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AquaticsinBrief

INSIDE:

SOLITUDE LAKE MANAGEMENT

A Full Service Lake, Pond, Wetland and Fisheries Management Company

Case Study: Shoreline Restoration at a Recreational Lake

A premier sporting community in the heart of South Carolina Lowcountry offers the perfect backdrop for nature lovers seeking authentic experiences on and near the water. Outdoorsmen and women who reside in this community enjoy front row access to 3,500 acres of huntlands, fresh and saltwater fishing impoundments, and miles of unspoiled marshes.

The vibrant activity around these wildlife areas includes crabbing and oystering, boating and kayaking, fishing, golfing, horseback riding, and hiking. The area is also home to an array of unique wildlife, including southern fox squirrels, American alligators, chukars, pheasants, deer, river otters, bottlenose dolphins, and many other treasured species.

Due to the positioning of this time-honored community along the East coast, wind and rain have caused the banks along certain fishing impoundments to erode over time, creating drop offs ranging from 18 in. to 4 ft. The community considered a number of solutions, including bulkheads and rip-rap, but had concerns that such options would detract from the natural landscape for which the community is known.

A SOX Erosion Control system was recommended by SOLitude and selected by the community as the solution for the erosion and sedimentation problems they were experiencing. Unlike traditional erosion control options, these systems can be seamlessly introduced along a shoreline to create a harmonious transition from water to land. The innovative technology is comprised of patented photodegradable knitted mesh that can act as a sediment containment barrier along the shoreline. Once staked into the stable shoreline, the system can be filled with organic material to create a gradual slope leading to the waterbody, creating an even, safe shoreline for the community members to enjoy. In addition to providing long-term erosion control benefits, native flowers and grasses can be planted directly into the material, allowing for

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Case Study: Shoreline Restoration at Recreational Lake

Continued from front cover

the cultivation of lush vegetative buffers around precious fishing and recreational waterbodies.

A team of eight professionals spent nine days installing a 12 ft-wide SOX system along 1000 linear ft. of shoreline. Of the 34 waterbodies located on the property, this particular lake is relied upon for fishing and also serves as a focal point for a horseback riding trail that runs parallel to the site. A mechanical hydro-rake was used to scoop eroded muck out of the waterbody and deposit it on shore for integration into the knitted mesh system. In addition to increasing depth in the waterbody, the use of on-site material (as opposed to trucked in dirt) helped reduce overall project expenses.

Once filled, the SOX system was shaped to integrate naturally into the existing shoreline. The SOLitude team made additional considerations to extend the length of key pipes and drains located within the bank. The restoration work was completed with the installation of native plant species in the precious littoral zones along with sod, which were planted to give the lake a living shoreline and help filter excess nutrients from entering the waterbody. The community was extremely pleased with the ease and fast-paced transformation of the shoreline restoration, which minimally impacted residents and will provide more than five years of erosion control.

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SOLitude has recently completed the successful installation of SOX systems on numerous shorelines across the country. From community stormwater ponds to golf course waterbodies and large recreational lakes, this erosion control solution is generating amazing results and leaving community members and golf course superintendents extremely satisfied. ■

3 Tips for Creating a Successful Trophy Fishery

By **Dylan Kwak, Fisheries Biologist**

Developing a thriving trophy fishery is no easy task. To be successful, it's important to consider the various factors that could restrict productivity and develop a plan to create the ideal environment for fish growth. Growing massive and healthy largemouth bass or tiger muskies can be achieved by considering these three facets for successful fisheries management:

1. Recruitment

Recruitment is the number of fish that survive and grow to a catchable size. This can vary annually due to seasonal differences in survival at egg, larval, and juvenile life stages. SOLitude manages recruitment through selective harvesting to ensure healthy fish are reaching their full growth potential.

2. Growth

Fast growth is critical in developing and maintaining a trophy fishery. The growth potential of your trophy fish is dependent on genetics, forage abundance and quality, diverse and adequate habitat and high productivity. Fisheries biologists can provide either natural or artificial habitat for prey, and stock proper genetics to help ensure rapid growth.

3. Mortality

Fisheries with low mortality rates (a high number of fish surviving each year) tend to become overpopulated. Conversely, with high mortality rates, desired angler catch rates will not be achieved. For an effective management plan, SOLitude utilizes electrofishing and increased angler harvest to help control mortality levels.

Our experienced team of fisheries biologists are ready to work closely with you to design an individually tailored Fisheries Management Plan to help achieve your dream trophy fishery. ■

5 Steps to Achieving a Community-Oriented Fishery

By **Aaron Cushing, Fisheries Biologist**

Creating fishing opportunities is a great way to provide entertainment and strengthen a community. With the help of a fisheries biologist and the following management strategies, you can turn any community lake or pond into a successful fishing program:

1. Conduct an Electrofishing Study

Electrofishing is an exciting activity the entire community can watch and will help members better understand the current state and health of the waterbody. From fish size, structure and condition to predator-to-prey ratios, water quality and habitat, this information will help determine future management steps.

2. Feed Fish

Introducing feeders or a hand feeding program at fishing access points will help attract fish, making them easier for kids

to catch, while also providing the nutrition required to support a population of fish. When the fish feeder goes off, gather the kids around to watch the feeding frenzy fun!

3. Install Fish Habitat

Introducing natural or artificial structures into your fishery will help maintain a balanced fish population and create fishing "hot spots" for your neighborhood anglers, making it easier for everyone to catch fish!

4. Stock Fish

Fish stocking is a solution used to quickly create new fishing opportunities in lakes and ponds. This introduces unique species into the fishery on a regular basis, creating a fun angling experience for all.

5. Host A Community Fishing Event

Hosting a fishing event can help generate excitement for the program and teaches both kids and their parents how and where to fish. In preparation for the event, a fisheries biologist can work with the civic leaders to help tailor the event to the community's schedule and budget, and can ensure high odds of success for all participants.

Contact a SOLitude fisheries biologist today to begin developing your community fishing program! ■

Restore Your Waterbody One Scoop at a Time

By **Lauren Sullivan, Environmental Scientist and Project Coordinator**

Much like living organisms, lakes and ponds are born, age and die. Many factors, like nutrient levels and runoff, can affect the length of a waterbody's existence, but the lifespan is considered complete when sediment builds up to the point that it can no longer retain water. A solution such as a mechanical hydro-rake, a floating pontoon with a backhoe and rake attachments, can help reduce signs of aging, improve functionality, and prolong the need for dredging by removing organic matter and unconsolidated sediment.

The hydro-rake can function in water as shallow as 18 inches and in depths of up to 10 feet deep. In areas where access to the shoreline is limited, the hydro-rake can be paired with a transporter vessel to contain materials before unloading at a designated location, so property managers can rest assured that this option will have minimal impact on valuable shorelines properties. Hydro-raking is a versatile management solution that can be utilized to achieve a variety of goals:

Increase Waterbody Depth and Improve Water Quality

Environmentally friendly hydro-raking is most useful in lakes and ponds that have collected large amounts of organic muck and debris from things like decaying algae and plant matter, leaves, grass clippings, and tree limbs. Waterbodies, such as stormwater ponds, with large amounts of runoff often contain excessive levels of phosphorous and nitrogen (nutrients that promote the growth of nuisance vegetation and algae blooms). If rooted vegetation and accumulated organic matter are not managed through hydro-raking and other preventative means, the nutrient overload may eventually cause water quality issues that threaten fish and aquatic life.

Restore Recreational Access

Hydro-raking is not only beneficial for removing bottom muck, it is also an excellent method to clear unwanted organic material and nuisance vegetation from beach shorelines. Removing this material will help to provide a safe swimming and boating area for summer camps or small public beaches.

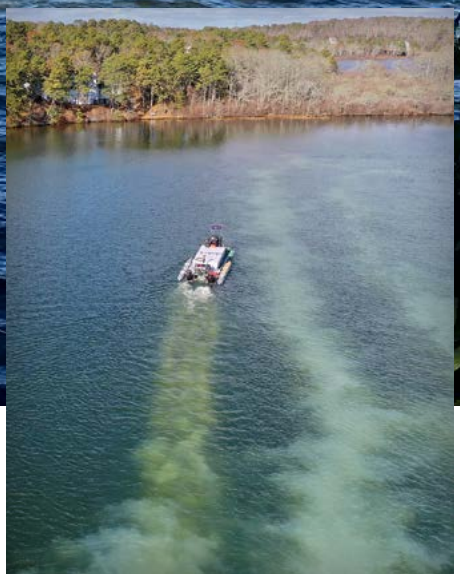
Remove Unwanted Aquatic Vegetation

The results of hydro-raking where vegetation removal is the goal will vary depending on the types of nuisance vegetation present. Plants with well-developed root systems, like waterlilies and cattails, can be significantly reduced for 2-3 years following a hydro-raking project. Depending on the density, submersed species and plants that reproduce through fragmentation, like fanwort and water milfoil, may be successfully controlled for the summer after hydro-raking. They can be prevented further with the help of a comprehensive management plan that includes solutions like buffer management, nutrient remediation, and targeted herbicide and algaecide treatments, if necessary.

While hydro-raking is an environmentally-friendly solution for the removal of nuisance vegetation, it is only one piece of a holistic lake and pond management plan, which can provide the most sustainable, professional and long-lasting support for your aging waterbody. With the proper management approaches, you can ensure that when it comes to your lake or pond, age truly is just a number. ■

Case Study: Improving Water Quality with Alum in an Ecologically-Sensitive Waterbody

By **Jameson Bastarache, Environmental Scientist**



Located in Harwich, MA, this popular pond serves as an ecological, agricultural and recreational asset to the surrounding communities. This 174-acre kettle pond is unlike many in the Cape Cod region. It's relatively shallow in comparison to others, boasting a maximum depth of 28 ft. and a mean depth of 13 ft. This waterbody has supported cranberry farming for roughly 150 years and is an important spawning habitat for Alewife (a small fish species that migrates between fresh and saltwater). In recent decades, the pond has also experienced significant residential development along the shoreline.

Alewife

Over the years, phosphorus levels have become excessive due to the presence of the Alewife and nutrient loads from nearby ponds, stormwater runoff, and runoff from the cranberry bog. As a result, this waterbody has experienced a number of severe cyanobacteria (commonly referred to as "toxic algae") blooms, which have deteriorated the water quality and impaired many of the pond's uses. After two large algae blooms in 2019 and 2009, a proposal for an aluminum sulfate (alum) application to help improve water quality was developed.

Phosphorus inactivation by means of alum treatment was determined to be the most advantageous method for removing phosphorus from the water and inactivating phosphorus in the sediment. This option was the most plausible based on budgetary, environmental, and management constraints, among other factors, to establish long-term control.

An Alum treatment utilizes two compounds — aluminum sulfate (alum) and sodium aluminate. When combined, they maintain a neutral pH. Upon application, the aluminum contained in both products reacts with the water to form an insoluble floc which binds with phosphorus and removes suspended particles as it settles to the bottom. Once at the bottom, this environmentally-friendly alum floc also works to inactivate available phosphorus in the sediments, helping to improve water quality and thereby reduce the likelihood of recurring algae blooms moving forward.

Treatment areas were outlined with GIS in advance and then downloaded to the onboard GPS unit used to pilot the vessel during treatment to ensure complete coverage. The aluminum compounds were then pumped separately to a submerged boom system which applied both compounds below the surface.

Over the course of two weeks, a total of 90 acres was treated with the aluminum compounds utilizing SOLitude's custom-designed alum barge. The treatment area was divided into four sectors, each of which received four staggered doses. This was done to help maintain balanced water chemistry and protect organisms present in the treatment area. Water quality conditions, including pH, water clarity, and other parameters were closely monitored throughout treatment.

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The application and monitoring occurred in a timely manner, allowing passive recreational activities to resume for the remainder of the season. There were immediate improvements in water clarity and it continued to improve throughout the following weeks. The local wildlife and sensitive ecosystem were not adversely affected by the applications and continue to thrive. The locals were extremely happy with the results and were relieved knowing their days on the water won't be ruined by toxic algae blooms. ■

Thanking Our "Hometown Heroes" During Global Pandemic

Frontline workers, including healthcare professionals, emergency responders, and other essential employees, have served their communities selflessly during the coronavirus pandemic. To recognize their exceptional efforts in this time of need, SOLitude Lake Management has helped launch the Hometown Heroes program.

Through this new program, SOLitude's team of freshwater management professionals delivered care packages to deserving healthcare, childcare, senior living, and military organizations in their local communities across Florida, Massachusetts, Connecticut, Delaware, Colorado and Arizona. Each package contained handwritten notes, entertainment and restaurant gift cards, snacks, branded gear, and additional goodies. Team members also delivered catered meals to clients and valued partner organizations. In collaboration with SOLitude's parent company, Rentokil, colleagues were able to impact more than 8,100 individuals throughout the nation.

In addition to Hometown Heroes deliveries, SOLitude's colleagues have devised other unique ways to spread joy during this unprecedented time of social distancing. From hosting neighborhood food drives to painting greeting cards for nursing home residents and homebound individuals, our team has continued to make an impact in their communities from the comfort and safety of their homes. ■

The SOLution
creating a better world

Volunteers of the Quarter One and Two

We are pleased to name our volunteers of the first and second quarter! Through SOLitude's corporate volunteering and community outreach program, The SOLution, the company has named Aquatic Specialist Robert Finnick of SOLitude's North Florida team as Volunteer of the Quarter for the first quarter of 2020. Robert helped with an array of volunteering events through the first quarter. Most notably, he helped assist with a controlled burn event hosted by the North American Sarracenia Conservancy. Robert ended the first quarter with 42 personal volunteer hours.

We are happy to name Aquatic Biologist Ean Sims of Southwest Florida team as our Volunteer of the Quarter for the second quarter! Ean was heavily involved in our Hometown Heroes initiatives and has held many events throughout the COVID-19 pandemic, including a neighborhood food drive, to help his local community and show his appreciation to frontline workers. Ean generated a total of 30 volunteer hours throughout the second quarter.

We are proud of our hard-working colleagues that are making a difference in the world, even during these times of uncertainty. ■

Volunteer of the Quarter Q1, Robert Finnick (North Florida)

Volunteer of the Quarter Q2, Ean Sims (Southwest Florida)

Before & After Showcase

Wetland Preserve Restoration (Beneficial Plantings)

Property type:
Public Nature Center

Square feet:
175 ft x 10 ft

Steve Lawler, Project Manager, CA

Filamentous Algae Treatment

Property type:
Private Pond

Acreage:
2.5 acres

Kevin Wilt, District Manager, FL

Invasive Water Primrose and Algae Treatment

Property type:
Private Pond

Acreage:
1.2 acres

Peyton Matthews, Aquatic Biologist, MO

Shoreline Restoration

Property type:
Community Pond

Square feet:
823 ft

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the MappingNetwork
The Stewards of Water
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BBB ACCREDITED BUSINESS
BBB RATING: A+

Get Professional Recommendations with Comprehensive Lake and Pond Assessments

By **Sam Sardes, Weed Science Director, Lab Director**

Lake and pond management is a complex field that presents never-ending puzzles and surprising challenges. No two waterbodies are alike and they are all constantly changing based on how the water is used, the surroundings and weather. When diagnosing and designing a solution for water quality issues like algae blooms or bad odors, it's important to know what's going on below the surface.

SOLitude is proud to offer professional assessments that give you a comprehensive view of your waterbody's health. Think of these assessments as a physical for your waterbody. An array of scientific tests are conducted to check its vitals and establish an initial baseline of health. The data can be used to identify root causes of recurring issues and predict and prevent the onset of future water quality problems. Lake and pond professionals can also use the data to make more informed proactive management decisions that are customized to your waterbody's current state.

We have a variety of waterbody assessment packages, each including a comprehensive report detailing water quality tests, for you and your stakeholders. Your freshwater management professional can help you determine which packages are most appropriate based on the history of your waterbody, as well as your unique goals and budget. Contact your local lake and pond management professional to get peace of mind about the future of your waterbody.

Learn more and see our assessment packages at www.solitudelakemanagement.com/waterbody-assessments. ■