# SLPID

## 2021 SPRING NEWSLETTER

SLPID, PO Box 2551, Malta, NY 12020 | www.SLPID.org

# DON'T GET CAUGHT

## Filling or Dredging Saratoga Lake without a Permit

Saratoga Lake has a mostly sensitive shoreline with minimal natural protections such as a rocky or well forested/vegetated shoreline. There are many streams and wetlands along the shoreline which contribute significant natural resource value to the lake. These resources also have sensitive shorelines and even small disturbances can have a major impact. This condition makes it important to maintain the natural shoreline to the greatest extent possible.

### Impacts of Filling or Dredging

Adding fill or dredging material from the lake, wetlands and streams can yield significant negative impacts to fish nests and small animal and amphibian passage between the water and the shore. In addition, erosion and sedimentation can result in serious and long-lasting environmental damage.

### Permits Requirements

To make sure the shoreline is kept in its natural condition to the greatest extent possible the NYS Department of Environmental Conservation established a permit process to guide property owners who desire to add fill to their individual shorelines. The permit process contains standards that are designed to protect the natural environment, animal habitat, fisheries, and general water quality of the lake.

A federal permit may also be required from the US Army Corps of Engineers. Federal permit requirements kick in when the amount of fill requested reaches a certain threshold. The determination of whether additional permits, including a federal permit is required, occurs during the general permit process which requires the applicant to complete a Joint Application Form that is sent to both DEC and ACOE.

Please be aware that a landowner who wants to excavate or place fill in navigable waters of Saratoga Lake, including adjacent and contiguous marshes and wetlands, is required to obtain a Protection of Waters Permit from NYSDEC before any work is started. Projects will require either a minor or major permit from DEC. Generally, Minor projects have shorter review time frames and require less public review. Minor Excavation or Placement of Fill in Navigable Waters projects include:

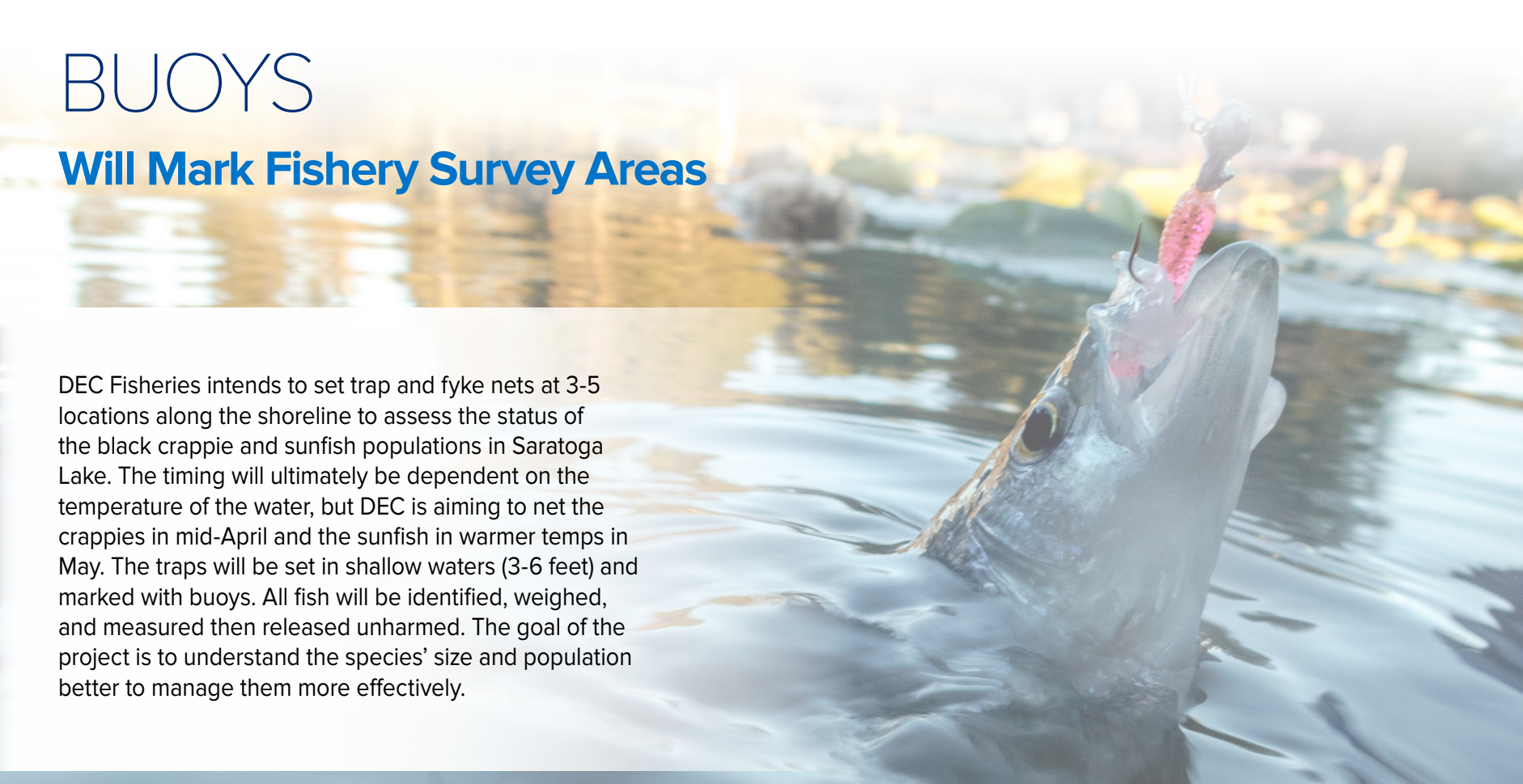
- Fill of less than 100 cubic yards.
- Maintenance dredging occurring at least once every 10 years.
- Excavation of an area of 5,000 square feet or less.
- Installation of rip-rap of less than 100 linear feet for each parcel of land.
- Repair or replacement, in-kind and in-place, of existing structures.

### Further Information

Please check out the following website for information on submitting a permit: https://www.dec.ny.gov/permits/6230.html. Contact the NYSDEC Region 5 office in Warrensburg with questions about completing the application form and other required information for your application. Contact permit administrator Beth Magee at 518-623-1282 mailto:dep.r5@dec.ny.gov

# BUOYS

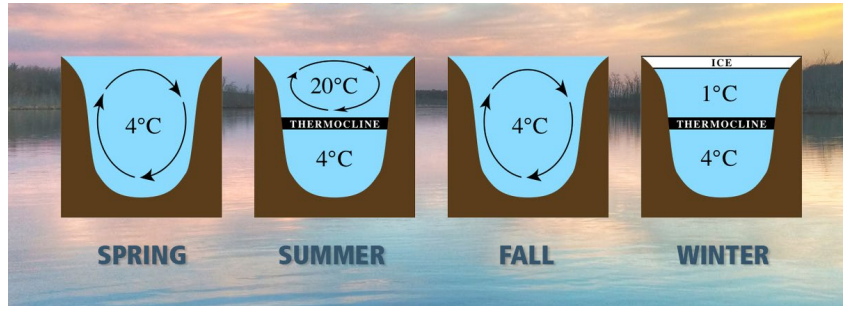
## Will Mark Fishery Survey Areas



DEC Fisheries intends to set trap and fyke nets at 3-5 locations along the shoreline to assess the status of the black crappie and sunfish populations in Saratoga Lake. The timing will ultimately be dependent on the temperature of the water, but DEC is aiming to net the crappies in mid-April and the sunfish in warmer temps in May. The traps will be set in shallow waters (3-6 feet) and marked with buoys. All fish will be identified, weighed, and measured then released unharmed. The goal of the project is to understand the species' size and population better to manage them more effectively.

# LAKE TURNOVER

Lake residents were excited to see the ice melt off the lake with boaters and kayakers out early, smashing through the ice to break it away. The Official ice-out date was March 26 this year.




Lakes freezing plays a critical role in our environment. A lot of life continues during the winter, including rooted plant green algae, blue-green algae (cyanobacteria) bacteria, and fish growth goes on during winter. The lake does not sleep during the winter.

Water exists as a solid, liquid, and gas, which makes it unique. Water density changes with temperature and water are less dense as a solid at 0 °C (32°F) than when it is at a temperature above and below 4.0° C, water is most dense at 4.0° C (39°F). After the ice-off temperature, the vertical profile is all the same from top to bottom. As the air temperature warms, the lake slowly warms, and temperatures at the lake surface gradually increase. This increase will continue during the entire spring and summer. In June, the upper 5-8 meters will warm to such an extent that warm less dense water separates from the cooler, denser water. It is creating a layer that is a thermocline. The thermocline may become more profound as the summer progresses or stay at a depth of around 8 meters. The water below 8 meters will not circulate until fall turn over when the lake cools to the deep water temperature. Then the lake is isothermal and will re-mix or turnover. The deepwater is isolate from the atmospheric air and is cut off from oxygen. In the bottom sediments of the lake, active decomposition occurs that requires oxygen.

By August, in the deepwater zone, oxygen is depleted, which changes the water sediment zone's chemistry at the bottom of the lake. The chemical changes in iron in an area without oxygen (anoxic) causes the phosphorus bound to the iron to be released, creating phosphorus-rich water. This phosphorus water will stimulate green algae and cyanobacteria when the lake mixes in the fall.

In the winter, when ice covers a lake, deep layers of water without access to air may become devoid of oxygen and may lead to winter fish kills. If there is an anoxic zone at the bottom of the lake, it will cause phosphorus release. Oxygen depletion in the winter is a slower process due to the low-temperature water. That photosynthesis continues under the ice when the ice is clear with limited snow cover. Photosynthesis will produce oxygen. Under clear ice, Eurasian watermilfoil is seen topped out.

Spring and fall mixing are driven by wind, and prevailing wind direction changes by seasons, with more turbulent conditions occurring in the spring and fall. A typical dimictic pattern of temperature changes.

Before the ice melt, the lake's oxygen levels are depleted. Springtime arrives, and the ice slowly melts with warmer temperatures exposing the lake water once again. Stratification happens once again. The wind begins to mix the lake water, and the surface water begins exchanging gases with the air, pushing the surface water deeper and infusing it with oxygen. Next time you are swimming in a lake, notice the temperature differences the deeper you dive down. If you have a swimming face mask on, you may see a layer of trapped debris and pollen at the zone of temperature changes.

When the lake turns over in the spring and fall, there is internal recycling of phosphorus from the deep water. The fall turnover recycles more phosphorus than the spring turnover. The spring ice melt also contributes phosphorus since most phosphorus is in the dust and dirt accumulating on the ice. At the same time, there is increased runoff, so there is a slug of phosphorus and nitrogen compounds.

# Chronology of Saratoga Lake Reports

The earliest study recorded for Saratoga Lake dates to 1899 and was ordered by Governor Theodore Roosevelt. This study was primarily concerned with the pollution of Kayaderosseras Creek and Saratoga Lake. It resulted in mandating construction of the first sewage treatment plants in Ballston Spa and Saratoga Springs, as well as the control of waste discharges by the textile and leather industries.

The first extensive study of the Upper Hudson River and its tributaries was conducted in 1932 by the Conservation Department, the New York State Department of Environmental Conservation's (NYSDEC's) predecessor agency. At that time, deep water areas in Saratoga Lake showed signs of reaching oxygen depletion based on the results of a single water quality sampling in July when deep water areas revealed very low levels of dissolved oxygen.

From 1972-1974, the USEPA (USEPA, 1974) conducted a study on the water quality of Saratoga Lake. These studies occurred immediately prior to the formation of the Saratoga County Sewer District #1.

From 1981-1982, chemical, biological, and physical monitoring of Saratoga Lake was conducted under EPA's "Clean Lakes Program"(Hardt and Mikol,1983). As part of these studies, NYSDEC directed in-lake feasibility and pilot studies, including the evaluation and selection of weed control methods as well as identifying associated environmental impacts.
**The 1983 Diagnostic Feasibility Study for Saratoga Lake** represented of all these studies from the 1980s. It contained important findings since the data covers both the pre- and post-implementation of the Saratoga County Sewer District in 1977. Since the 1983 Study, the problem of EWM has been the focus for lake management, and in 1986, the formation of the SLPID tax district was formed to manage the EWM problem and other lake and watershed issues.

SLPID has been an active participant in the Citizens Statewide Lake Assessment Program (CSLAP), a volunteer lake-monitoring program managed jointly by the DEC and the NYS Federation of Lake Associations for the following years: 1993-1997, 2005-2011, 2013, and 2016-2020. Under this program, trained volunteers collected water samples, and made water quality measurements every other week over a fifteen-week period starting in May and ending in October. During the initial five-year study, CSLAP drafted a broad summary of the major lake problems and discussed recommendations for lake management. SLPID rejoined CSLAP in 2005 and has been supplementing CSLAP's data with dissolved oxygen readings for the last few years.

# Chronology of Saratoga Lake Reports cont.

**Land To Lake Perspectives: A Watershed Management Plan for Saratoga Lake** (SLWMP 2002) was funded and developed through the Environmental Protection Agency (EPA) Wetlands State Development Program in 1999. The Watershed Plan served as an update to the 1983 Lake Diagnostic Feasibility Study and focused on alternative methods to control Eurasian watermilfoil (EWM) and non-native plant growth, including the introduction of a small-scale bio-control project using the EWM weevil to combat EWM, and the use of Sonar, a chemical agent used for the control of invasive aquatic species. The Sonar® demonstration studies were not funded through the EPA grant, but through SLPID's funds due to the importance and priority of determining methods that would be useful in managing EWM in Saratoga Lake.

In 2004, SLPID commissioned Aquatic Control Technology, Inc. to research and prepare the **2004 Long-Term Aquatic Vegetation Management Plan** to develop an integrated approach to EWM control by utilizing a combination of mechanical harvesting, lake drawdown and herbicide applications to decrease the areal extent of EWM, a key recommendation from the 2002 Watershed Management Plan. The Long-Term Aquatic Vegetation Management Plan, funded directly from the SLPID budget, concluded that an application of Sonar to the entire lake would be a viable option for the control of EWM, while harvesting methods should still be utilized to control weeds throughout the lake. A comprehensive survey of the EWM beds was subsequently conducted and reported in the 2005 EWM Inspection Report. The **2006 Draft and Final Environmental Impact Statement (EIS) for the Sequential Whole Lake Treatment of Saratoga Lake** provided the basis for obtaining the permits required to treat Saratoga Lake with herbicides to control EWM.

In 2019, SLPID completed the **Draft and Final Supplemental Generic Environmental Impact Statement (SGEIS) for the Saratoga Lake Aquatic Invasive Species 2019 Long-Term Management Plan.** This was an update of the 2006 Draft and Final Environmental Impact Statement( EIS). The SGEIS recommended a continued integrated management plan for the control of non-native plants by use of herbicides and draw down, mechanical harvesting and hand harvesting to manage the density of all aquatic plants.

Currently underway, the **Saratoga Lake Watershed Plan 2021 Update**, represents an update to the **Land To Lake Perspectives: A Watershed Management Plan for Saratoga Lake** completed in 2002.

# Floating Wetland Treatment Island Demonstration Project

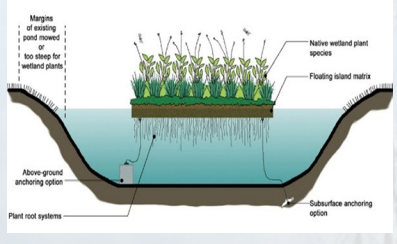
SLPID is planning to initiate a demonstration project that proposes to construct an artificial wetland to protect the lake from sediment and pollutants associated with stormwater discharges from local streams. The floating wetland treatment island will be made of coconut fiber coir logs (see photo below). Once the demonstration project is determined to be successful, it is intended that the project will be duplicated at other stream outlets around Saratoga Lake.

Coir Fiber Floating Biolog

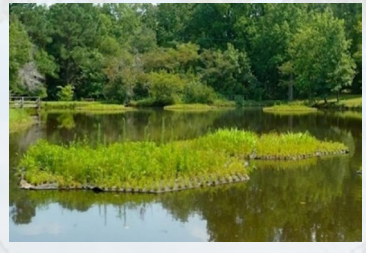
The project would involve the purchase of vegetated biodegradable, coconut coir pith logs tightly packed in tubular netting. These logs provide an excellent medium for plant growth and are therefore highly effective in the collection and treatment of pollutants in stormwater. The typical duty of the floating island technology is to intercept and rapidly cycle nutrients into the vegetation. Another significant benefit of floating wetland treatment islands is that they create high quality habitat areas for the lake's fishery.

The estimated cost for a single small floating wetland treatment island is approximately $6,000 and involves the purchase of one or more biologs ($500-1,000 per log), a plastic tank, and various native plants. These islands can vary widely in size, shape, surface area, planting scheme and positioning.

Floating wetland islands are most frequently positioned close to the shoreline within the no wake zone, either in front of or adjacent to stormwater pipes, swale gullies, or inlet streams where elevated nutrients enter the lake. The location for the Saratoga Lake project will be determined by where there are local streams discharging levels of total phosphorus .concentrations of 0.06 mg/L or higher as detected through water testing. There are approximately 16 streams that discharge into Saratoga Lake and none have undergone extensive testing. The success of the demonstration project will be determined by the ability to determine before conditions and conditions after the floating island is mature and able to treat the water passing through it. The next step is to conduct water testing on several streams before deciding the ultimate location. SLPID is actively seeking partners to participate in this initiative. Please contact Lake Administrator Crissy Connolly at: mailto:cristina.connolly@slpid.org




Ref.: Texas Community Watershed Partners



Floating Wetland Treatment Biolog Island

# Saratoga Lake
# TAKE THE PLEDGE

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## ENCOURAGE YOUR NEIGHBORS!

Like us on Facebook and send a message

The goal of **Take the Pledge** is to encourage property owners within the Saratoga Lake watershed to commit to a few sustainable actions and demonstrate that small efforts on your part have a significant reaction on the biodiversity and health of the lake.

As a property owner within the watershed, your direct and indirect actions have the most impact on algal growth, sediment run-off, bacteria, pathogens, and poisoning aquatic life and wildlife.

## I PLEDGE:

**TO MINIMIZE RUNOFF** – Use "soft-scaping" and buffers around the lakefront and any slope or hillside that has a chance to runoff into the watershed.

**Tip:** Leave a buffer of grass, hedges or native flowers between the lakefront and lawn. You can reduce impermeable surfaces with natural walkways, patios and permeable or gravel driveways. Instead of concrete patios, use natural permeable materials with native plants integrated.

**TO SAY NO TO FERTILIZERS** – Most lawns naturally have adequate phosphorous for a healthy lawn and fertilizer is not needed. In accordance with NYS law, if you must use fertilizers, get a soil test done at the county Cooperative Extension office to ensure that you are only using the fertilizer that is needed.

**DO NOT** apply lawn fertilizer within 20 feet of any water body unless...

– There is at least a 10-foot buffer of shrubs, trees or other plants between the area you are fertilizing and the water OR

– Fertilizer can be applied no closer than 3 feet from the water using a device with a spreader guard, deflector shield or drop spreader.

**Tip:** Look for alternatives to fertilizers and if you do use them – never before a storm!

**TO STOP THE POLLUTION** – Do not throw leaves, lawn debris/clippings, or animal feces into the lake. All of these are high in phosphorous that can contribute to algal growth.

**Tip:** Always bag lawn debris for disposal or better yet, compost!

**TO SAY NO TO PESTICIDES** – As well as harmful cleaning agents and other chemicals. The bugs you see in and around the lake are also an important part of the ecosystem. Dangerous pesticides and lawn chemicals can be toxic to aquatic life and promote the growth of algae and weeds.

**Tip:** Avoid all chemicals; they are also bad for you and your pets' health. Wash cars and boats away from the lake.