BAY MILLS INDIAN COMMUNITY

BIOLOGICAL SERVICES NEWSLETTER

FEBRUARY 2018 ISSUE 6

INSIDE THIS ISSUE

IN THE NEWS: Chronic Wasting Disease

Chronic Wasting Disease (CWD) is a neurological disease that affects deer and elk and is highly contagious. In the past few years, it has become a hot topic in Michigan among hunters, biologists, and the general public. In 2015, a wild deer tested positive for CWD and since then 56 more positive deer have been identified in the southern Lower Peninsula. The spread of disease is concerning because of the potential for it to cause decline in deer populations. CWD is easily spread between animals through direct contact, food and water sources contaminated with saliva, urine, or feces, and contact with infected areas. Baiting or feeding animals, as well as keeping them in captivity, can increase the rate of disease spread.

Above: Counties with CWD positive deer

When an animal becomes infected with CWD, the disease causes brain degeneration that eventually leads to death. Prions, which are misfolded and infectious proteins, are the agent that causes CWD. Since the disease is not caused by bacteria or a virus, there is no known way to treat infected animals and the infectious proteins are very difficult to denature or "kill." The prions can remain in the environment for years and infect other deer that come into an infected area.

For more information on CWD signs/symptoms and how to prevent disease spread, contact Emily Martin at emartin@baymills.org or pick up an informational brochure at the Conservation Office.

For questions about fishing/hunting licenses, current regulations, or if you wish to report poaching, please contact the Conservation Department at 906-248-8640.

FEATURED INVASIVE SPECIES: Himalayan Balsam

NEW INVASIVE PLANT FOUND IN BRIMLEY

Himalayan Balsam (*Impatiens glandulifera*) is a plant from Asia that invades ditches, streambanks, and road edges. It produces attractive pink/purple flowers that look very similar to the orange, native species Jewelweed. Himalayan Balsam may grow 4-6ft tall with serrated leaves and green, red, and purple stems.

For more information on Himalayan Balsam or to report an infestation, contact Bay Mills Biological Services at (906) 248-8652 or misin.msu.edu. Biological Services is a partner of the Three Shores Cooperative Invasive Species Management Area (CISMA).

Photos by B. Tokarska-Guzik

Photo by L. J. Mehrhoff

Why it's a Problem

Himalayan Balsam was planted in a garden in Brimley, but quickly escaped and has spread into ditches, wetlands, and lowland forests, out-competing many native plants. This can lead to reduced diversity of plant and insect species as Himalayan Balsam tends to form dense stands. It can disturb water flow and increase risk of flooding. Monocultures of the plant can alter the behavior and composition of pollinator species.

How it Spreads

Himalayan Balsam develops pods that are filled with sticky seeds. When those pods are disturbed by wildlife or wind, they rupture, shooting the seeds out in all directions. The explosion is incredibly robust; seeds from one pod can travel 23 feet! The plant may also resprout from roots.

Ways to Control Himalayan Balsam

Control methods for Himalayan Balsam include hand-pulling of plants, and herbicides depending on the size of the patch. Remove the entire plant in July before seed pods form and never compost it. For more information on identifying this plant visit http://vitalsignsme.org/sites/default/files/content/ui_impatiens_glandulifera_121219.pdf

Photo by J. A. Payne
Jewelweed a native look-alike

Photos courtesy of B. Tokarska-Guzik, University of Silesia, L.J. Mehrhoff, University of Connecticut, and Jerry A. Payne, USDA Agricultural Research Service, Bugwood.org

COMMUNITY OUTREACH

VOLUNTEERS PLANT TREES AT THE BALL DIAMOND & PLAYGROUND

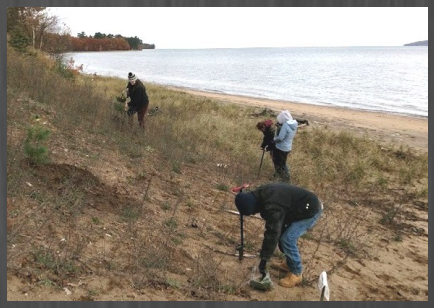
Above: White pine seedling

Below: Boys and Girls Club, Girl Scouts, and BMCC students plant trees to reduce erosion and benefit sand dunes ecosystem.

This fall Biological Services took on the ambitious goal of planting 2,458 trees along Bay Mills' shoreline and they couldn't have done it without some dedicated volunteers. Children from Bay Mills Boys and Girls Club and Girl Scouts troops 5202 and 5171 braved the chilly weather to plant hundreds of seedling trees around the ball diamond and playground. Tree species included White Pine, Red Pine, Cedar, Paper Birch, and White Spruce. Students from Bay Mills Community College planted the same mixture of seedlings plus some Creeping Juniper and White Pine saplings on the steep slope by the college. With a good growing season and a little luck, these trees will reduce beach erosion and benefit the sand dunes ecosystem.

Chi-Miigwetch to all our volunteers!!

Photos by Biological Services



SOMETHING STINKS: THE HAZARDS OF BURNING GARBAGE

Have you ever stepped outside and a terrible-smelling smoke begins stinging your throat and eyes? As you cough and blink back tears, you discover your neighbor burning their garbage.

It costs a dollar a bag to dispose of garbage at the trash compactor; but burning it can have much greater costs.

Material	***Chemicals when combusted***	***Health effects***
Plastic	Benzene, Cadmium, Dioxin, Lead Hydrogen chloride Hydrogen cyanide	Carcinogen; toxic if inhaled, ingested. Carcinogen; poisonous if inhaled, ingested. Retained in soil. Highly corrosive irritant; mildly toxic if inhaled Asphyxiant; deadly if inhaled
Styrofoam	Styrene gas	Carcinogen, damage eyes & lungs, headaches, nausea
OSB or plywood	Arsenic, Formaldehyde	Carcinogen; poisonous if inhaled/ ingested/ touched.
Magazines, colored cardboard ink	Lead, cadmium, mercury, chromium	Carcinogen; poisonous if inhaled, ingested. Poisonous if inhaled/ ingested.

SAFE DISPOSAL OF OLD DRUGS

Have you ever found an expired bottle of prescription drugs in your medicine cabinet and wondered, what should I do with this? Should you throw it in trash? Flush it down the toilet? The truth is, neither landfills, nor wastewater treatment plants have the ability to safely treat medication. Eventually it leaches into our groundwater or lakes and streams, then our drinking water and food supply. But there is a better way!

Safely dispose of old drugs at the Bay Mills Health Center or these other seven locations in the area. Medication is collected then sent off to a special laboratory that responsibly destroys it.

UNWANTED, UNUSED, EXPIRED MEDICATIONS

SPREAD THE WORD

DISPOSAL THAT'S EASY, SAFE, & SECURE

Located at the Bay Mills Health Center Pharmacy. Disposal available during regular pharmacy hours. 8am-6pm Mon-Fri. Contact Bay Mills Pharmacy with questions. (906) 248 2031

Bay Mills Health Center
12124 Lakeshore Dr Brimley, MI 49715

PHARMECUETICAL TESTING IN WAISHKEY BAY SURFACE WATER

Bay Mills Biological Services and Bay Mills Community College have teamed up to assess contaminants of emerging concern and their food web impacts in Waishkey Bay. They are investigating pharmaceuticals, pesticides, and plastics within the Bay and its tributaries. Although these contaminants have been measured in waterbodies elsewhere, little work has been performed here, so this project fills an important knowledge gap for the Tribal community and Great Lakes research. The sampling of these chemicals will improve the knowledge base on chemical mixtures in the environment. This project is funded by the USDA-NIFA Tribal College Research Grants Program.

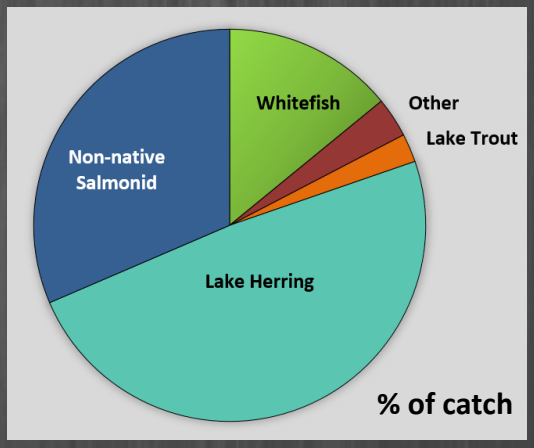
BMCC students, faculty, and Biology Department staff collect surface water samples from Waishkey Bay for lab analysis.

GREAT LAKES FISHERIES PROGRAM UPDATE

Above left to right: Biology staff lifting Northern Pike in gillnet. An under the ice image of a gillnet being lifted by Bay Mills Biology staff. Staff holds a Lake Herring captured in the assessment net.

UNDER THE ICE FISHERIES ASSESSMENT

The Bay Mills Biology Department conducted under the ice fisheries assessments in Whitefish Bay and the upper St. Mary's River in 2009, 2014, 2015, and 2018. The goal of this assessment is to learn more about the winter ecology of Lake Superior fishes, a topic on which little is known. We set graded mesh gillnets under the ice, overnight, with the goal of capturing a variety of species from a variety of length and age groups. We collected data on all species captured including: length, weight, age, sex, reproductive status, and food habits. We will also check the diets collected this year for the presence of micro-plastics as part of an ongoing study with the Bay Mills Biology Department and Bay Mills Community College concerning micro-plastics and contaminants in the upper St. Mary's River. In total, we captured 10 species ranging in length and age (Table 1).



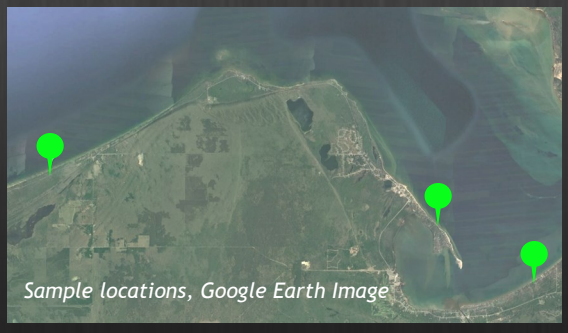


Table 1. The length, age ranges and percent of catch of all species captured during the under the ice surveys 2009-2018.

Species	Catch	Length Range	Age Range
Burbot	0.5%	370-415 mm	-
Chinook Salmon	0.9%	322-400 mm	1-2 yr
Coho Salmon	25%	256-485 mm	1-7 yr
Lake Herring	49%	321-501 mm	3-9 yr
Lake Trout	2%	454-454 mm	-
Lake Whitefish	8%	310-496 mm	3-6 yr
Northern Pike	1.5%	646-860 mm	-
Rainbow Trout	5%	296-603 mm	1-5 yr
Menominee	0.5%	313-403 mm	4-5 yr
Splake	0.7%	329-450 mm	3 yr

Bay Mills fisheries staff also monitors commercial and subsistence fishing by its members. These data are used to monitor fish populations and make informed management decisions. If you have questions about the fisheries program, please contact the program manager, Paul Ripple at (906)248-8649, pripple@baymills.org.

OIL PIPELINE LINE 5 UPDATE:

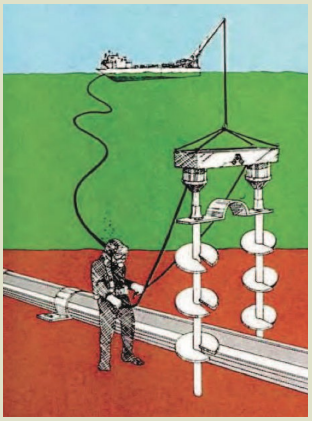
North Americans have been dependent upon petroleum for more than one hundred years and have used many methods to get the raw material to market. Although pipelines are one of the safest methods of transporting oil products, they still pose significant threats the environment and public health. Enbridge, Inc operates the Line 5 pipeline that runs from Superior, WI to Sarnia, Ontario, Canada. Along its 645 mile-long path, Line 5 traverses 50 mi in close proximity to Lake Superior, 140 mi along Lake Michigan coast, and lies exposed under the Straits of Mackinac. Lakehead Pipe Line Company, Inc, now Enbridge, Inc installed Line 5 over 64 yrs ago (in 1953). Engineers at the time gave it a life expectancy of 50 yrs. It has already been subject to a significant rupture near Crystal Falls, MI in 1999 and small ruptures which have been documented along upland portions of the Line, areas within the 1836 Ceded Territory. Enbridge has also failed to adequately monitor and maintain other pipelines; one which caused the Kalamazoo River oil spill in 2010.

What's New with an Old Pipeline?

In August 2017 Enbridge, Inc disclosed that there were at least two areas of bare metal where the protective coal-tar coating was missing from Line 5 pipeline under the Straits. State leaders revealed that the pipeline had missing coating and bare metal exposed dating back to 2014. The company said reports of the coating hadn't been made public before due to "an internal reporting issue" and that Line 5's safety had not been compromised. Enbridge admitted they damaged some coating themselves during installation of anchor supports. Areas of calcified, missing, or disturbed coating added up to 112 ft^2. Most of these areas were repaired in September/October 2017, the remainder will be addressed in summer 2018.

The mandatory biota study on zebra mussel impacts is ongoing and expected to be completed early in 2018.

Enbridge also promised it would invest $7 million in safety equipment for the Straits of Mackinac which is also expected in summer 2018.



Above: Diagram of anchor support installation.
Lower right: Bare metal of pipe adjacent to anchor support.
Lower left: Calcareous deposit on pipe line.

Summer 2017 Enbridge hydrotested both lines; pressure held.

7/31/2017 Enbridge requested permit for additional 22 anchor supports

Aug–Sept 2017 Enbridge surveyed pipe for zebra/quagga mussel impacts

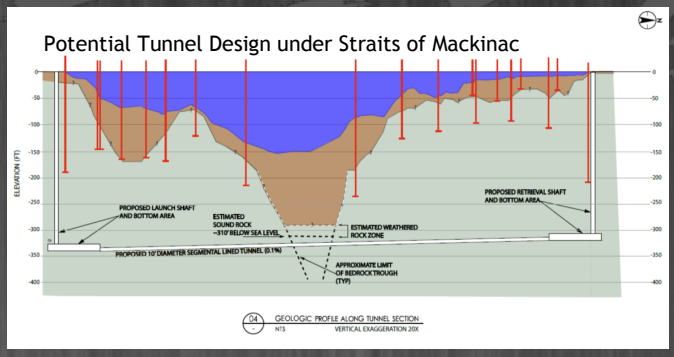
8/30/2017 Enbridge announced calcareous deposits and bare spots on pipe

9/1/2017 State of MI demanded action. Many state leaders called situation unacceptable

10/27/2017 Enbridge confessed they knew about bare spots since 2014

Governor Snyder's Agreement with Enbridge 11/30/2017

Just after Thanksgiving, days after the final Alternatives Analysis Report was released and before any stakeholder meetings had been held, Governor Snyder surprised many by signing an agreement with Enbridge. This agreement had no prior consultation with tribes, nor with many other agencies including the US Coast Guard (a crucial player in any spill response). The key components include the following:



1. Undertake study to assess feasibility of pipeline in a tunnel under the Straits.
2. Temporarily shut-down Straits pipeline during "sustained adverse weather conditions" mainly wave height of 8ft or more.
3. Assess possible installation of underwater monitoring technology (cameras) under the Straits.
4. Implement technology to allow for faster detection and response in the event of a spill in the Straits.
5. Implement measures to mitigate a potential vessel anchor strike (like in a freighter emergency situation) in the Straits.
6. Replace the portion of pipeline under St. Clair River.
7. Identify and implement additional measures to minimize likelihood of spill at every water crossing in MI.
8. Increase transparency by providing opportunity for State to participate in evaluations under the agreement; providing all information requested by State; and meet regularly with State to assess and discuss changes to pipeline operation.

Bay Mills Biological Services staff are concerned about a number of parts of this agreement. First the wave height was set without consultation from the USCG, who can only operate their clean-up equipment in wave heights less than 4 ft. Additionally, these adverse weather conditions do not take into account ice cover or lake bottom currents straining the pipeline.

Stipulations on transparency are too little too late. Enbridge has had a history of violating its existing commitments and attempting to conceal ~~those~~ violations. Violations range from unsupported spans, to curvature issues, coating abnormalities, and pipe wall thickness requirements. So how will the company's transparency be measured?

Though little time was given to thoroughly review alternatives, the Governor has settled on a tunnel replacement design for the section of Line 5 under the Straits. The agreement disregarded countless hours and dollars invested in the Alternatives Analysis Report, stakeholder meetings, and staff time reviewing numerous documents.

Some criticize the agreement as difficult to enforce and lacking true protection for the Great Lakes.

11/20/2017 Alternatives Analysis report released

11/27/2017 Gov Snyder signed Agreement with Enbridge without consultation with tribes

12/11/2017 Advisory Board (PSAB) signed Resolutions calling for Gov to reconsider terms of Agreement and shut down Line until issues resolved

4/23/2018 Line 5 will be 65 years old and more than ready for retirement

What will be next for the aging infrastructure?

WATER QUALITY PROGRAM UPDATE

Species in Focus: The Curious Lives of Mayflies

What is a mayfly?

A mayfly is a primitive insect that inhabits local streams, rivers and lakes during its larval life before emerging and becoming a free-flying adult.

Life History: Larval Stage

Hexagenia larvae or nymphs, often called wigglers, burrow into the sediments of our local waterways where they filter-feed tiny particles from the water. Depending on the species of mayfly, the larval stage may last anywhere from a few weeks to two years.

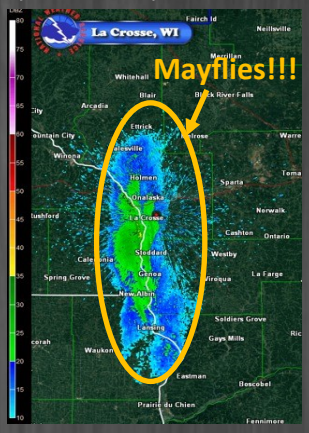
Photo by Nick Addison & John Morse

Metamorphosis to Adult Stage

When it is time to emerge, *Hexagenia* nymphs make their way to the water surface where they hatch, shedding their larval exoskeleton and emerge as a sub-adult. Sub-adult mayflies are unable to fly until they undergo a final molting stage. During metamorphosis, mayflies are at their most vulnerable, often triggering feeding frenzies in fish. This is where we get the phrase 'match the hatch' as it is derived from fly fisherman matching their artificial flies with an active hatch.

The adult stage of mayflies lasts less than 48 hours! During this time, male and female mayflies engage in intricate mating processes and die soon after. After mating, female mayflies lay their eggs on the water surface, where the eggs will sink back to the sediments to start the lifecycle over again.

Hexagenia exhibit synchronicity when they 'hatch' into adults all at once. *Hexagenia limbata* hatches occur in huge numbers all around the Great Lakes every year. Swarms are so thick and massive, they may be viewed on weather radar like a storm cloud! Have you noticed the huge hatches during the summer when you have stopped at Bay Mart?



Ecological Importance

Mayflies are very sensitive to changing water quality conditions. Bay Mills Biological Services Department uses mayflies (and other aquatic organisms) to monitor the health of local waterways.

Larval mayflies are an important food source for fish, including whitefish. It is during the larval stage that mayflies are most beloved by ice fishermen. Perhaps you have used "wigglers" as bait.

Photo by Fly Fishing Encyclopedia

Bay Mills Indian Community
Biological Services
www.baymills.org 906-248-3241
12140 Lakeshore Dr Brimley, MI 49715

Newsletter contact: Aubrey Maccoux-LeDuc,
amaccoux-leduc@baymills.org 906-248-8652
This newsletter funded by the Great Lakes Restoration Initiative.

Great Lakes RESTORATION