

# The Oneida Lake Bulletin

Fall 2015

[www.oneidalakeassociation.org](http://www.oneidalakeassociation.org)

## Water Chestnut “Search and Destroy” Volunteer Weed Pull

**Why:** Water chestnut is an alien invasive species capable of colonization and conversion of low-energy, soft-bottomed aquatic habitats. First discovered in Oneida Lake by Director and former OLA President William Schriever, OLA has since 2000 actively participated in several interdisciplinary forays to address management of this weed. Since the original Onondaga County Adopt-a-Shoreline project promulgated by Amy Samuels, then of Cornell Cooperative Extension, the OLA has conducted weed surveillance and pulls between Big Bay Creek and the east side of Three Mile Bay. Other entities similarly remove the weeds from the shore of Big Bay west along the Oneida River. Only sporadic sightings of the plant have been made in the rest of the lake, suggesting that sustained manual pulling has been successful in limiting this plant’s population.



*Gina Duggleby and Andrea Dávalos gathering Water Chestnuts on Oneida Lake.*



*The Water Chestnut Abatement Team – L-R Gina Duggleby, Caitlin Muller, Megan Pistolese, Tom Brodeur, Evan Jones, Ben Hansknecht. Not pictured: Scott Shupe, George Reck, Patricia Cerro-Reehil and Ethan Hayes Reehil.*

**Who Participated:** On Thursday, August 6, Megan Pistolese, The Nature Conservancy Outreach Coordinator and companions from the Pulaski office Tom Brodeur, Evan Jones, Ben Hansknecht, and Caitlin Muller OLA Directors Gina Duggleby, Patricia Cerro-Reehil (and her son Ethan), George Reck, and Scott Shupe, Cornell Research Associate Andrea Dávalos (working with Bernd Blosssey on chestnut biocontrol program).

**Results:** Evidence of Water Chestnuts still found in Oneida Lake. An area of dug canal north of NYSDEC’s Angler Access off Shaw Road had been neglected until this year where about

15 bushels of plant were removed. Another 8-10 bushels were removed from the mouth and interior of Big Bay Creek. With the permission of NYSDEC, Plants were composted onshore. Participants also picked up a bushel of trash from the water and the NYSDEC facility. There was a noticeable increase in the occurrence of frogbit, another invasive that will unlikely be controlled as it is small and easily carried by waterfowl and floating debris.

**Action by OLA Members:** Please let us know if you find water chestnuts in the lake and where they are. When removing them, be sure to pull them up slowly to get the entire rooting system!

# President's Message

“Thank you” to past officers and directors for services to this 70-year-old organization. Your appreciable efforts are generally unknown outside the Board of Directors. The BOD is enhancing its media efforts, and the use of the web and Facebook should improve member and public awareness of OLA’s concerns, opportunities, and efforts. Someday one form or another of this *Bulletin* may be a quarterly newsletter though efforts of our new directors and member-volunteers.

Volunteers helped again this summer with the annual ‘Bill Schriever water chestnut pull’. Volunteers will be needed after the New Year to help with membership tables at various sport shows. Before then, I hope that each member can solicit other friends of the lake to join OLA. I made a 5,000 member challenge at April Annual Member’s Meeting. If by January we have substantially enhanced membership, I will ask the Board to consider resuming a fishing boat drawing for the April 2016 meeting. Please volunteer: entice your boating and angling friends to visit the OLA website membership page and join our team!

Membership numbers speak volumes, especially in August when the Board hosts a special evening with lake-area politicians, rescue and police agencies, and biologists and managers from U.S. Fish and Wildlife Service, U.S. Department of Agriculture, New York State Department of Environmental Conservation, New York State Conservation Council, and New York State Parks Recreation & Historic Preservation, and universities. They learned of our efforts to add web cameras around the lake, our assertion that no new alien and invasive species should enter the Great Lakes or Hudson-Mohawk-Oswego canal system, advocacy for a new east-end boat launch, enhancement and maintenance of existing public access properties, vigilance for and removal of navigation hazards, efforts to improve public understanding of the lakes nutrient and algae relationships, and our discussions related to creating lake-oriented projects and seminars targeting local school classes/clubs.

Enjoy the last warm days afloat on the lake. Some will prepare for waterfowling, others start checking hard water tackle. Icefishing this winter may be radically different as we cope with the exploding round goby population. Meanwhile, any day on the lake is still better than your best day at work!

Think ahead and give the gift of an OLA 2016 membership at Christmas. Go to the OLA website and sign up a friend of family member today!

Stay safe, and enjoy the Fall!



Scott Shupe  
President, Oneida Lake Association  
president@oneidalakeassociation.org  
info@oneidalakeassociation.org

## The Oneida Lake Association, Inc.

Founded in 1945

*The Bulletin* is published by the Oneida Lake Association, Inc., so that its members may be informed regarding the activities of the association. The Oneida Lake Association, Inc., was organized in 1945 to restore and preserve the natural resources of Oneida Lake and its environs.

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We will be spotlighting each of the seven water rescue agencies on Oneida Lake in future *Bulletins*.

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# Our Secret Recipe for Oneida Lake's Amazing Pancakes

By Gina Duggleby, AP/Honors/Regents Biology Teacher Central Square

*Editor's note: This article is excerpted from a longer version. To read OLA Director Gina Duggleby's full scientific recap and see more images depicting Oneida Lake's famous pancake recipe, visit [oneidalakeassociation.org](http://oneidalakeassociation.org) today!*

Perhaps you have seen "Pancake Shoals" on an Oneida Lake map. You may have even snagged five inch disc-shaped "pancakes" while trolling the lake's shallow shoals. These brown sandy mud concretions of manganese and iron are scientifically referred to as ferromanganese nodules and are found in these well aerated offshore areas in Oneida Lake at depths of less than 27 feet. Scientists are intrigued with Oneida's pancakes as they are among the largest in freshwater lakes worldwide. These pancakes also have twice as much manganese than iron compared to other lakes worldwide. (Dean & Ghosh, 1981)

So what is Oneida Lake's secret recipe for producing such spectacular pancakes? In 1982, Kenneth Neelson was a professor at the Scripps Institution of Oceanography in LaJolla, CA when he heard about the bizarre circumstances in Oneida Lake. Each spring, snowmelt washes manganese out of the surrounding hills into the lake. Prevailing winds mix the waters allowing the dissolved metal to combine efficiently with oxygen to form solid manganese oxide which sinks to the bottom. The mystery was that scientists found that solid manganese oxide was disappearing at more than 1,000 times the expected rate, and nobody could figure out why. "If rates were really that fast, I knew it had to be biology," Neelson says. He suspected bacteria in the lake were getting rid of the manganese oxide almost as quickly as it formed. This made sense, but it hadn't been proven that microbes could break down a piece of metal. This unsolved mystery continued to intrigue him and in 1985 began his research on Oneida Lake to prove his hunch correct. (Paraphrased from Powell, *Popular Sci-*

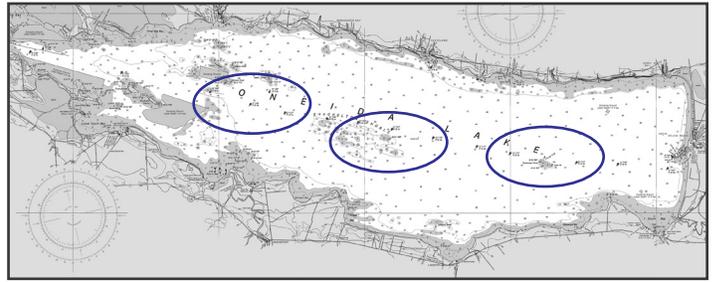
*ence* January 2015)

Through Neelson's extensive research along with the work of several other colleagues in this field we have learned that it is the precise interaction of the weather, the biota, the nodules, the sediments, and the Manganese dissolved in Oneida Lake and surrounding waters.

The following ingredients in our large shallow lake have been found to be essential to these perfect Oneida Lake Pancakes:

- First, add a generous portion of dissolved Manganese from snowmelt in the hills along the south shore.
- Next, add a blend of photosynthetic algae and bacteria throughout the water column that grow prolifically throughout the summer and water pH levels of about 8.1.
- Add a pinch of prevailing winds to regularly and rapidly mix the entire water, preventing stratification of pH and oxygen levels as is found in other lakes.
- Then, add a handful of Crawfish and fish along with a moderate bottom current to flip, erode, and move the fragmented nodules to deeper locations.
- Finally, add a smidgen of buried anaerobic bacteria, *Shewanella oneidensis* MR-1 (short for "Metal Reducing") to continually re-dissolve the fragments to restart the cycle and form even larger pancakes.

The last ingredient in particular, *S. oneidensis*, a bacteria which bears Oneida Lake's name was first isolated and named by Neelson in 1988. Just as he had suspected, this new species is capable of reducing the solid manganese oxides. This remarkable species is capable of living in both aerobic, oxygen rich environments and anaerobic, oxygen poor



Areas in the center of the lake containing extensive development of Manganese Nodules (Dean, Moore, Neelson 1981)

environments. Corrosion of metals was long thought to be primarily chemistry. That is, until Neelson and colleagues dug into that muck at the bottom of Oneida Lake and pulled out microbes with the amazing ability to "breathe" or reduce metals.

Neelson has shown how bacteria in the *Shewanella* family extract energy from metals. Scientists used to think it was impossible for organisms to extract energy from metals because, as solids, metals cannot be accessed by the enzymatic machinery or proteins inside cells. Neelson discovered *S. oneidensis* has found a resourceful way around this problem. Instead of bringing pieces of metal inside the cell, *S. oneidensis* has evolved respiratory enzymes or proteins on the outside of their cellular membranes. By wearing their "lungs" on the outside, the bacteria can simply latch on to a chunk of metal and begin harvesting energy from it. (Paraphrased from *Research Frontiers in Bioinspired Energy*, 2015)

When oxygen levels are low, *S. oneidensis* grows a long "nanowire" to make direct contact with the manganese oxide it needs to breathe. Neelson also found that the bacterium doesn't care whether the substance on the outside is manganese oxide or some other metal entirely, so long as it can complete the electrical circuit. (Paraphrased from Powell, *Popular Science* January 2015)

Thanks to researchers in the field

(Continued on page 5)

# Atlantic Salmon Restoration in Oneida Lake

by Justin Anthony DiRado

Atlantic Salmon restoration in Central New York has been ongoing since the species was extirpated in the late 1800s. However, efforts to date have largely been unsuccessful in reestablishing naturally sustaining populations. Our research focuses on evaluating characteristics of two strains of salmon that are considered candidates for future restoration.

Juvenile Atlantic Salmon of Sebago Lake and Lake Memphremagog (Magog) strains were stocked in Oneida Lake tributaries to evaluate survival and growth, as well as habitat suitability of the streams. Differences in respiration, growth rates, and food consumption between the strains are currently being evaluated in the new Center for Integrated Research and Teaching in Aquatic Science (CIRTAS) laboratory at SUNY-ESF. In addition, the potential effects of climate change on stream habitat suitability and salmon are being investigated through a developing bioenergetics model.

In the field, salmon fry were stocked in two streams (Mad River and Point Rock Creek) in early summer 2014 and allowed to grow for 2-3 months before being sampled for growth and survival characteristics. During this time, a variety of habitat variables were collected from the streams, including substrate, water temperature and chemistry, depth and velocity. Habitat in the Oneida Lake watershed was generally suitable for juvenile Atlantic Salmon. Survival between the strains was similar, however

the Magog strain individuals expressed greater growth rates than Sebago strain individuals.

In the laboratory, salmon of both strains will be held at five different temperatures ranging from 53-75°F. Growth, food consumption, and metabolism will be evaluated to determine if one strain outperforms the other at elevated temperatures, which may have strong implications for future restoration in the face of climate change. A bioenergetics

model will be applied to predict salmon growth in varying environmental conditions. By incorporating rates of salmon food consumption, metabolism, and waste production from the lab with water temperatures, velocity, and insect drift from the field, the bioenergetics model will be used to predict climate change impacts in Central New York.

Work in the laboratory is ongoing and results are still being produced. Our field results show that the Magog strain may be a better candidate for restoration than the Sebago strain. However, these

*(Continued on next page)*

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## The OLA Fishing Corner: Fall Fishing Tips

by Ryan Asmus with the added expertise of Cap'n Tony Buffa

I love fishing but when I was asked to write an article on Oneida Lake fishing tips, I decided to confer with someone with more experience who catches a lot more fish!

When it comes to fishing for Oneida Lake walleye during the fall months, there seems to be two solid techniques. Using blade baits in deeper waters and shore fishing with stick baits can both be productive as we move through October and into November.

Generally as the season moves on, the walleye tend to move more toward the East end of the lake. In early October you are likely to find them near buoy 115 (try the North side of the buoy line). While in November, they might be found more in the area of buoy 109. During this period, look for the fish to be schooled in waters that range in depth from thirty feet to forty feet and even deeper. The lures to use during these months are vibrating blade baits. While actively fishing for Walleye, try rigging and setting out a separate rod or two with fathead minnows. You may be able to catch some yellow perch too since they, white perch and walleye tend to school together during this time.

More opportunities exist while fishing from the shoreline. Whether you are fishing directly from the shore, using waders to get a further out, or fishing from a boat, in these shallower waters the preferred lure would be a stick bait. Try fishing at different times throughout the evening. If fishing from a boat, anchor in five feet of water and take advantage of casting into the shallows and out to as deep as twelve feet. These depths tend to define the inshore catching zone. Be patient fishing from the shore during the fall, walleye are transient, they tend to stay moving. Don't get discouraged. The walleye may be moving in and out of the shallows throughout an evening or around the lake from one day to the next. You might also like to consider moving from place to place as well. The fall might be an excellent time to explore new locations from which to fish.

Line selection may affect your fishing success. When conditions are very calm, you may want to switch from a static braided line to a more forgiving monofilament. Walleye are nibblers and especially less aggressive during calm conditions. Braided lines may cause you to feel a hit and try to set the hook prematurely. When using monofilament line, with more stretch, you may be more likely to set a hook in the mouth of a fish more "fully involved" with your lure.

Have a safe and fun fall fishing season!



Electroshocking setup in Rice Creek, Oswego, NY. L-R: Justin DiRado and Chris Powers.

## Pancake Recipe

(Continued from page 3)

including Neelson, our unique and wonderful Oneida Lake Pancake Recipe is available to share with all! This research has opened several new exciting doors for future discoveries, based on the microbes' alien-like talents for breathing metal. Potential future applications include bacteria powered batteries, new approaches to waste management, bioremediation of heavy metal contamination sites, fighting corrosion, and insights about life on other planets. This little microbe with a really big, homegrown name continues to find its home here in the deep muck around our Oneida Lake Pancake Shoals. However, *Shewanella oneidensis* will undoubtedly continue to surface around the world teaching us about novel ways to harvest energy from unconventional sources. So, the next time you land a pancake on your line, you'll know a little more about the special ingredients that make them so Oneida Lake spectacular!

## Atlantic Salmon Restoration

(Continued from page 5)

results only represent one year of study and other researchers have reported differing results. While Sebago strain salmon are being produced from several hatcheries, only one hatchery currently produces the Magog strain. In terms of future restoration potential, the greater availability of Sebago strain eggs and fry may encourage fisheries managers to favor this strain instead of the Magog strain.

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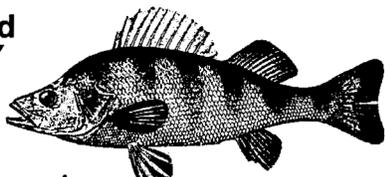
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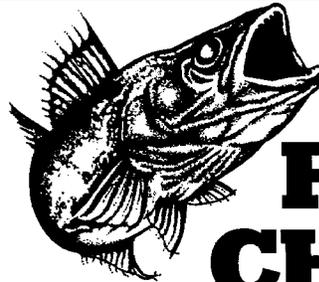
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