Sleeping Bear Dunes National Lakeshore
National Park Service
U.S. Department of the Interior

THE BOT. SQUAD

FIGHTING TYPE E BOTULISM SINCE 2006

2015 Season Underway— What's New on the Horizon ?

As we dig into the 10th season of monitoring type E botulism, Sleeping Bear Dunes National Lakeshore (SLBE) continues to collect scientific information from beach monitoring, and will continue to enlist new partners and strategies to increase the effectiveness of our efforts.

First, SLBE plans to increase volunteer participation in nearshore underwater research. This research will build on the scientific knowledge we've collected on the beach and further inform management strategies.

Second, we need to increase awareness of type E botulism among the public. The SLBE Interpretive Division will step up their outreach effort by educating visitors, schools, and various other groups about: the problems of invasive species; lake level and climate variation; public health concerns; and continued ecosystem imbalance affecting the entire Great Lakes Watershed.

As part of the larger Great Lakes Restoration Initiative (GLRI), our Bot. Squad Program is one of many entities involved in the diverse and comprehensive study of this very complex and special biome we call home. With power in numbers and knowledge, together we can restore more of what makes these Great Lakes so special.

Citizen Science Dive Team

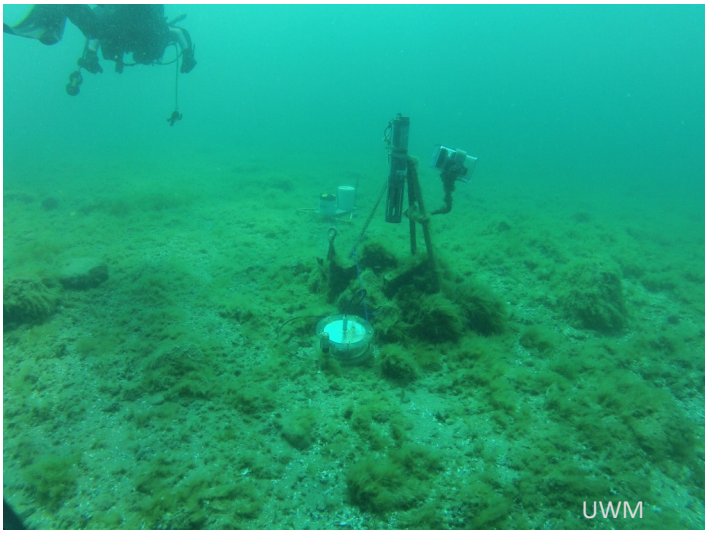
Researchers from University of Wisconsin- Milwaukee (UWM), park rangers and citizen scientist dive team met at the Leland Harbor on July 8th to train for this year's dives.

Pictured from left to right- Emily Tyner (UWM), Ken Holzman, Sarah Chalup (Park Ranger), Tom Morrow, Jeff Winkler, Ben Turschak (UWM), Erica Plesha (UWM), Carol Linteau.

The Citizen Science dive program is an exciting collaboration between researchers, SLBE, and community members to include public participation in research efforts. The citizen science divers maintain the underwater monitoring equipment (Sonde and time-lapse camera) located in Good Harbor Bay, collecting benthic scrapes to assess Cladophora and mussel biomass, counting round goby fish, and photo documenting bottom conditions.

The first training dive took place on July 8th. The researchers leading the project were impressed with the skill level, experience, and interests of the dive community participating in the program, and are excited to continue working with them.

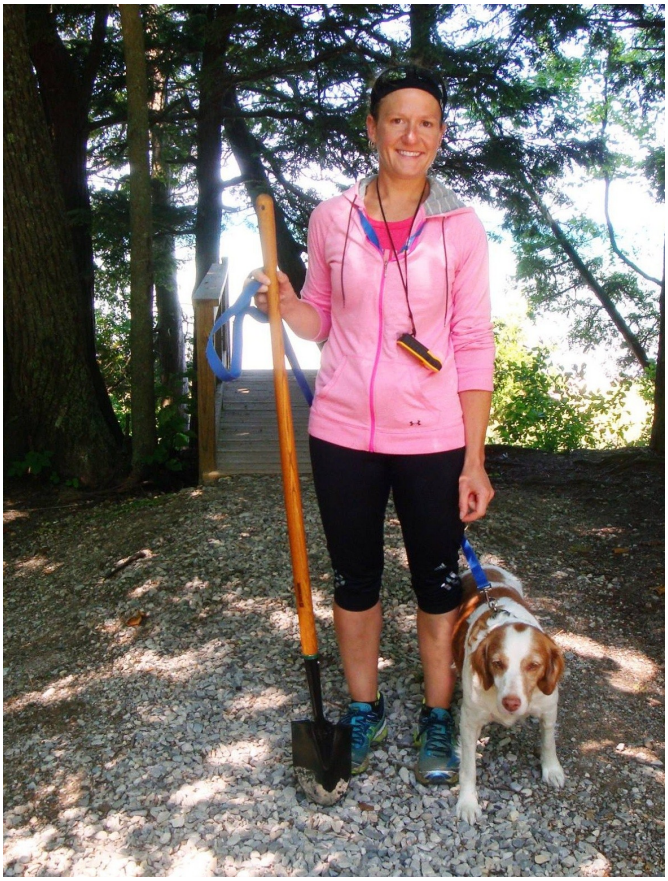
Ranger Sarah and David Rosier from Great Lakes Environmental Center in Traverse City collected water samples while the divers were below the surface.



Underwater monitoring equipment located in Good Harbor Bay at a depth of 10 meters. This equipment monitors and records temperature, pH, dissolved oxygen, current speed, and light. Sonde readings and photos are taken every hour.

Sights from the Beach –

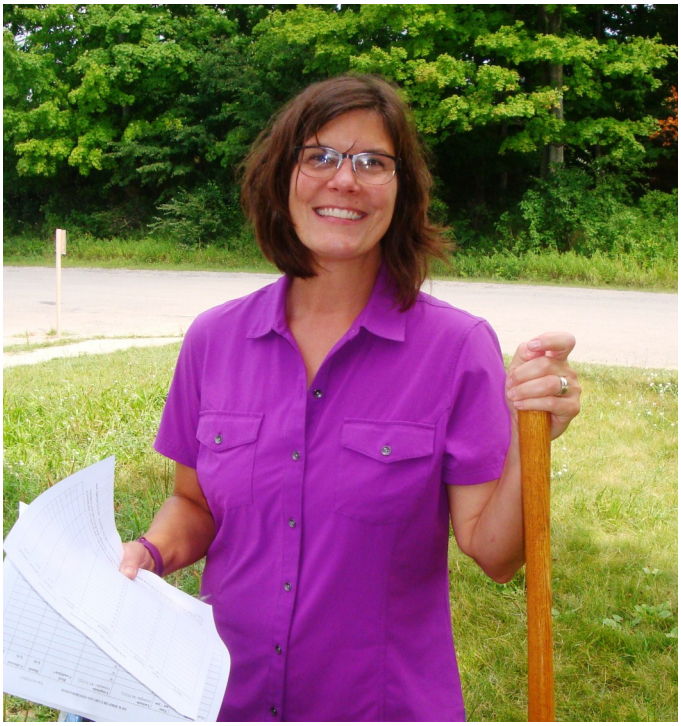
First Collected Specimen of 2015: Ring-billed gull (RBGU). Found on 6/25 near the Maritime Museum.



New Bot. Squad VIP Katrina and her dog monitoring Sunset Beach.

New Bot. Squad VIP Mike Hrynkiw on the new Pyramid Point Transect 9b (right). High waters and lack of beach required the transect to be divided into two sections.

...more Sights from the Beach –



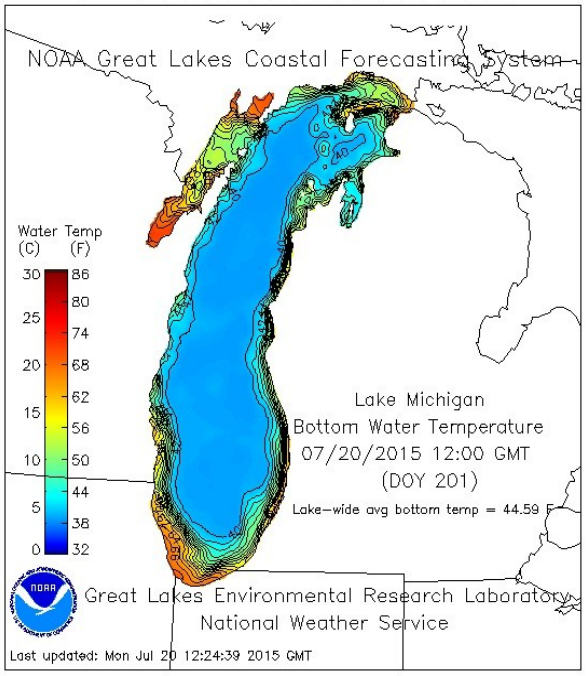
After a season of assisting with the Piping Plover Crew, new Bot. Squad VIP Daiva White (above) recently began monitoring near Sunset Beach.

Double-crested cormorants (DCCO) have accounted for nearly half of the dead birds found on beaches thus far this season.

Piping plover photographed by VIP John Ester near Peterson Beach. This was one of an amazing 62 chicks that fledged from SLBE nests this season—50% of the total number fledged for the entire critically endangered Great Lakes Population!

HIGHER & COOLER WATERS

Historically, outbreaks of Avian Botulism have been particularly severe when water temperatures are high. Spring water temperatures have been good predictors of botulism outbreak severity. Since 2006, the trend shows warm spring water temperatures have higher mortality. Cool springs and cooler waters, such as this summer, have resulted in lower than average mortality.



Based on this year's springtime lake temperatures, we expect very low mortality (182 birds). However, based on lake level trajectories, we could expect higher mortality (1,199 birds) in the coming year. This year could help us understand the relative importance of temperature vs. lake levels in driving bird mortality. With the current mortality tally at 5 birds (3 gulls, 2 cormorants) thus far this year, we are on track for a record low season—perhaps fewer fatalities than last year's record low total of 98 birds.

What does it mean for the Bot. Squad VIPs?

ABOVE Picnic Table Landmark at the Transect 8a/8b endpoint is awash - with little beach left against the bluff.
The beach below Pyramid Point is impassable.

With the lake levels on the rise some of the transects are becoming difficult or impossible to traverse. If you discover that your transect is becoming troublesome please contact Dan Ray at (231) 326-4757 or dan_ray@nps.gov

RIGHT With rising water levels many beaches are disappearing and in some areas waves have crested the foredune, creating interdunal wetlands.

A group of teachers who participated in the Lake Michigan Shipboard Science Workshop toured SLBE with park rangers Day Ray, Mark Stewart, and Matt Mohrman (not pictured). This was part of an increased cooperative outreach effort of teaching teachers, to increase education concerning the invasive aquatics/ Bot in classrooms across the Great Lakes region.

OUTREACH EFFORTS

Rangers are attending special events such as Bear Lake Days, and Traverse City's Friday Night Live, this summer and fall to spread the word on Avian botulism and invasive species plaguing the great lake region. A new Avian Botulism interpretive sign has been installed at the harbor in Leland.

Photos by Park Ranger Interpreter Mark Stewart

The Bot. Squad
Find us on Facebook

Researcher to Discuss Avian Botulism at Sleeping Bear Dunes National Lakeshore

Nov. 12 at 9:30 a.m. at the Philip A. Hart Visitor Center in Empire

Taaja Tucker (U.S. Geological Survey, Great Lakes Science Center contractor) will present a program entitled "Avian Botulism and Our Waterbirds" on November 12 at 9:30 a.m. at the Philip A. Hart Visitor Center Auditorium in Empire, Michigan. Taaja will discuss research findings and publications to date, which examine the relationships among and between aquatic algae, invasive mussels, invertebrates, fish, and the many bird species which frequent Lake Michigan and our Lakeshore. Special emphasis will be placed on underwater communities. Much of her work has been as an ongoing research partner-- along with the data gathering efforts of The Bot. Squad-- in the GLRI effort to better understand observed botulism outbreaks.

Image by Taaja Tucker

This presentation is part of the Sleeping Bear Dunes National Lakeshore speaker series called "Research Rendezvous." To celebrate the 100th anniversary of the National Park Service and highlight the value of national parks as our nation's "living laboratories," the National Lakeshore is hosting a series of public talks by park researchers through 2016. All Research Rendezvous presentations offered at the National Lakeshore are free. Upcoming "Research Rendezvous" presentations will include:

August 13, 2015: "Parks as Natural Laboratories: Water Bugs of the Upper Great Lakes National Parks" by Dr. R. Edward Dewalt (Illinois Natural History Survey)

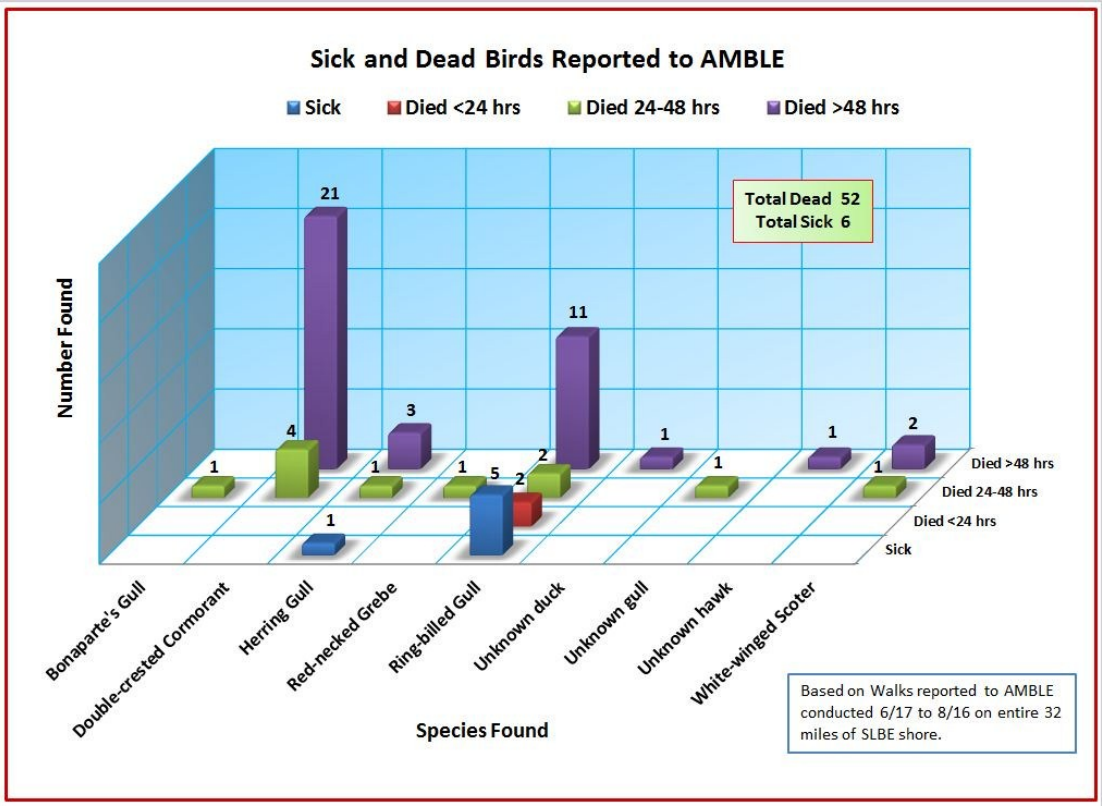
September 10, 2015: "Sand Dune Restoration: Testing Whether Plant Diversity Matters" by Dr. Kerry Crawford (University of Houston)

*Note: Dr. Harvey Bootsma's August 6 presentation "Avian Botulism in Lake Michigan: How Does it Happen?" was postponed until next season, owing to wind storm closures at SLBE during the scheduled event.

Season Numbers: A Current Update

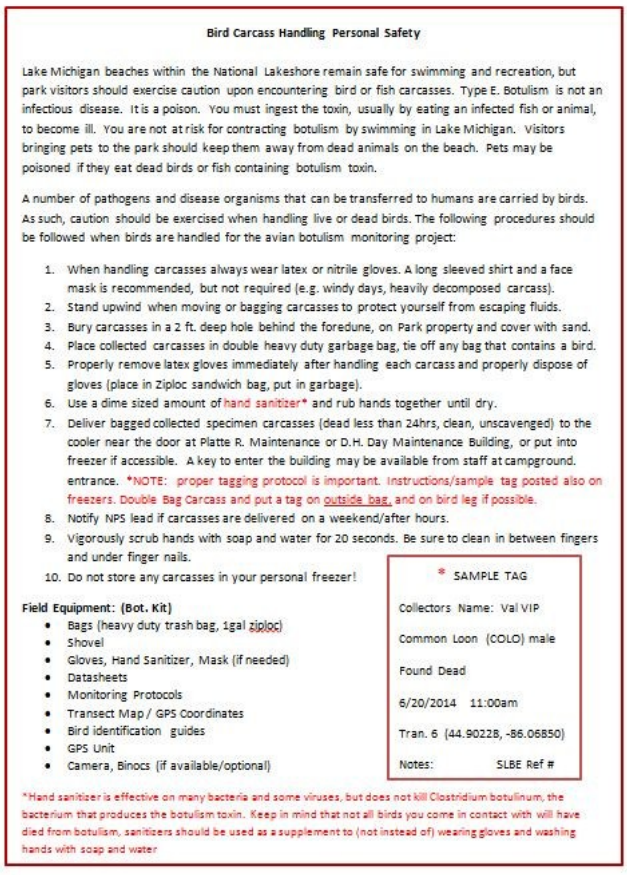
Data from our reports to AMBLE thus far have indicated fairly low mortality. From June through early August of 2015, figures were tracking below last year which had the lowest losses (98 dead birds) ever recorded since 2006.

Recent high winds, which closed the Park temporarily, along with two weeks of hot weather and warmer water temperatures , may have caused the recent observed increase in fatalities showing up on beaches.



A Bot. Squad Safety Reminder as Our Season Progresses !

Please remember to stay safe and protect yourself from toxins, pathogens and disease when dealing with carcasses while patrolling the beaches. Refresh your memory by looking at the Bird Carcass Handling Personal Safety Protocol (right). See this and other safety info, Bird I.D. Photos, and News Updates at "The Bot. Squad" Facebook page https://www.facebook.com/TheBot.Squad/photos/pb.297897070311466.-2207520000.1439930498./701306439970525/?type=3&theater



Bird Carcass Handling Personal Safety

Lake Michigan beaches within the National Lakeshore remain safe for swimming and recreation, but park visitors should exercise caution upon encountering bird or fish carcasses. Type E. Botulism is not an infectious disease. It is a poison. You must ingest the toxin, usually by eating an infected fish or animal, to become ill. You are not at risk for contracting botulism by swimming in Lake Michigan. Visitors bringing pets to the park should keep them away from dead animals on the beach. Pets may be poisoned if they eat dead birds or fish containing botulism toxin.

A number of pathogens and disease organisms that can be transferred to humans are carried by birds. As such, caution should be exercised when handling live or dead birds. The following procedures should be followed when birds are handled for the avian botulism monitoring project:

1. When handling carcasses always wear latex or nitrile gloves. A long sleeved shirt and a face mask is recommended, but not required (e.g. windy days, heavily decomposed carcass).
2. Stand upwind when moving or bagging carcasses to protect yourself from escaping fluids.
3. Bury carcasses in a 2 ft. deep hole behind the foredune, on Park property and cover with sand.
4. Place collected carcasses in double heavy duty garbage bag, tie off any bag that contains a bird.
5. Properly remove latex gloves immediately after handling each carcass and properly dispose of gloves (place in Ziploc sandwich bag, put in garbage).
6. Use a dime sized amount of hand sanitizer* and rub hands together until dry.
7. Deliver bagged collected specimen carcasses (dead less than 24hrs, clean, unscavenged) to the cooler near the door at Platte R. Maintenance or D.H. Day Maintenance Building, or put into freezer if accessible. A key to enter the building may be available from staff at campground entrance. *NOTE: proper tagging protocol is important. Instructions/sample tag posted also on freezers. Double Bag Carcass and put a tag on outside bag, and on bird leg if possible.
8. Notify NPS lead if carcasses are delivered on a weekend/after hours.
9. Vigorously scrub hands with soap and water for 20 seconds. Be sure to clean in between fingers and under finger nails.
10. Do not store any carcasses in your personal freezer!

Field Equipment: (Bot. Kit)

- Bags (heavy duty trash bag, 1gal ziploc)
- Shovel
- Gloves, Hand Sanitizer, Mask (if needed)
- Datasheets
- Monitoring Protocols
- Transect Map / GPS Coordinates
- Bird identification guides
- GPS Unit
- Camera, Binocs (if available/optional)

* SAMPLE TAG
Collectors Name: Val VIP
Common Loon (COLO) male
Found Dead
6/20/2014 11:00am
Tran. 6 (44.9022B, -86.06850)
Notes: SLBE Ref #

*Hand sanitizer is effective on many bacteria and some viruses, but does not kill Clostridium botulinum, the bacterium that produces the botulism toxin. Keep in mind that not all birds you come in contact with will have died from botulism, sanitizers should be used as a supplement to (not instead of) wearing gloves and washing hands with soap and water

B-4, Bird Carcass Handling Personal Safety

Strange Sights On The Beaches

This season there have been 6 reports of dead deer on or near beaches. One was found at Platte Point near a pipping plover (PIPL) enclosure. If a dead bird or other animal carcasses is found in areas near active PIPL nests it is important to remove them in order to prevent attracting scavengers and predators to the site which could endanger PIPL adults, fledglings, or eggs.

Another deer was found on Boekeloo Trail, and was collected by Biotechs Jen Sidge (pictured) and Dan Ray, to be turned over to the Michigan DNR for testing. Park Natural Resource Division Staff received confirmation of reports of this deer from Bot. Squad Monitor Susan Lavender.

USGS science for a changing world

Great Lakes RESTORATION

NATIONAL PARK SERVICE

Special thanks to veteran VIP monitors, and new VIPs Katrina Schafer, Mike Hrynkiw, and Daiva White.

This edition of *THE BOT. SQUAD* newsletter represents the first of many collaborative efforts by Interpretive Park Rangers and the Bot. Squad Monitoring Program to address common goals of our Great Lakes Restoration Initiative mission. Beach monitors will continue their hands-on field work: surveying beaches, identifying birds, and collecting data. Interpreters will, in turn, assimilate the information and communicate, educate, engage and inspire volunteers, visitors, media, and the public by presenting a broader, clearer picture of ecosystem changes and aquatic invasive species, and how they relate to Avian Botulism, current research, and future policy here at Sleeping Bear Dunes National Lakeshore.

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