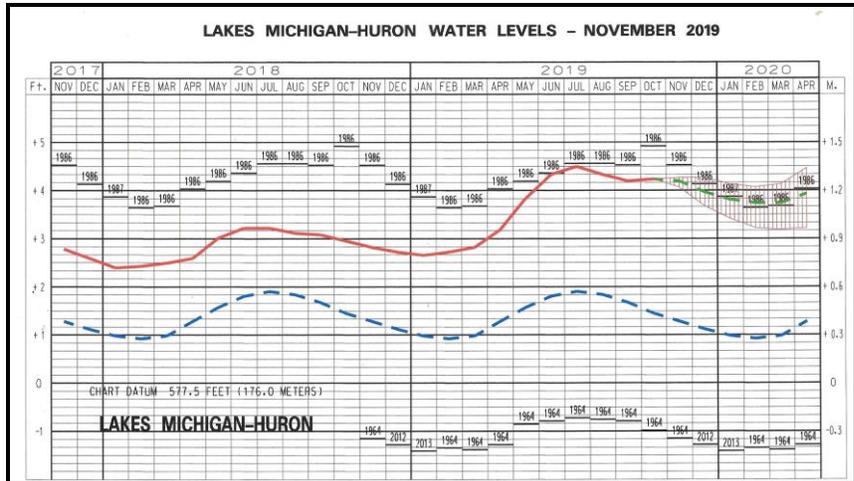
Specifically, this project aims to develop and evaluate control methods for use in localized natural rocky reef habitats by managers and researchers.

IN SHORT: Kill Quagga Mussels where they live - restore macro-invertebrate life alongshore and in the food web for fishery.



US ARMY CORPS OF ENGINEERS WATER LEVEL FORECAST:

Lakes Michigan-Huron for November 8th are an inch below the levels of a month ago. Levels forecasted are below their November record high monthly average by 8 inches. Lakes are 15 inches above their average levels for November 8. In a month's time, Lakes Michigan-Huron, are forecast to be 2 - 3 inches lower their current level.



PILOT STUDY: MACRO-INVERTEBRATE LIFE ALONGSHORE EAST GT BAY

TEAM: Michelle VanDenBrand, GLEC; Barbara Termaat, Newton's Road; HS interns Grace and Zack.
Funded by Your donations to Township Neighbors Network (TNN)



Field work was completed by student interns under the supervision and protocol of GLEC scientist Michelle VanDenBrand with oversight by Barbara Termaat of [Newton's Road](#).

Pilot study consisted of a plot extending into East Grand Traverse Bay (EASTB) near Kewadin, MI. The study followed natural features and made observations to a depth of 0.8 meters (just under 3 feet). Macro-invertebrate samples were collected from each available habitat: floating debris, small woody debris, small cobble at the shoreline and at 0.8 meters deep.

Organisms were sorted and identified to the family level. Observations were made of other life; a bald eagle was seen but no fish and amphibians. Photos of aquatic plants were taken for identification in the lab. Scoring and interpretation was also done in the lab. An added observation near the mouth of local Mitchell Creek, showed rocks were covered in cladophora to an extent normal in the Great Lakes. Rocks were above water so could not be sampled for macro-invertebrate life.

TNN Funded the study to determine density and health of the aquatic food web in near shore waters of EASTB. The Alongshore Trek of 2016 observed no native mussels, and few frogs, crayfish and fingerling fish (confirmed). The hypothesis is that deep water Quagga mussels are the cause. The study is planned to be repeated next season in four locations, one in each Antrim 'Island' Township along the East GT Bay coast.

NOTE: **Macroinvertebrate** is the term used for invertebrate fauna that can be captured by a 500-µm net or sieve. This includes insects, mites, scuds and crayfish (arthropods), snails, limpets, mussels and clams (mollusks), segmented worms (annelids), roundworms (nematodes), and flatworms (platyhelminth).





TNN President was literally born below sea level in the red area of Netherlands near Amsterdam.

In these low-lands, cities, people, homes and land have been protected by natural and engineered solutions for 500 years.

TOGETHER TNN AND YOU ADVANCE LOCAL ALONGSHORE INTERESTS IN STABLE BEACHES, CLEANER WATER, MORE NATURAL WATER LEVEL RANGE

TNN ADVOCATES WATERSHED PROSPERITY, BLENDED NATURAL AND ENGINEERED SHORELINE SOLUTIONS.

TUTORIAL

With this in mind, TNN offers the YouTube presentation below on how pocket beaches are formed by erosion.

The example is from Ireland – but the principles apply here on East Grand Traverse Bay (EASTB).

The scale of pocket beaches can be large or small. For each property owner, s/he makes decisions on hard protection like seawalls or softer features.

Think of a scalloped coast, large pocket beaches between native headlands and small pocket beaches the size of your parcel. A blending of engineered and natural features.

<https://www.youtube.com/watch?v=VAFdYLX9DUu>

NOTE: This effective tutorial is not by TNN



Pocket Beach – Victoria BC, Canada

NEW YORK SUES INTERNATIONAL COMMISSION OVER LAKE ONTARIO FLOODING

BY: Nick Rummell, Courthouse News Service, Oct. 10, 2019 EXCERPT – Please read entire article at link [Waves on L. Ontario \(Wikipedia\)](#)

ROCHESTER, N.Y. (CN) – New York officials claim in a lawsuit, poor management by the international group that oversees the waters of the Great Lakes led to hundreds of millions of dollars in property damage due to flooding two out of the last three years.

The suit (also) claims, the blame for rising waters lies with a large increase in spring precipitation in the past three years, with which the poorly run International Joint Commission (IJC) has been unable to contend.

The IJC – a partnership between the United States and Canada created in the 1950s – is charged with protecting lakeshore property owners and shipping interests along the five Great Lakes.

<https://www.courthousenews.com/new-york-sues-international-commission-over-lake-ontario-flooding/>



Toronto in the background

Living on the Coast

PROTECTING INVESTMENT IN SHORE PROPERTY ON THE GREAT LAKES

BY: Sea Grant – University of Wisconsin and US Army Corps of Engineers – Detroit District
<http://www.seagrant.umn.edu/downloads/ch002.pdf>

TNN research covers the Great Lakes and across the world for relevance to East GT Bay (EASTB). Actionable ideas seemed better in this Wisconsin Guide.

Shore protections should mimic nature in an area-based defense. Examples include the following that has been tried alongshore in EASTB.

- **Slow down wind erosion** with “wind breaks” – trees, bushes and screens that absorb wind energy - add your own screens. Mimic wind resistance that existed before your home was built.
- **Trip waves to dissipate wave energy** and release much of their destructive power. Waves can be tripped with submerged breakwaters (e.g. sills).
- **Sand fencing.** Build a dune or beach ridge with double fence rows (spaced 4X fence height). Stabilize dunes/beach with marram grass and willows.
- TNN ADDENDUM - **Sandbags provide temporary reefs**, groins, breakwaters, and headlands or revetments. Sandbags are an inexpensive way to experiment with a variety of protective designs.
- **Rebuild nearshore shoals, reefs and bars.** Such structures can be used to increase the life of re-nourished beaches. (Local EASTB: Extend the offshore reef rebuilt near ER Harbor in stages to Creswell Road).
- **Armoring the shore** is an expensive last resort for land and vulnerable homes that are threatened by erosion or storm wave overtopping in crisis high water levels.

The people decide what works on their own property in cooperation with neighbors. Hundreds of small projects around East Grand Traverse Bay (EASTB) will over time reveal the real world of protecting investment in shore property for the generations.

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