Keuka Lake Association Starry Stonewort (SSW) Abatement Project

Frequently Asked Questions

What is Starry stonewort?
Starry stonewort (SSW) is a type of large, green algae with a plant-like form. It occurs submersed in lakes, ponds, and slow-moving water bodies, anchored to the sediments with clear filaments called rhizoids. These rhizoids resemble fishing line and produce star-shaped growths called bulbils.

How deep will it grow and in what type of habitat?
SSW can colonize shallow to deep waters up to at least 20 feet (6.1 meters) deep. It may reach the surface at depths up to 7 feet. SSW occupies a broad range of habitats. It particularly thrives in alkaline, stagnant to slow-moving waters with moderate to high levels of nutrients and calcium.

How and when did it get to the U.S.?
It is unknown how SSW was transported to the U.S. It is likely that it initially arrived in ballast water of trans-oceanic ships from Europe. The first documented U.S. population was in 1978 (Geis et al. 1981) in the Saint Lawrence River between New York and Ontario, Canada. SSW is currently known from Indiana, Michigan (Lower), Minnesota, New York, Ohio, Pennsylvania, Vermont, and Wisconsin, and Ontario, Canada. In addition regional lakes have experienced SSW including: Oneida, Owasco, Waneta, Cayuga, Canandaigua.

How does it spread from lake to lake?
It is unknown how SSW is transported between water bodies. Some aquatic plants and algae can be transported by waterfowl consuming their reproductive structures (seeds). However, there is an apparent absence of female SSW in North America, which would be necessary to produce viable “seeds” (oospores). The bulbils are star-shaped, creamy white, and less than 1/3-inch (~1cm) across. A single plant can produce many bulbils, and each bulbil can produce many new plants. Physical transport of bulbils or fragments is the most likely way that SSW is being transported, especially by boats, trailers, anchors, and other equipment. Early populations of SSW are often discovered adjacent to boat landings and other public access points. It is also possible that fragments of SSW could spread within a lake or between connected water bodies by water currents.

Where has SSW been found on Keuka Lake? When?
SSW was detected in the Keuka Outlet and Sugar Creek in 2016. It was detected in Keuka Lake, near the mouth of Sugar Creek, in 2020.

How has it been managed thus far?
In the Keuka Outlet, to reduce SSW biomass and decrease the likelihood of watercrafts snagging and transporting SSW fragments, KLA (Keuka Lake Association) and KWIC (Keuka Watershed Improvement Cooperative applied for and received a grant in 2017 from NYS Department of Environmental Conservation (NYS DEC) to hire a contractor to harvest SSW in the Outlet up to twice a year, for three years. From 2017 through 2019, harvesting occurred one time per year, usually in mid-to-late August. Harvesting was continued under extended availability of remaining grant funds in 2020.

At Sugar Creek, review of literature and evaluation of the location and harvesting capabilities determined that the best management strategy was manual removal by hand-pulls. Volunteers from several organizations and members of the community have worked together to pull SSW from the infestation site at Sugar Creek since 2017 through 2019.

What are the impacts of SSW on a lake?

- Native vegetation and habitat damage. Keuka Lake watershed ecosystem is particularly susceptible to the dense mats characteristic of SSW. The suffocation and displacement of natural

vegetation disrupts food chains, fosters the accumulation of toxins and furthers an inhospitable condition for plant life, algae management and overall lake chemical balance.

- Fish spawning and movement impacts. SSW mats and vegetation impacts disrupt the spawning locations for fish native to the region. The density chokes out the habitat they rely on for survival as well as creating a hazard to movement, feeding and the balance of the aquatic ecosystem. With 60 miles of shoreline and depths conducive to SSW there is a critical need to prevent and monitor the spread of this invasive plant.
- Recreation, safety and commercial consequences. Thickness, growth and spread can damage boat motors, interfere with swimming, fishing, and watersports. All having a long-term impact on enjoyment of lake life and its associated business and commerce, which at its core thrive on a vibrant, healthy lake.

How can we control it?
Many attempts have been made to control SSW, including application of aquatic herbicides and physical removal in lakes and ponds. Studies in several states are underway to evaluate outcomes of these management actions. Reports from lab-based trials indicate a decrease in biomass when SSW fragments are treated with copper algaecides. Controlled field-based trails are underway to assess the use of copper algaecides for SSW control, and preliminary results are inconclusive. As with all invasive species, prevention and early detection remain the best options. Cleaning boats and equipment thoroughly is key to preventing spread of SSW to new locations. Photos and physical specimens of suspected SSW should be sent to an expert for verification. See the list of experts at the end of this document. Biological control has shown mixed results for management of aquatic invasive species. There are no known biological control agents available for control of SSW.

What is the plan and what are the impacts?
The KLA ~~is~~ will employ a series of measures to address Starry Stonewort in 2021 and annually to prevent spread. These measures include:

An Awareness Campaign and physical removal to address Starry Stonewort (SSW). Educational and warning signage at the boat ramps as well as buoys placed in the lake. These measures will be accompanied by a continued emphasis on “Clean/Drain/Dry practices.

Benthic Mats will be placed in locations where SSW has been located based on survey conducted along the shore and in the lake. (early July)

Diver Assisted Suction Harvesting (DASH). A special harvesting system will be employed to remove up to 95% of the biomass of SSW. Divers will pull the “plants” from the sediments including the attached rhizomes and bulbils and feed them into a suction hose. The biomass is deposited on a boat fitted with filter trays to capture all fragments and tiny bulbils. It is then transferred to the shore for dewatering and composting. (mid-late July)

New York State (NYS) approved Algaecide treatment will be deployed to a two acre site at the inlet mouth and along the shores of Sugar Creek to reduce and control a SSW infestation and prevent spread. (mid-late August)

These measures will be followed by surveying, monitoring and reporting from September 2021 followed by 2022 project planning based on the results of the project.

What benefit is expected?
The anticipated benefits of these measures to protect native species and habitat, to preserve Keuka Lake AA-TS water quality rating, prevent loss of recreational uses i.e. fishing, swimming and boating, to avoid

negative economic impacts, and prevent SSW spread throughout the watershed and nearby water bodies.

How is the project being funded?
The KLA has applied for and been awarded a $10,000 grant from The Finger Lakes Partnership for Regional Invasive Species Management (PRISM). In addition, KLA will apply funds from membership and fundraising to address this issue consistent with our mission to preserve the lake for future generations

Where can I learn more?
SSW Collaborative https://starrystonewort.org/

How can I help?
Clean, Drain, Dry your watercrafts before and when leaving a waterbody and learn how to identify SSW and if you see it in Keuka Lake, take photos and report it to KLA (insert email) or Cornell Cooperative Extension (CCE) of Yates County Natural Resources Educator, Laura Bailey at lb698@cornell.edu or call (315) 536-5123.