

Observing Lyngbya North & South Shores Maumee Bay/Lake Erie by Sandy Bihn Western Lake Erie Waterkeeper November 2009

Background. Maumee Bay is a shallow estuary that serves as the outfall of the Maumee River and the Ottawa River and joins Lake Erie in the east end. Maumee Bay is approximately sixteen square miles with an average depth of five feet. The shoreline of Maumee Bay consists of urban residential, industrial with less than 5% preserved. Maumee Bay is divided in the middle by the Toledo shipping channel which is dredged annually to 28'. To allow large ships the shipping channel was straightened about seventy years ago. Prior to the 1960's, the dredge materials were side cast creating shoals which remain today. Instead of side casting, confined disposal facilities to contain the dredge materials were created in Maumee Bay that currently fill over 650 acres in Maumee Bay, or about 6% of the bottom of the bay. There are two power plants that intake and expel an average of one billion gallons per day – an estimated 6% of the water in the bay (There is another power plant in the northeastern edge of Maumee Bay in Lake Erie that uses 1.9 billion gallons of water per day. The estimates are that Maumee Bay waters turn over every five days. Maumee Bay has been highly altered by humans. Traditionally, there is algae in Maumee Bay in late summer and it dies off in the winter.

Observing Lyngbya. Because of a vantage point just west of Maumee Bay State Park, on Maumee Bay that provides a view of the shore, it is possible to view the shoreline. Looking from the southern shore of Maumee Bay, the naked eye can see the two power plants in Michigan, Whiting Consumers and Monroe DTE.

A massive matted hair like green substance blew in after a strong five day northeastern on **Labor Day weekend 2006.** The hair like matted lyngbya blanketed the shore and a ditch just west of Maumee Bay State Park. What was later determined to be lyngbya wollei piled several feet deep. The lyngbya smothered and killed the lily pads and plants in the ditch. Eventually, Tom Bridgeman, UT Lake Erie Center, said that the algae was fingerprinted as lyngbya wollei. At first, it was thought that this was the usual fall algae and would die off in the winter. It did not. The water washed up green with lyngbya throughout the winter.



Lyngbya west of Maumee Bay State Park
July 2007

In spring 2007 the lyngbya was massive and piled up on the southern shores of Maumee Bay. A shoreline property about 1.5 miles west of Maumee Bay State Park before lyngbya had a sand beach but now was piled with 5' to 10' of lyngbya.



Lyngbya 2007 southern shore of
Maumee Bay Oregon, 1.5 miles west of
Maumee Bay State Park. At top lyngbya
has plants growing out of it – no visible
sand

In the summer and fall of 2007, the lyngbya piled high in Maumee Bay so much so that it looked like lyngbya dunes peaking out of the water. Boat motor intakes were clogged and the waters were putrid.

In 2007 no lyngbya was observed on the northwest shores of Maumee Bay in Toledo off Summit Street and Cullin Park in Toledo. Some lyngbya was reported east of Maumee Bay in the Reno Beach area but none so dense and thick and shorebound as in south Maumee Bay. In late fall 2007 lyngbya was reported in the marina a Luna Pier on the northeast shore of Maumee Bay near the outfall of Consumers Power. The marina had so much lyngbya that it was excavated. The marina is in the path of the outfall of the Whiting Consumer's Power coal fired power plant that pulls about 330 mgd from and back to Maumee Bay.

The lyngbya remained on the southeast shores of Maumee Bay next to Maumee Bay State Park through the winter of 2007-2008. The summer of 2008 was not as warm as 2007. **The lyngbya was on the southeastern shores of Maumee Bay in 2008 but the lyngbya did not mound as it did in 2007.** The south Maumee Bay shoreline property about 1.5 miles west of the park still had lyngbya in 2008, but the weeds that grew out of the lyngbya were less than in 2007.

In the spring and summer of 2008, observations were made on the northeastern shores of Maumee Bay at the Luna Pier marina. The lyngbya was never visible from shore but owners said that the lyngbya had to be excavated for the boats.



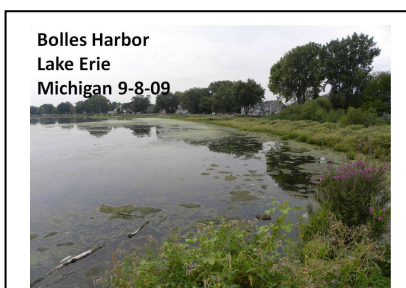
Lyngbya excavated off the Luna Pier Beach Labor Day weekend 2008

In the spring and summer of 2008, several observation trips were made to the northeastern shores of Maumee Bay and the northwestern shores of Lake Erie to Bolles Harbor pier which is in the footprint of the Monroe DTE power plant. **On the west side of the Bolles Harbor Pier (there is a channel with deeper water for the boats on the east side) the lyngbya was green and thriving in the water and on the beach.**

In 2008 again, there was no visible lyngbya along the north shore of Maumee Bay in Toledo at Cullin Park and Point Place. There was no lyngbya visible along the banks of the Ottawa River.

The lyngbya remained in the winter of 2008-2009. This was a cold winter with more ice than in the previous two years. The lyngbya rolled up on the shore as green as ever throughout the winter and spring.

Lake Erie near Maumee Bay) in the spring, summer and fall of 2009.



It appeared that the lymgbya was coming to south Maumee Bay from North Maumee Bay in Luna Pier and the Bolles Harbor area during northeastern winds. The lymgbya was greener in Bolles Harbor (West Erie near Maumee Bay) than anywhere on the southern shores of Maumee Bay.



Sept. 28, 2009 south shore Maumee Bay home base – no lymgbya where water was one to eight feet deep.



September 28, 2009 northwest shore of Lake Erie – Grand View Beach, Lasalle, Michigan

The summer of 2009 was one of the coolest on record. **The lymgbya on the southern shores of Maumee Bay was present in 2009 but the volume was far less than in 2007 and 2008.** The shoreline property west of home of Maumee Bay State Park had no lymgbya in the summer of 2009. The beach returned to sand. There was lymgbya just west of Maumee Bay State Park but it came and went. Sometimes there was none and a sandy beach and then the lymgbya would come in during a northeastern wind and accumulate on the shore. Trips in 2009 to Luna Pier and Bolles Harbor in north Maumee Bay and Lake Erie in Monroe/Bolles Harbor found no visible lymgbya at Luna Pier, but again the owner at the Luna Pier marina said they had to excavate lymgbya. **The lymgbya was visible and flourishing at Bolles Harbor (west Lake Erie near Maumee Bay) in the spring, summer and fall of 2009.**

It appeared that the lymgbya was coming to south Maumee Bay from North Maumee Bay in Luna Pier and the Bolles Harbor area during northeastern winds. The lymgbya was greener in Bolles Harbor (West Erie near Maumee Bay) than anywhere on the southern shores of Maumee Bay.

Then on September 28, 2009 there were severe west to east winds that blew the water easterly and exposed the near shore bottom. Remember that the depth of water in the shoreline along Maumee Bay is less than five feet for about 500' to 1000' offshore. There was no lymgbya on the bottom of Maumee Bay west of Maumee Bay State Park and east to the marina at Maumee Bay State Park. The water was out over 500' from the normal watermark.

At the same time the southern shore floor of Maumee Bay was observed, the floor of west Lake Erie next to Maumee Bay was observed on September 28, 2009 at Grandview Beach, Lasalle, Michigan – east of Luna Pier – west of Bolles Harbor. The lymgbya was growing on the bottom in about 1'-4' of water parallel to the shore for as far as the eye could see. This seems to confirm that the lymgbya is growing and thriving in the nearshore Luna Pier/Bolles Harbor/Monroe West Erie areas. Then, when a northeastern wind blows, the lymgbya dislodges and is blown to the southern shores of Maumee Bay. The

lyngbya stays on the south shore and grows when the temperatures is warmer but as the temperatures declines, the observed volume of lyngbya on the south Maumee shore is reduced. The lyngbya that was 5'-10' thick in 2007 and was there in 2008 was gone in 2009 after a cold winter and cool summer.

Lyngbya Information Researchers at the Ohio State University, University of Toledo, Heidelberg College, the University of North Carolina, Clemson, University of Florida and Dr. Wayne Carmichael who studied lyngbya at Wright State were contacted to provide information on lyngbya. Some literature called lyngbya the Godzilla of algae – tenacious . Lyngbya is described as a nuisance algae that may have some toxins. The problem with lyngbya is that when it is thriving, it grows rapidly and mounds and takes over the near shore area altering habitat and recreational water use. Lyngbya also causes problems for intakes.

Bill Frazier, Water Quality Lab Manager, for a small utility department in High Point, North Carolina provided insight. **He described lyngbya as liking sources of high carbon content like sewage and unusually warm water.** High Point has a water intake at City Lake; its primary drinking water source. Lyngbya plagued the lake since July 2000. High Point has utilized Clemson University's procedure and private contractors to control and mitigate the lyngbya bloom. It has been ongoing up through this year. **Even with Clemson's rehabilitation, it was not until upgrades to sewer collection systems in the surrounding watershed as a result of EPA's push in their SSO program began that frequent overflows were eliminated. For the past 2 years, lyngbya has begun to recede.** The result is that lyngbya has all but disappeared as of this growing season and further rehabilitation to the lake may be suspended. There is little doubt that controlling conditions that favor lyngbya are the most effective key for lyngbya control.

Monroe and Luna Pier sewage overflows. The Monroe wastewater plant reports ongoing sewage overflows in the millions of gallons primarily after heavy rainfall. The Luna Pier wastewater plant has some reported overflows. There have also been reports of failing septic systems in the area.

Summary

From these observations, it appears that the lyngbya on the southern shores of Maumee Bay is coming from Luna Pier/Monroe. No lyngbya was observed growing in the southern bottom of Maumee after the west winds. Lyngbya was observed in a line parallel to the shore that normally would have had 1-4' of water on the north Maumee Bay shore between Luna Pier and Bolles Harbor. From the High Point, North Carolina experience, it seems that if Monroe, Michigan and Luna Pier fix sewage overflows, the lyngbya may no longer survive in these waters.