MA COLAP 31st Annual Workshop: Invasive Species and Lake Management

MA DFW Headquarters, Richard Cronin Building
1 Rabbit Hill Road, Westborough, MA 01581
Friday, April 13, 2018

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!

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

Agenda

8:00 - 8:20 Registration and Light Breakfast (Room 108)

8:20 - 9:45 Plenary Session and Presentations (Room 108)

8:20 - 8:25 Opening Remarks
Danielle Marini, President, MA COLAP

8:25 - 8:35 DCR Lakes and Ponds Update
Anne Carroll, Director, Officer of Water Resources, DCR

8:35 - 8:55 Massachusetts Boat Excise Tax Overview
Ziggy Waraszkiewicz, Chairman, Charlton Lakes and Ponds Committee

8:55 - 9:25 Building Resilient Coldwater Fisheries: Lake Trout Spawning Phenology and its Response to Warming Air Temperature
Melissa Lenker, Environmental Scientist, ESS Group

9:25 - 9:55 Improvement of Fish Habitat at DelCarte Ponds, Franklin, MA
Carl Nielsen, CLM, Vice President, ESS Group

9:55 - 10:00 Vendor Introductions/Request for Volunteers

10:00 -10:10 Break and Exhibitors

10:10 - 12:10 Presentations (Room 108)

10:10 - 10:40 Intro to Lake and Pond Management
Kara Sliwoski, Territory Leader, Aquatic Biologist, SOLitude Lake Management

10:40 - 11:10 Cyanobacteria: A Planktonic Super Villain
Brea Arvidson, Aquatic Biologist, SOLitude Lake Management

11:10 - 11:40 Underwater Diving Quality Assurance
Christopher Stillman, Leav Geophysical/Hydrographic Surveyor, APEX

11:40 - 12:10 Geospatial Plant Management Approach with Littoral Treatment
Michael Martin, Cedar Eden Environmental

12:10 - 1:10 Lunch, Exhibitors, Networking

12:30 - 1:00 Business Meeting (Room 103)

1:00 - 3:05 Presentations (Room 108)

1:10 - 1:55 Biodiversity, Wetlands, Groundwater
Sharon McGregor, Environmental Consultant, Board of Directors Biodiversity for a Livable Climate

1:55 - 2:35 The Impact of Low Dose Fluridone Treatments on Non-Target Aquatic Plants
Ken Wagner, Ph.D., CLM, Water Resources Services, Inc.

2:35 - 3:05 It's a bird…it's a plane…no, it's a drone helping to manage your lake!
Bob Hartzel, CLM, CPESC, Principal, Comprehensive Environmental Inc.

3:05 - 3:35 Chapter 91 General License Self- Certification Program for Residential Small Dock and Piers
Nancy Lin, Outreach Manager, Wetlands and Waterways Program, DEP
Ben Lynch, Program Chief, Waterways/Chapter 91 Program, DEP

3:35 - 3:40 Raffle Drawing and Wrap Up (Room 108)

Community Limnology Kit provided by Aquatic Ecosystem Research

Abstracts and Biographies

DCR Lakes and Ponds Update

Anne Carroll, Director, Office of Water Resources, DCR

The lakes and ponds program manages public water bodies throughout the State Park system with projects including nuisance plant and algae control, bacteria assessment, erosion control and beach improvements. In addition to lake management projects, the program works with local groups and municipalities to protect, manage and restore these valuable aquatic resources. We provide technical assistance to communities and citizen groups, help to monitor water quality at various public beaches to ensure public safety, and provide educational materials to the public about various lake issues. The Program strives to ensure a safe future for Massachusetts' water bodies through a watershed approach and citizen education and involvement.

Talk will be led by Anne Carroll, Director of DCR's Office of Water Resources with Jim Straub, Lakes and Ponds Program Coordinator. Each of the speakers have over 15 years experience in managing lakes and ponds throughout the Commonwealth. Staff manage lake improvement projects on DCR properties, participate in regional working groups, provide presentations and citizen trainings, and provide technical assistance to local lake groups.

Massachusetts Boat Excise Tax

Ziggy Waraszkiewicz, Chairman, Charlton Lakes and Ponds Committee

Due to the current financial situation in the state and most cities and towns there is little public funding available to maintain and improve the lakes and ponds in Massachusetts. This places the burden on the lake associations and the residents of a lake or pond to raise the funds required to maintain or improve their lake or pond. There is however, a not well publicized, source of funds.

Massachusetts General Laws allows cities and towns to assess and levy an excise tax on boats for the privilege of using the waterways of the Commonwealth. The law also indicates that fifty percent of the tax collected shall be credited to a municipal waterways improvement and maintenance fund. It is the responsibility of each individual city or town to establish this fund. The Town of Charlton has collected the boat excise tax since 2004, has established a municipal waterways maintenance and improvement fund, and the Charlton Lakes and Ponds Committee is in the process of deciding how to use these funds.

Ziggy Waraszkiewcz is Chairman of the Charlton Lakes and Ponds Committee and a member of the Last Green Valley volunteer water quality monitoring group. He received his Ph.D in chemistry from Clark University, and is retired after 32 years with Astra/AstraZeneca. He has been a summer resident of South Charlton Reservoir for 33 years and testing the water quality in Charlton lakes and ponds for 9 years.

Building Resilient Coldwater Fisheries: Lake Trout Spawning Phenology and its Response to Warming Air Temperature

Melissa Lenker, Environmental Scientist, ESS Group

Lake trout (*Salvelinus namaycush*) spawning supports valuable fisheries throughout the Northeast, but has an unclear relationship with climate. We use lake trout spawning records spanning over 50 years (1961-2014) for an Adirondack lake to test for warming-induced spawning delays. Mean monthly air temperature increased at rates between 0.14 and 0.34°C/yr and warmer autumn temperatures were correlated with later spawning. However, while temperatures warmed through time and later spawning was associated with warmer temperatures, spawning timing was not delayed. Rather, the beginning of spawning shifted earlier at a rate of 0.75 days/decade, while the midpoint and end of spawning did not change. We propose several hypotheses to explain this counterintuitive result, perhaps the most plausible being that artificial selection for early-spawning fish by hatchery practices counteracted the effects of warming. This study highlights a potential threat to hatchery-supported, coldwater fisheries and emphasizes a need to preserve population-level variation in spawning timing traits. The presentation will also cover steps lake and pond owners can take to preserve coldwater fish populations.

Melissa Lenker is an environmental scientist with ESS Group, Inc. where she contributes to technical reports and environmental permitting documents relating to aquatic invasive species, dredging, and lake and pond management. Before joining ESS Group, Melissa worked as a freelance consultant for The Nature Conservancy on projects related to coldwater fishery management in upstate New York. Her graduate work involved modeling the population dynamics of an unfished lake trout population in the Adirondacks. Melissa earned her M.Sc. from McGill University and her B.Sc. from Cornell University.

Improvement of Fish Habitat at DelCarte Ponds, Franklin, MA

Carl Nielsen, CLM, Vice President, ESS Group

A thorough evaluation of the flora and fauna at the DelCarte Ponds in Franklin, MA was conducted with the goal of identifying opportunities for enhancing fish and wildlife habitat within the resource. The study found a number of habitat impacts to the resource due to invasive species, primarily water chestnut and grass carp. Water chestnut was found to be threatening the open water habitat at this once popular fishing spot at the expense of more desirable bottom-growing species of vegetation. Carp were found to be impacting water quality by suspending sediments and nutrients during their foraging which contributed to algal blooms. The poor water quality and lack of gravel or sandy spawning habitat resulted in a fish community that was not well suited to bass or sunfish species that would normally help to manage the carp population through egg predation. Recommendations were made to enhance the habitat of the pond to reduce non-native species, improve water quality, and augment the substrate to create suitable spawning bed for bass and sunfish species. The first phase of this restoration is now underway.

Mr. Nielsen has a BS in Biology from Colgate University and an MS in Fisheries and Wildlife from the University of Missouri. He has more than 28 years of experience in the assessment and management of freshwater and marine systems and is currently Director of Water Resources at ESS. Mr. Nielsen is a Certified Lake Manager and an aquatic invertebrate taxonomist. He specializes in the evaluation of lake and watershed systems with a focus on water quality assessment, biomonitoring, fisheries and aquatic plant management.

Introduction to Lake and Pond Management

Kara Sliwoski, Territory Leader, Aquatic Biologist, SOLitude Lake Management

This presentation will provide a general overview of lake and pond management including the methods currently available for the management of aquatic vegetation, algae and nutrients in lakes and ponds. It will cover lake/pond characteristics, plant/algae biology and the reasons behind management, then will focus on assessing, choosing and implementing appropriate strategies. Both chemical and non-chemical approaches will be reviewed. The discussion on chemical strategies will review the various active ingredients available to aquatics with respect to plant susceptibility, application techniques and water use restrictions. The non-chemical techniques to be discussed include but are not limited to harvesting, hydro-raking, dredging, dyes, benthic, barriers, biological controls and aeration.

Kara Sliwoski is currently an Aquatic Biologist and Territory Leader at SŌLitude Lake Management (formerly Aquatic Control Technology) and has worked on various lakes and pond management projects throughout New England. Kara received her BS in Marine Biology and Environmental Science from Roger Williams University (Rhode Island) in 2015 and has been with SŌLitude since then. Kara and her team currently manage over 200 waterbodies in northeast Massachusetts, New Hampshire and Vermont. These programs generally include assessment, permitting, monitoring and implementation of both chemical and non-chemical management techniques.

Cyanobacteria: A Planktonic Super Villain

Brea Arvidson, Aquatic Biologist, SOLitude Lake Management

Often referred to as HABs, Harmful Algal Blooms commonly occur across the planet in both fresh and salt water. While they are nothing new, the most concerning HABs in freshwater are comprised of cyanobacteria, which are more frequently becoming a headliner in bulletins, magazines, and newsletters alike.

So, what are cyanobacteria? Why do cyanoblooms happen and what dangers do they pose?

A growing concern of public safety are toxin-producing cyanobacteria. Where do the cyanotoxins go after the bloom dies? Cyanotoxin research is still in its adolescence, where topics of aerosols, bioaccumulation, sequestration, and breakdown are questioned.

Tactics for bloom prediction, prevention, and management are becoming more widely available, where education and public safety are primary drivers. With prediction, preventative measures can be employed, and control response can be planned in the event of a bloom.

Brea Arvidson is an Aquatic Biologist at SŌLitude Lake Management, where she is involved in many of SŌLitude's largest monitoring and management projects throughout Massachusetts, Vermont, New York, and New Jersey. She also acts as biology lead for various projects throughout the northeast. She received a BS in Marine, Estuarine, and Freshwater Biology from University of New Hampshire (2015) and has been with SŌLitude for 2 years.

Underwater Diving Quality Assurance

Christopher Stillman, Leav Geophysical/Hydrographic Surveyor, APEX

Like Massachusetts, Apex is committed to ensuring that our inland and coastal waters are monitored, protected and safe. One of the ways we're doing that is by helping the Massachusetts Water Resource Authority (MWRA) in the Wachusett Reservoir. For the past four seasons, we have performed quality assurance (QA) diving inspections including the field verification of invasive plant—Eurasian watermilfoil (Myriophyllum spicatum), Variable watermilfoil (Myriophyllum heterophyllum) and Fanwort (Cabomba caroliniana)—removals, in partnership with Diver Assisted Suction Harvesting (DASH) team members. Our diving investigations expanded to include a Side Scan Sonar survey, documented via an underwater video, of the submerged portions of two bridges in the reservoir basin. By using this specialty imaging system, we provided a rapid, details, and cost-effective understanding of the area surrounding the bridges while accurately assessing their structural condition. Beyond our work at MWRA, we have helped New Bedford Harbor Development and Massachusetts municipalities such as Salem, New Bedford, Swampscott, and Rockport with underwater exploration, ecological protection, and sustainable development. Insight gained by our work has paved the way for progress throughout the Commonwealth. Our expertise includes performing investigatory dive inspections at the Chestnut Hill Reservoir, conducting eel grass surveys, providing eel grass surveys, addressing submerged pipelines, and performing geophysical investigations such as single-beam and multi-beam bathymetric surveys. What's beneath the waterline is now no longer under the radar. Our comprehensive reports, 3-dimensional models, and acoustic images capture critical information that help protect our aquatic habitats and our natural resources.

At Apex Companies, Mr. Stillman performs geophysical and hydrographic surveys and marine sampling for dredging and marine infrastructure projects. Mr. Stillman also performs field oversight of test borings and has experience with data processing, geotechnical suitability determination, and construction oversight. Side scan sonar and multi/single beam hydrographic survey experience includes daily and weekly surveys over a period of 4 years at multiple locations. Mr. Stillman holds a certificate in Geographic Information Systems, and Scientific scuba diving. Mr. Stillman is responsible for health & safety for diving and on board survey activities.

An innovative geospatial approach using littoral treatment zoning for aquatic plant management in a large, multi-use lake

Michael Martin, Cedar Eden Environmental

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Chautauqua Lake is a 13,000 acre lake with 42 miles of shoreline, located in Chautauqua County, western NY, USA. The lake is the key economic feature in Chautauqua County and serves a diversity of uses, including as a drinking water source for several communities, as well as intensive recreational and fishing activities. Chautauqua Lake is also home to several Rare, Threatened and Endangered species and unique plant communities. The lake has a long history of macrophyte management for excessive native and non-native aquatic plant species. An integrated macrophyte management strategy

was developed by examining human use, environmental and aquatic plant factors using GIS analysis to create zones throughout the littoral zone of the lake. Treatment regimes were developed for each of these zones that take into account intensity of use, significant environmental features and distribution and abundance of aquatic plant species. As a result, long-term management can proceed using a best-available/allowable technology approach. The presentation will provide details on the analyses performed and demonstrate the multi-step process used to create the treatment zones. A discussion will also be made regarding selection of the various treatment options and how they serve to protect the lake's resources while supporting the lake's varied uses.

Michael R. Martin, president of Cedar Eden Environmental, is a Certified Lake Manager (CLM) with over 30 years of experience in lake and watershed management, aquatic plant management, and the development of geographic information systems for environmental and municipal planning working in the public, private, and academic/not-for-profit sectors. Mr. Martin is a past-president of the North American Lake Management Society (NALMS), past Regional Director for NALMS and the New York Federation of Lake Associations and was a founding member of the Indiana Lake Management Society. Mr. Martin's broad experience includes the development and implementation of lake and watershed diagnostic-feasibility studies, lake and watershed management plans, and mapping and management of aquatic plants, including non-native and invasive species control via mechanical and chemical methods. He has conducted numerous watershed investigations, identifying urban, rural and agricultural NPS problem areas as well as the BMPs needed to address them.

During the past 30 years, Michael has collected, analyzed, and interpreted data and developed long-term lake, watershed and aquatic plant management programs on hundreds of lakes and ponds throughout Connecticut, New York, New Hampshire, Pennsylvania, New Jersey, Massachusetts, Delaware, West Virginia, Virginia, and Indiana. He has been involved in the integrated management of aquatic plants across New York State. His past work has included consulting for the Los Angeles Department of Water and Power and conducting impact assessment and bird rescue in Grand Isle, Louisiana following the 2010 Deepwater Horizon oil spill.

When he is not working on environmental management projects, Michael enjoys kayaking and photographing his way through the wetlands, rivers and ponds of the Adirondack Park and hiking with his daughter and grandson in the deserts and mountains of Utah. He also promotes environmental stewardship through his Lake Stewardship blog, as well as his online phytoplankton and aquatic plant image libraries.

Earth Restored: Carbon Rich, Wet and Wild - *Lake/Pond and Watershed groups at the Forefront*

Sharon McGregor, Environmental Consultant, Board of Directors, Biodiversity for a Livable Climate

Climate change is one of the key challenges of our time – a world crisis that the present generation must begin to solve if we are to pass on a livable planet to our children and grandchildren.

If we stopped burning all fossil fuels around the globe today, it would still be too late to stop the cycle of climate change already in motion – due to the carbon that has accumulated in the atmosphere from fossil fuel emissions and releases from losses of nature. In the present environment of U.S. federal level climate denial, it is imperative that *nature solutions* are implemented locally and regionally to stem rising temperatures, ongoing biodiversity losses, increased frequency and intensity of storms, droughts, and flooding. Lake/pond and watershed groups can do much to mobilize nature in the removal of atmospheric "legacy" carbon that is fueling climate change and associated impacts.

Linked one to another, nature-based individual actions, ecological services of conserved and restored lands and waters, conservation and sustainability policies/programs can be major forces in turning the climate crisis around.
Biodiversity for a Livable Climate board member, Sharon McGregor, will speak about why it is important for lake, pond, and watershed groups to work with nature to stabilize local climate and benefit the global climate. Sharon will include the most recent science on how climate change is accelerating due to feedback loops in play; how getting back to pre-industrial atmospheric carbon levels is achievable; and ways that the MA Coalition of Lakes and Ponds, associated lake and pond associations and property owners can be part of a "think globally, act locally" effort to restore the form and function of soils, increase carbon draw-down, retain water on the landscape, prevent flooding, moderate local temperatures, and generally bring about renewal of biodiversity and ecosystem processes.
Come learn about the contributions that COLAP and its member groups can make to mobilize nature in the *reversal* of climate change.

Sharon McGregor is an environmental consultant, educator and advocate. She is trained as a biologist and public and nonprofit administrator, and is experienced in policy development and implementation in the fields of biodiversity conservation and ecosystem protection, land conservation, water resources and watershed management, and marine conservation.

Sharon serves on the Board of Directors of Biodiversity for a Livable Climate, a nonprofit dedicated to restoring biodiversity and ecosystems to reverse global warming. Her prior work includes serving as Massachusetts Assistant Secretary for the Environment (Biological Conservation and Ecosystem Protection) under former Environment Secretary Bob Durand, Director of Water Policy and Planning for the MA EOEA (now EOEEA), and Conservation director at the New England Aquarium.

Sharon's childhood exploration of the woods, fields and wetlands around her home cultivated a lifelong appreciation and respect for the wealth of living creatures with whom we share this planet. The rapid loss of Sharon's hometown nature to development inspired her to propose legislation empowering communities to preserve open space, habitats, historic landscapes, and quality of life. This legislation became the Massachusetts Community Preservation Act (2000).

Sharon's professional passion is promoting the inclusion of biological diversity and ecosystem health considerations in all aspects of government, business, and individual decision-making, so that human behavior and actions are truly sustainable. She holds a Masters in Public and Nonprofit Administration from Harvard University and a Bachelor of Science degree from the University of New Hampshire.

The Impact of Low Dose Fluridone Treatments on Non-Target Aquatic Plants

Kenneth J. Wagner, Ph.D., CLM., Water Resource Services

Fluridone has been used extensively for control of invasive species in the northern USA, particularly Eurasian watermilfoil (*Myriophyllum spicatum*, EWM). Over several decades, the most common strategy for EWM control with fluridone has evolved into longer exposure times (2-4 months) to relatively low concentrations (<10 ppb). Using monitoring data from 147 treatments of 64 lakes, we examined the response of non-target plant species and overall assemblage richness for 1-6 years after treatment, comparing pre-treatment and post-treatment data for frequency of individual species and presence-absence for species richness. These are empirical data from actual treatments, where many factors other than treatment itself can have effects, but the range of responses provides insights to what can be expected when fluridone treatment is conducted in lakes with known plant assemblages.

Individual tables for each species for which adequate data were available provide a probability distribution for increase or decrease of each species for up to 6 years after treatment. Most non-target species were minimally impacted. 14 out of 50 species that were not common (and for which it was therefore difficult to detect valid changes) showed a tendency to decline initially after treatment, but recovered within 2-3 years in nearly all cases. Another 14 species, several of which are also on the list of possible declining species, showed a tendency to colonize quickly after treatment, most likely from seeds already in the lakes.

Average species richness was not significantly affected by treatment, but there was a wide range for individual lakes. Separating lakes by pre-treatment richness, those with low (<10 species) richness experienced increases in richness after treatment, while those with high (>20 species) richness experienced decreases for up to 2 years, after which richness returned to pre-treatment levels. Lakes with intermediate richness (11-19 species) produced intermediate results. With the timeframe allowable for impacts from treatments to be reversed, low-dose fluridone treatments appear to meet all regulatory criteria. In cases where invasive species have depressed richness, increased assemblage richness is attainable by treatment.

Dr. Wagner holds degrees from Dartmouth College and Cornell University, with his Ph.D. earned in Natural Resource Management in 1985. He has over 40 years of experience working on a variety of water resources assessment and management projects, including lake, reservoir, river and watershed assessment, rehabilitation, and management, regulatory processes, and educational programs. In 2010 he started Water Resource Services, a small company with a focus on water supply protection and lake management consulting, based in Wilbraham, Massachusetts. He is a former President of the North American Lake Management Society and is now serving his second term as Editor in Chief of Lake and Reservoir Management, a peer-reviewed journal.

It's a bird…it's a plane…no, it's a drone helping to manage your lake!

Bob Hartzel, CLM, CPESC, Principal, Comprehensive Environmental Inc.

The use of unmanned aerial systems (UAS, also known as drones) in environmental science and engineering is expanding rapidly as the accuracy of these tools increases and as costs go down. This presentation will provide an overview of how drones can be put to work for lake and watershed investigations, including:

- Ecological assessments and mapping (vegetation communities, algal/cyanobacteria blooms, etc.)
- Infrastructure inspections, including stormwater infrastructure and culverts
- Shoreline inspections and mapping
- Shoreline/bank erosion inspections for lake and river shorelines
- Shoreline structure inventories (docks/piers; Chapter 91 Inventories; ACEC Resource Management Plans, etc.)
- Topographic survey to support BMP designs
- High-resolution imagery (photo-mosaic and video) to document baseline conditions

Bob Hartzel is a Principal with Comprehensive Environmental Inc. (CEI) and leads CEI's Ecological Services practice. Bob is a Certified Lake Manager, Certified Professional in Sediment and Erosion Control, and wetland scientist with over 25 years of experience in managing river, lake, and wetland restoration projects in New England. Bob lives on Forge Pond in Littleton and serves on the Board of Directors for the Friends of Forge Pond.

Chapter 91 General License Self- Certification Program for Residential Small Dock and Piers

Nancy Lin, Outreach Manager, Wetlands and Waterways Program, DEP
Ben Lynch, Program Chief, Waterways/Chapter 91 Program, DEP

Massachusetts General Laws, Chapter 91, requires licensing of all non-commercial, water-dependent, small-scale docks, piers, and similar structures within tidelands, Great Ponds, and navigable rivers. To make the licensing process easier for eligible small residential dock and pier owners, MassDEP recently created a General License and new self-certification process for certain structures that meet certain eligibility requirements and conditions. The new self-certification process streamlines state review and makes the process easier and less expensive for applicants. MassDEP will review the process and eligibility for interested participants.

Nancy Lin is the Outreach and Training Manager for MassDEP's Wetlands and Waterways Program (WWP). She created the MassDEP's Wetlands Circuit Rider Program in 1995. Since 1988 Nancy has overseen the outreach and training for WWP, as well as writing and managing grants that advances wetlands/waterways programmatic goals. As a certified Professional Wetlands Scientist (PWS), Nancy has developed, produced and implemented many of the Program's technical, regulatory and general outreach/training efforts. Prior to MassDEP, Nancy was the Director of the City of Cambridge's Conservation Commission; managed natural history and staff training for the New York City Park Ranger program; and was a naturalist/teacher at a NYC Environmental Education Landmark - High Rock Park.

Ben Lynch has been the Section Chief of the Waterways Regulation Program (WRP) at Mass DEP since 2002. The WRP is responsible for all chapter 91 permitting activities. Mr. Lynch worked with program staff, advocacy organizations, and the regulated community to help write the General License regulations. The creation of a c. 91 General License was a result of an act of the Massachusetts legislature in 2012.

MA COLAP 2018 Survey

Thank you for attending our 2018 Spring Conference! We appreciate your support of our organization, and your interest in our event. Please take the time to fill out the survey below. Any and all feedback that you can provide will help us better prepare for next year!

1. What did you like best about the conference?

2. What did you like least about the conference?

3. What topics would you like to see in the future?

4. Would you prefer to attend this conference at a different time of year? If yes, when?

5. Are you interested in getting involved with MA COLAP? If yes, please leave your name and contact information so that we can reach out to you.

6. Other comments or suggestions for our next event?

The following questions will be specific to the lake or pond you represent/live on/manage:

7. Is your lake or pond Natural or Man-made? (circle one)

8. If additional State funding were available for Lakes and Ponds, where should this money be spent?
    a. Education
    b. Enforcement
    c. Recreation
    d. Aquatic Control
    Other _____

9. Do you draw down your lake/pond in the fall? Y / N

10. How far do you draw down your lake/pond? _____ How frequently? _____

11. If you are the property owner, how much do you pay for annual dues?

12. Are your dues mandatory or voluntary? (please circle)

13. Is there public access to your lake/pond? Y / N

14. Are there any horsepower restrictions on your lake/pond?

15. Are there any speed limits on your lake/pond?

16. Are jet skis allowed on your lake/pond?

17. Who or what is the most beneficial resource you use for your lake and pond management: Please specify if possible.

    a. Web site _____
    b. Individual _____
    c. Organization _____
    d. Other Resource _____