

Massachusetts Congress of Lake and Pond Associations

32nd Annual Workshop

Stormwater Management and Your Lake or Pond

Massachusetts Division of Fish and Wildlife Headquarters, Richard Cronin Building, Room 108

1 Rabbit Hill Road, Westborough, MA 01581

Friday April 12, 2019



MA COLAP
Massachusetts Congress of
Lake and Pond Associations

We would like to thank our wonderful sponsors.



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We would also like to thank the Massachusetts Division of Fisheries and Wildlife for hosting our event.

This venue is a functioning office building. For this reason, we ask that you limit your movement between rooms, and remain quiet while inside the atrium. Thank you!

Agenda

- 8:00 to 8:25 **Registration and Light Breakfast**
- 8:25 to 8:30 **Opening Remarks**
Melissa Lenker, President, MA COLAP
- 8:30 to 9:00 **DCR Update on AIS in the State Lakes System**
Jim Straub, DCR
- 9:00 to 9:30 **Think Blue Massachusetts Public Education Campaign**
Kerry Reed, Think Blue
- 9:30 to 10:00 **Worcester's Blue Spaces Initiative: The Case for a Municipal Lakes and Ponds Management Program**
Jacquelyn Burmeister, City of Worcester
- 10:00 to 10:30 **Break**
- 10:30 to 11:00 **MS4 – It's Not Just for DPW Anymore**
Frederick Civian, MassDEP
- 11:00 to 11:30 **Cyanobacteria – Too Much of a Good Thing**
Amanda Mahaney, SOLitude Lake Management
- 11:30 to 12:00 **Where Did my Beach Go!?!**
Carl Nielsen, ESS Group, Inc.
- 12:00 to 1:30 **Lunch, Exhibitors, Networking**
- 12:30 to 1:30 **Board Meeting**
- 1:30 to 2:00 **Don't Leave It To Beaver: Comprehensive Pond Restoration in the Face of Wildlife-enhanced Stormwater Impacts**
Matt Ladewig, ESS Group, Inc.
- 2:00 to 2:30 **Lake Iron Nodules in New England Lakes and Ponds**
Jonathan Higgins, Higgins Environmental Associates, Inc.
- 2:30 to 3:00 **MassDOT Stormwater Best Management Practices**
Oona Gaffney and Joe Yoo, MassDOT
- 3:00 to 3:30 **Eutrophication, Cyanobacteria, and Floating Wetlands**
Max Rome, Northeastern University College of Civil Engineering
- 3:30 to 3:35 **Closing Remarks**
- 3:35 to 4:00 **Clean Up**

AIS in the State Lakes System

Jim Straub, DCR Lakes & Ponds Program

Jim Straub from the Massachusetts Department of Conservation and Recreation, Lakes and Ponds Program, will discuss the current state of aquatic invasive species in the Massachusetts lakes systems.

Think Blue Massachusetts – A Statewide Education Campaign to Build Awareness of Stormwater Pollution

Kerry Reed, Think Blue Massachusetts

Across the Commonwealth of Massachusetts, varied groups of municipalities have come together to form regional stormwater coalitions, in order to share resources and expertise, and to take advantage of regional economies of scale with regards to MS4 compliance. Recognizing that there are potentially even greater opportunities for sharing resources and gaining efficiencies at the statewide scale, regional stormwater coalitions came together to create the Massachusetts Statewide Municipal Stormwater Coalition (“the Statewide Coalition”). The Statewide Coalition was formed to join forces of multiple regional stormwater coalitions in Massachusetts to assist cities and towns with meeting the requirements of the MS4 stormwater permit. The Statewide Coalition currently represents over 130 regulated communities from Cape Cod to the Pioneer Valley Region.

The Statewide Coalition saw a need to develop a statewide stormwater education and outreach campaign that provided a framework for statewide recognition of critical issues related to stormwater. In 2018, the Statewide Coalition was awarded a \$200,000 MS4 Municipal Assistance Grant from the Massachusetts Department of Environmental Protection (MassDEP) to develop that campaign.

The goal of the statewide stormwater education and outreach campaign was to develop an integrated strategy that maximized the effectiveness and efficiency of public outreach and participation efforts at the statewide, regional and local scales. The campaign:

- Developed an integrated implementation and evaluation strategy;
- Created a kit of new and existing tools, including recognizable branding, that can be utilized across the state to educate and remind people about stormwater and the importance of using best practices.;
- Conducted a pilot implementation of selected tools at a statewide scale;
- Strengthened partnerships needed to support long-term implementation; and
- Conducted training on how to utilize these and other tools effectively over the coming years.

The Statewide Coalition adopted the “Think Blue” program, already successful in Maine and other areas of New England. The Think Blue Massachusetts campaign produces a replicable message(s) to educate the general public about stormwater. This campaign assists cities and towns with meeting MS4 permit requirements and can be customized to meet local and regional needs. The Think Blue Massachusetts campaign was officially launched in June 2018. The initial implementation included branding (the “Think Blue” ducky), a Think Blue video, a social marketing campaign using Facebook, an educational website (<https://www.thinkbluemassachusetts.org/>), and other template materials.

Worcester's Blue Spaces Initiative: The Case for a Municipal Lakes and Ponds Management Program

Jacquelyn Burmeister, City of Worcester

Worcester is a diverse, post-industrial city of 180,000 people located in the headwaters of the Blackstone River watershed. It's over 20 lakes and ponds suffer from a plethora of urban water quality challenges, including invasive species, cyanobacteria, and fecal bacteria exceedances. Previously, management of these waterbodies fell onto several small, volunteer-led lake associations, who took it upon themselves to perform water testing and contract lake treatments. However, efforts were sometimes disjointed and underfunded. In 2016, the City of Worcester launched its "Blue Spaces Initiative", which aimed to promote the city's lakes and ponds as assets for recreation and economic development. A Senior Environmental Analyst was hired through the Department of Public Works and Parks to work collaboratively with community groups and other city departments to create and fund long term management plans for four major recreational waterbodies. Since its inception, the program boasts an in-house sampling program, a citizen science volunteer group, educational materials and workshops for residents, active management at five waterbodies, lake recreational use promotion, and broad community support. The program has been successful at prioritizing and aligning lake management goals between the city and community, and can be a model for other municipalities.

MS4 – It's Not Just for DPW Anymore

Frederick Civian, MassDEP

The Municipal Separate Storm Sewer (MS4) permit issued by EPA to 260 Massachusetts cities and towns became effective July 1, 2018. Unlike the previous MS4 permit, which dates from 2003, the requirements of the permit affect multiple operations across municipal governments, from DPW and Engineering to Parks and Recreation, schools and Planning Boards. The MS4 permit requires permittees to evaluate and modify their local stormwater protection rules inside the "Urbanized Areas" of MS4 communities by July 1, 2020. Advocates for better stormwater management of both public and private resources have opportunities to encourage their municipalities to enact more protective local bylaws by considering actions such as a wider geographic scope, lower thresholds to trigger additional post-construction stormwater rules, enhanced recharge requirements, and requirements that local developments use Low Impact Development techniques.

Cyanobacteria – Too Much of a Good Thing

Amanda Mahaney, SOLitude Lake Management

Blue-green algae (or cyanobacteria) is a recent hot-button topic tied to negative consequences such as human health scares, property damage, and harm to pets and wildlife. All the negative attention tends to disregard the fact that cyanobacteria aided in the creation of Earth as a habitable place. Specific to aquatic systems, cyanobacteria occur naturally, and are an integral part of the food web, depending on nutrients to reproduce; however, stormwater ponds specifically created to collect and store pollutants such as sediment, nutrients, trace metals, oil & grease, etc., creates an imbalanced habitat for opportunistic cyanobacteria to increase at a rapid rate. In consideration of the foregoing, annual stormwater pond management is essential to creating and sustaining this man-made habitat.

Where Did my Beach Go!?!

Carl Nielsen, ESS Group, Inc.

In coastal waters, a beach may disappear due to sea level rise, but at many lakes and ponds in Massachusetts, beach losses are more likely due to stormwater erosion. Beach erosion can seem like a simple fix, just dump more sand. But over time, this “solution” may really be avoiding the bigger issue which is the stormwater runoff that carries the beach sand away along with other associated nutrients and pollutants. A better approach for many beaches will be to fix the stormwater runoff patterns to prevent flow across the beach or eliminate runoff altogether. Along with that work, the placement of new sand may also require a variety of wetland and water quality permits, depending upon how a project is designed. Case studies showing several beach restoration projects recently completed or underway in Massachusetts will be presented to highlight the types of solutions that are most advantageous along with the design, permitting and construction costs for each. Potential funding sources will also be discussed.

Don't Leave It To Beaver: Comprehensive Pond Restoration in the Face of Wildlife-enhanced Stormwater Impacts

Matt Ladewig, ESS Group, Inc.

Most stormwater management efforts are rightly focused on addressing human sources of excessive flows and pollutants to surface waters. However, wildlife can sometimes play a meaningful role in aggravating or accelerating stormwater and other nuisance impacts on surface waters. For affected waters, nuisance wildlife concerns are an important component of the lake assessment and management planning process.

This presentation will highlight a lake management success story involving the comprehensive restoration of ecological, aesthetic, and recreational conditions at Flowering Pond in Maudslay State Park. Flowering Pond serves as a key focal point of the park and featured prominently in the original private estate garden. However, over time, watershed and shoreline sources of sediments, nutrients, and organic matter resulted in a smaller and shallower pond. During the initial assessment of Flowering Pond and development of a lake management plan, it became clear that failing to address nuisance beaver activity would reduce the effectiveness and longevity of restoration efforts at Flowering Pond. Therefore, beaver management was undertaken as the first component of the Flowering Pond restoration project, followed by sequential implementation of erosion controls, stormwater improvements, and dredging over a five-year period.

Lake Iron Nodules in New England Lakes and Ponds

Jonathan Higgins, Higgins Environmental Associates, Inc.

Before the 1800s, the Massachusetts Bay Colony in Southern New England was known to some as the iron capital of the colonies. It had large iron processing industries and vast reserves of iron ore in the form of lake and bog iron nodules. As an earth scientist and researcher, I documented the current and historical range of lake iron nodule occurrence in New England lakes and ponds, their method of formation and compared this to documented local and regional changes in atmospheric and surface water quality over time. Aerial wet and dry deposition patterns for nitrates and sulfates correlated well spatially with the current range of lake iron nodule occurrence. Between nitrates or sulfates, sulfates in our freshwater ponds and lakes would tend to have a stronger impact on the natural biogeochemical cycling of iron and formation of lake iron nodules. Sulfate in freshwater can increase the rate and depth of organic detritus/sediment oxidation and sulfides readily bind with available iron. Lake iron nodules have been documented to hold up to four percent (40,000 milligrams per kilogram) of phosphorus. Nodule formation and biogeochemical cycling of iron are natural ways of reducing available phosphorus that can be impacted by changes in surface water quality.

MassDOT Stormwater Best Management Practices

Oona Gaffney and Joe Yoo, MassDOT

As stormwater moves across the landscape, it takes up sediment, pollutants, and excess nutrients including heavy metals, phosphorous, and nitrates. The concentration of these pollutants in our streams, lakes, and ponds leads to a number of environmental impacts including eutrophication, sedimentation, increased turbidity, and reduced dissolved oxygen. Stormwater runoff can and threaten native species, contaminate groundwater aquifers, and damage drainage infrastructure. MassDOT treats roadway stormwater with various Best management Practices (BMPs) to mitigate the effects of stormwater on the environment. This presentation will give a brief background on the importance of these stormwater treatment and management systems and an overview on the federal and state regulations pertaining to stormwater management. The presentation will also discuss the kinds of BMPs that MassDOT employs and the maintenance tasks that must be performed to ensure their functionality. The presentation will then be opened up for discussion and questions.

Eutrophication, Cyanobacteria, and Floating Wetlands

Max Rome, Northeastern University College of Civil Engineering

A brief introduction to eutrophication and harmful cyanobacteria algal blooms. How can we understand blooms as both a result of nutrient pollution and as a consequence of degraded habitat? How do floating wetlands work and how can improving wetland habitat help to reduce algal growth?