



## PERSPECTIVES ON STATE LAKE MANAGEMENT PROGRAMS

*At the Federation of Lake Associations' 1992 Annual Conference, members expressed an interest in exploring the potential for a statewide lake management program. As local lake associations have recognized for many years, there is an almost overwhelming number of local and state agencies and organizations that need to be considered when lake management issues are being discussed. None have sole authority to manage the water resources of a lake or its watershed. This virtually mandates that to be effective, lake management efforts must be collaborative in nature.*

*County water quality committees have recently been formed in every county in the state in an effort to respond to the need for collaboration in protecting local water resources, including lakes. These committees were formed with the leadership and assistance of the NYS Department of Environmental Conservation (DEC) and the Soil and Water Conservation Committee of the NYS Department of Agriculture and Markets, under a program to control non-point sources of water pollution. Can these committees provide the nucleus for coalitions of local agencies and organizations to develop and carry out effective policies to protect water resources? Seeking the answer to this question is a worthy challenge at both the local and state level.*

*This article was prepared to share two perspectives on lake management. The first piece is a synopsis of a recently completed project in the State of Minnesota that reviewed lake management efforts and recommended improvements. The piece is based on the report, "Managing Minnesota's Lakes" and was written by Martin N. Culik, Agriculture and Natural Resources Program Leader for Cornell Cooperative Extension in Ontario County, who is on the FOLA Board of Directors. The second piece is a view of the present and future lake management situation in New York. It was written by Jay A. Bloomfield, Chief, Lake Services Section of the DEC. Jay is a lake management specialist with a doctorate in limnology; he is also a licensed professional engineer.*

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## MANAGING MINNESOTA'S LAKES

A Lake Management Forum was formed in Minnesota to review the status of lake management in the state, identify factors that constrain effective lake management, and formulate recommended actions and strategies to overcome the constraints and create a coordinated lake management system.

Lake users and managers had a strong sense that the quality of lakes in Minnesota were being increasingly affected. Virtually all of the state's lakes were considered either degraded or threatened. Additionally, it was felt that the lake management approach needed to be evaluated and modified to maintain or improve their quality. Efforts undertaken in the past to manage lakes in Minnesota were no longer considered sufficient.

The Freshwater Foundation, a Minnesota based non-profit organization, acted as the convener that brought together diverse interests to discuss lake management issues using a consensus-building approach. The forum included representatives of state and local governments, lake associations, lake user groups, environmental groups, academia, and others with lake interests. Through a series of personal interviews, workshops, task force meetings, and numerous reports over a two year period, the forum addressed lake management issues and suggested strategic responses to those issues.

The work of the forum centered on six discrete lake management themes:

(continued on page 2)



- 1) managing lakes on a watershed basis;
- 2) developing a coordinated data base for lake management;
- 3) establishing a common lake classification system;
- 4) examining the institutional framework for lake management;
- 5) reviewing the need for a strategic lake management planning process; and,
- 6) improving education and communication regarding lake management.

The following recommendations and expected outcomes were developed by the forum; note that all of the recommendations could easily apply to New York.

- **The economic value of Minnesota's lakes should be determined and this information should become an integral part of a lake management system for the state.** By developing an understanding of the economic value of lakes, state and local government can establish lake management budgets and priorities that reflect their value and provide for the long-term protection of valuable economic, as well as environmental, resources.

- **The concept of lake sustainability should be the primary goal of lake management, to be achieved by the evaluation of impacts on the quality of Minnesota lakes.** The concept of sustainability represents an ecologically sound basis for managing and protecting lakes. This also provides a common management goal that can be understood and shared by all lake management entities.

- **A partnership should be developed between state and local lake management interests to foster a collaborative approach to lake management, including the initiation of planning processes at the local level to develop comprehensive management plans for lakes.** By developing and using a collaborative approach to lake management, the considerable skills and energy available through local government and lake organizations can be used to complement state-level lake management efforts.

- **Lake management should be based on natural boundaries, i.e. lake watersheds.** Focusing lake management on watersheds provides an opportunity to address the most significant source of pollution, namely non-point source pollution. The causes, rather than the symptoms, of lake impacts are more readily addressed by adopting a watershed-based approach to lake management.

- **A coordinated lake data collection and application system should be established to support the management of lakes at the state and local levels.** Developing a coordinated lake data collection and application system would not only yield the information necessary to comprehensively manage lakes, but would make current lake-related data efforts more efficient, useful, and cost-effective.

- **A comprehensive lake classification system should be developed and implemented to guide the management of lakes.** The development of a lake classification system that incorporates ecological as well as cultural factors will provide a guide for the management and use of lakes, as well as a means to evaluate the effectiveness of lake management over time.

- **A comprehensive lake management education and information delivery system should be established to support the management of lakes.** The quality of lakes, and the effectiveness of their management, can be improved through the education of those whose actions influence lakes, including lake managers, lake users, decision-makers, and the general public. Improving the level of lake knowledge will expand lake management capacity.

Finally, the forum developed the following lake management charter: "It shall be Minnesota public policy to protect, preserve, and enhance its many lakes as irreplaceable natural assets, held in trust for future generations, while encouraging responsible current use for widely diverse purposes."

## LAKE MANAGEMENT IN NEW YORK

The New York State environmental protection and natural resource management program remains strong, despite several years of economic downturn. The Department of Environmental Conservation (DEC) has been able to maintain and slightly expand its award winning Citizens' Statewide Lake Assessment Program (CSLAP). The lake management guide, "Diet for a Small Lake", was published. Both of these efforts would not have been possible without the support and participation of the Federation of Lake Associations of New York (FOLA).

The two lake management programs that provide aid to localities, the Finger Lakes Vegetation Control Program and the Federal Clean Lakes Program, continue at sustenance levels. New York was fortunate to receive financing of two lake management conferences for Onondaga Lake and Lake Champlain. The development of management plans for these two important water bodies will be an important accomplishment.

What does the future look like? Continued restraint in the expansion of government at all levels does not bode well for lake management activities in the state. At present, only a tiny fraction of the over \$50 billion New York State budget is devoted to environmental programs and only a small percentage of this money goes toward lake management. The biggest stumbling block to improved lake management is not the shortage of talent or ideas, but rather money. If the state government is going to increase the size of the program, it must come at the expense of other less important activities.

Why is lake management important? Environmental quality is integral in economic development, not adjunct. The high water quality of lakes such as Lake George is a direct determinant in real estate property values and the level of commercial activity. Local governments derive support for many activities from property taxes. The users of lake regions



also spend money on food, goods, and entertainment, all of which provide sales tax revenues to state and local governments.

It is surprising to the average citizen that the DEC presently has little or no authority over energy management and conservation, regulation of water-based recreation (boating and navigation issues), regulation of land use activities in the Adirondack Park, management of agricultural non-point source pollution, management of on-site wastewater systems (septic tanks), and potable water supply quality.

What programs need more resources in order to improve lake management? State law could be amended to give counties the authority to propose taxes and fees on boat registration, docks and moorings, fishing tackle, real property land transfers, and other activities. DEC would develop the regulations that would set the standards for each county's lake management program. The Finger Lakes Vegetation Program should be expanded to a true statewide lake management local aid program. Such a program could be run voluntarily by the counties.

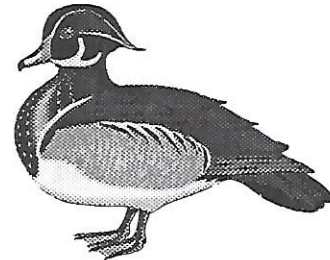
If funds permit, the CSLAP program should be expanded to include as many lakes which have volunteers who wish to be involved. DEC should expand its meager statewide water quality monitoring program for lakes. To better protect lakes from accelerated eutrophication, numerical water quality standards for lakes should be developed for such parameters as chlorophyll *a*, Secchi disk depth, and total phosphorus.

The statewide ban on phosphorus in household laundry products should be expanded to dishwashing detergents. The research into effective and environmentally safe methods of nuisance aquatic plant control should be expanded. Remediation techniques should be implemented to reduce tainting of fish flesh by toxic substances such as PCB's and mercury.

There must be far more emphasis by government on providing public access for water based recreation. We need more public beaches, boat launch sites, and fish access points on our lakes. Of course, none of these facilities can function adequately without first class water quality. Such water quality must be maintained by limiting point and non-point discharges of pollutants to lakes and financing the technology to do so. A regulatory stick without a financing carrot is not much of a lethal weapon. And last, but certainly not least, every citizen should be given the full opportunity to influence state and local environmental policies.

In summary, much has been done to protect and enhance our state's lakes, but much more needs to be done. Lakes

are mirrors on the landscape, reflecting society's treatment of the environment at large. Clean lakes are not only good for our environment, but good for our economy, too. Although lake management is not the most pressing issue facing government in the state, it is an issue that can be solved with hard work and at a low cost. This short term investment will insure that the state's lakes will continue to be a source of enjoyment by our children and grandchildren.



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# ZOOPLANKTON: A BIOLOGICAL LINK TO WATER QUALITY

## The Role of Zooplankton:

Zooplankton are important components of the complex ecosystems we call lakes. These microscopic animals spend their lives grazing the phytoplankton which are microscopic plants produced by the interactions of nutrients, light, water and carbon dioxide. Nutrients, such as phosphorus, contribute to an increase in phytoplankton growth while zooplankton grazing acts to reduce the abundance of these microscopic plants. The zooplankton are in turn an important food source for young fish and are a primary link in the transfer of materials and energy in the food web. The effects of nutrients and other non-biological components of the food web, on phytoplankton abundance, are often referred to as "bottom-up" controls. The influence of fish on zooplankton abundance and the resulting change in grazing pressure on the phytoplankton is in turn referred to as a "top-down" control.

Copepod



## Zooplankton In The Ecosystem:

Much can be learned about a lake ecosystem from a knowledge of zooplankton species and abundance. Large populations of efficient grazers, such as *Daphnia* and copepods, may act to decrease phytoplankton abundance. This often results in increased Secchi disk depths and reduced chlorophyll *a* concentrations. *Daphnia* may even reduce phytoplankton abundance when nutrients are relatively high. On the other hand, if *Daphnia* are absent, and the zooplankton community is dominated by small rotifers, phytoplankton abundance may be high even if nutrients are low. The absence of large, efficient, grazers in the zooplankton community may explain

why Secchi disk depths are low and chlorophyll *a* concentrations high in lakes with low nutrient content.



Rotifer

The presence or absence of certain zooplankton species may also be an indicator of top-down influences of fish predators. Large populations of small or undersized fish, such as yellow perch (*Perca flavescens*), act to reduce certain zooplankton species and thereby influence the abundance of phytoplankton and overall water quality. An introduced species, the alewife (*Alosa pseudoharengus*), has had major impact on the water quality in many lakes. This herring-like fish acts as a living vacuum cleaner and selectively filters large zooplankton, often eliminating entire populations of the efficient *Daphnia* grazers. In lakes where phosphorus and other nutrients have been reduced by good management practices, a subsequent introduction of alewife has actually resulted in increased chlorophyll *a* concentrations.

Daphnia



Figure 1 shows how the introduction of alewife in Conesus Lake, New York, resulted in a loss of large *Daphnia* populations and an increase in phytoplankton abundance as evidenced by increased chlorophyll *a* concentrations. This increase in growth of the microscopic algae occurred despite stable concentrations of the primary nutrient, phosphorus.

During the summer of 1992, a limited survey of the zooplankton community was conducted in several lakes participating in the Citizen's Statewide Lake Assessment Program (CSLAP). This analysis showed significant variations in the number of species and their relative abundance among the lakes. While data were limited, the experience demonstrated that knowledge of the zooplankton species present in a lake is an important element in determining the mechanisms that influence water quality and ecosystem health.

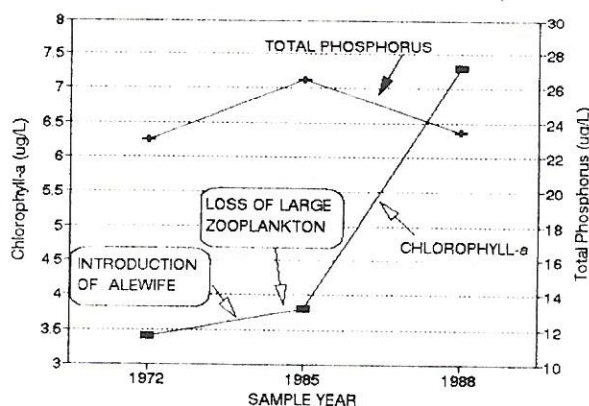
## Zooplankton Analysis:

Obtaining data about zooplankton species, their abundance and ultimate impact on a lake ecosystem requires three steps:

### Collection and Preservation:

Zooplankton are collected by towing a special net, with a very fine mesh of approximately 0.080mm, through a fixed vertical or horizontal distance in the lake.

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**Figure 1 -** Changes in Conesus Lake chlorophyll-a concentrations due to the introduction of alewife and loss of *Daphnia* while total phosphorus concentrations remained stable. Data from J.C. Makarewicz, Center for Applied Aquatic Science and Aquaculture, SUNY Brockport.



# PHYTOPLANKTON IN NEW YORK LAKES

*The Role of Phytoplankton in Understanding Your Lake*

Phytoplankton are photosynthetic cells in suspension in every body of water. The term "plankton" is an arbitrary one usually referring to microscopic forms, but any form of life living in the water column is essentially planktonic in nature. We arbitrarily separate whales and fish, kelps and flowering plants from the category, but krill (the "planktonic" food of whales) can be several inches long and some planktonic algae can colonize into huge clouds and floating mats. Almost all phytoplankton begin life as single cells and the majority of them remain solitary throughout their life cycles. Since plankton are, by definition, denizens of the micro world, we only experience them when conditions favor their rapid growth. At such times we experience them only as a green color in the water or a lack of clarity and sometimes as "green globs" or floating mats of "slime." Since, under favorable conditions, these blooms are a product of exponential growth, they seem to arise from nowhere overnight. In fact, they are always there in small concentrations or as resting spores. It is a vast and diverse world of forms and lifestyles, some stranger than anything conjured up in science fiction writer's imagination.

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***Those species with a known range of tolerance for a condition can be used as an indicator of that condition***

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There are many kinds of phytoplankton, from photosynthetic bacteria (the *Cyanophyta* or blue-green algae) to several major divisions of algae (the actual number of algae divisions varies from five to over ten depending upon the taxonomist). There seems to be a vast reservoir of species in even the cleanest body of water, so that the more you look, the more species you will find. However, any particular body of water at any particular time will only have a few dominant species. The dominant species vary with the lake, the time of year, the available nutrients, and other factors such as pollutants.

A typical undisturbed eutrophic lake in the temperate zone will have a consistent

population of plankton from year to year. This lake will typically have two biomass peaks, one in the Spring and one in Autumn. At any one time there will be a diversity of species, but their relative abundance varies with the time of year.

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***As we build a database of phytoplankton responses, we can develop timetables and recovery schemes for problem lakes, anticipate events such as offensive algal blooms, obnoxious odors, fish die-offs and macrophyte growth, and build a repertoire of effective preventive measures***

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Since each body of water has a unique phytoplankton composition, a taxonomist can sometimes recognize a lake by simply looking at a sample of phytoplankton. The phytoplankton population of a lake is in dynamic equilibrium with factors such as available nutrients, light, temperature, zooplankton grazing, and so on. Phytoplankton are sensitive in varying degrees to these factors: some species can live in extremely polluted water, some tolerate heat, some cold, some live only in hot sulfur springs, others tolerate a high level of certain elements, such as copper. Those species with a known range of tolerance for a condition can be used as an indicator of that condition.

The distribution of phytoplankton in a lake can vary with depth and proximity to shore. The distribution over deep water tends to be much more uniform than zooplankton, which are often quite patchy. Phytoplankton studied from a single mid-lake sample are usually a good indicator of

that lake's population, whereas a similar sample would be of little value for zooplankton population estimates. There are important exceptions, however. When there is a localized area of different water (from a stream or a point source pollution, for example) there will inevitably be a change in the phytoplankton of that area.

Phytoplankton populations are very sensitive to changes in the water. They are a measure of the total environment since they depend on all the parameters (not just the ones we can afford to measure) for their growth and sustenance.

In the Citizens' Statewide Lake Assessment Program (CSLAP) we have an unprecedented opportunity to establish a baseline study of phytoplankton to mesh with the existing study of the chemistries, to discover phytoplankton responses to known pollutants and disturbances, and to monitor recovery of a lake toward an oligotrophic condition. As we build a database of phytoplankton responses, we can develop timetables and recovery schemes for problem lakes, anticipate events such as offensive algal blooms, obnoxious odors, fish die-offs and macrophyte growth, and build a repertoire of effective preventive measures.

*by Christopher Coulon,  
Phytoplankton Specialist;  
CSLAP Field Technician*





# TRIBUTARY MONITORING

## An Important Part of Lake Management

*Water quality monitoring and analysis can provide high quality information about the environmental conditions of a watershed and its runoff as well as types and amounts of pollutants. This type of assessment, however, can be diverse and complex.*

*This article is intended to offer some basic insight about the dynamics and usefulness of collecting tributary data.*

Managing water quality within a freshwater lake typically involves an understanding of both the lake water itself and the condition of the water which empties into the lake. Since lakes are affected by land uses within the watershed, it becomes fundamental to assess pollutant sources originating within the watershed. Identifying types, amounts and sources of pollution can result in stream remediation, and pollution prevention.

Although many methods are used to monitor tributary runoff, two basic elements are usually undertaken with this type of assessment that provide the bulk of information. The elements include:

1) determining the volume of water or discharge and, 2) determining the nutrient content. Volume measurements can be relatively easy to obtain with the use of a flow meter and an existing structure such as a bridge or culvert. The bridge acts as a weir in which your flow measurements are referenced. Without a bridge or weir, you will need to conduct a manual cross section of the stream. Another option is to use high tech instruments that make the job easier, but this alternative is more expensive.

When considering a tributary sampling program it is important to consider both low flow and high flow conditions. Measurements taken during low flow periods can be helpful in determining which lake tributaries contribute the majority of nutrients on a regular basis, and in some cases, may be helpful in identifying industrial, commercial, and other point sources of pollution. Measurements taken during high flow conditions can be used to estimate the total amounts of nutrients entering your lake as well as possible land use conditions which generate nutrients during run-off events. Case studies show that the highest level of nutrient delivery to a lake occurs during high flow or run-off events when soils are saturated and overland flow increases.

The combination of both high and low flow measurements can prove extremely helpful in identifying what your priority nutrients are, and in identifying priority tributaries. Once you understand the "personality" of your lake and its tributaries you are then better prepared to make sound cost-effective decisions in the clean-up. This type of monitoring data also allows one to make decisions based on fact versus assumption.

The second element, determining nutrient content, is somewhat more complicated. There are a variety of field test kits that can be used effectively. Keep in mind, however, that most test kits will provide you with numbers but not answers. Prices vary depending on the requirements. Single parameter kits can be purchased for as little as \$25.00 whereas multi parameter kits range from \$200.00 and up. In the long run, it is more appropriate to work with a certified laboratory. Certified laboratories usually have strict quality assurance/quality control (QA/QC) standards which increase the level of accuracy, while reducing the possibility of error.

Comprehensive watershed monitoring can, in most cases, provide a solid foundation for water quality remediation and prevention. One such example exists with the Lake Ontario embayments of Wayne County, New York. Over the past three years both low and high flow monitoring (event and non-event) has taken place on twelve tributaries entering Sodus and Port Bays. The data collected has allowed researchers to make many determinations such as which tributaries contribute the bulk of pollutants, which pollutants we should focus on, and what quantities of nutrients are we dealing with. The next step in this assessment is to begin taking grab samples along the length of the tributary and near suspected pollution sites. The result of this work will provide a list of actual, identified "sources" of pollution. Knowing this, corrective measures can be tailored to each significant source.

In 1991 over 11 tons of total phospho-

*(continued)*



rus, 449 tons of total nitrogen, 55 tons of nitrates and over 3,650 tons of solids entered Sodus Bay in a twelve month period. Over 80% of these nutrients entered the bay via one tributary alone, Glenmark Creek. Similar data is being compiled on Port Bay.

Since very little comes free these days, costs can usually be reduced by joint ventures with other interested groups or associations or by availing the work to graduate students and volunteers. Perhaps a combination of all the above, along with a multi-lake approach, would prove successful in acquiring a package deal. If volunteers are willing to conduct the field work on a weekly or bi-weekly basis and minimal equipment was shared between lakes, the net cost of laboratory analyses could be significantly reduced. Making sense of the data provides graduate students with a challenge and provides the lake association with a report!

*by Robert K. Williams, Freshwater Scientist, Wayne County SWCD*

### **WANTED: Volunteers Needed for the FOLA Annual Conference**

Creative volunteer help is needed at the Federation's Annual Conference. Please consider lending some time to make this event a successful one. Assistance is needed in the areas of publicity (spread the news through local newspapers and radio stations), registration, and social arrangements (wine and cheese party, etc.). Please contact the FOLA office if you would like to participate.

## **CALENDAR OF EVENTS**

**March 16, 1993: WATER CONSERVATION SYMPOSIUM - SAVE WATER '93:** Learn what water utilities and local governments can do to help conserve water. Westchester Community College, Valhalla, New York. Registration: \$25.00, includes lunch and materials. Contact William Nechamen, DEC, (518)457-1627.

**March 19 - 21: 1993 NEW ENGLAND ENVIRONMENTAL NETWORK CONFERENCE AND EXHIBITION.** Tufts University, Medford, Massachusetts. The largest environmental conference on the East Coast celebrates 15 years of "Thinking Globally/Acting Locally." For workshop or exhibitor registration information: (617)627-3451.

**March 21 - 24: WATERSHED '93.** Alexandria, Virginia. Conference on watershed management. For information, contact Jennifer Paugh, Terrene Institute, 1000 Connecticut Avenue, NW, Suite 802, Washington, DC. or call (202)833-8317.

**April 27 - 29: NORTHEAST YOUTH WATERSHED MONITORING CONFERENCE.** Casowasco Conference Center in Moravia, New York. Workshops at the conference will address physical, biological and chemical monitoring of streams and lakes. The conference is open to formal and nonformal educators from the northeast. For information, call (607)255-2114

**May 2-8: WATER WEEK IN NEW YORK STATE.** The goal of Water Week, 1993 is to increase public understanding about the ways that pollutants from nonpoint sources work their way through a watershed to affect surface and groundwaters. In April, DEC will make available Water Week information packets that suggest ways that individuals and groups can take stewardship action. For more information, write: Public Participation Section, NYS DEC, 50 Wolf Road, Albany, NY 12233-3501, or call (518)457-0669.

**June 11 - 13: FEDERATION OF LAKE ASSOCIATIONS TENTH ANNUAL CONFERENCE.** Hamilton College, Clinton, New York. We hope you will join us for FOLA's 10th anniversary celebration! See page 12 for details.



# COLIFORM MONITORING FOR LAKE COMMUNITIES

The group of bacteria referred to as "coliform" has been used to determine the quality of water for human use for about 100 years. The bacteria in this group are made up of a large number of different organisms that share the ability to ferment milk sugar (lactose). Coliform are always found in large numbers in human feces so their presence in water indicates contamination and the potential presence of disease causing organisms. Coliform themselves are usually not disease causing, and are referred to as an indicator group. Coliform are now known to come from more sources, but health rules view all coliform the same.

Standards to interpret coliform results are for both total coliform, a large group that includes all organisms that can ferment lactose at a temperature of 35 degrees C, and for fecal coliform, a sub-group that are able to ferment lactose at 44.5 degrees C. The fecal coliform group is the more useful for recreational water standard. Drinking water standards use the total coliform group. For swimming, the log average or geometric mean fecal coliform value for a month should not exceed 200 organisms per 100 millimeters of water, and no more than 10% of these samples should exceed 400 organisms per 100 millimeters. For fishing the recommendation is that the fecal coliform log mean not exceed 2,000. For total coliform at bathing beaches the monthly median should not exceed 2,400 with less than 20% of the samples exceeding 5,000 organisms per 100ml. In either case, the criteria that is usually exceeded is the percent greater than 400 or 5,000, because storm event conditions tend to greatly increase the bacteria levels.

When a rainstorm occurs, an enormous number of coliform get flushed into

streams and ultimately to lakeshore beaches. The numbers of fecal coliform bacteria in a stream after a rainstorm generally increase from less than 100 to tens of thousands per 100 ml. This surge in coliform numbers, then moves downstream to a lakeshore beach at a rate determined by streamflow conditions and the beach location. Lake quality can change for a few hours to a few days after a storm depending on how fast coliform are carried from sources to the point where samples are taken. There are usually a number of coliform sources for each beach sampling site. The sources close to the beach can impact water quality very quickly. In larger river systems, a single storm can influence water quality for several hours to days after the storm. It is necessary to do a number of tests after a rainfall to get some understanding of these patterns.

Coliform die in the normal water environment. A major killing factor is sunlight; clear water will experience bacterial reductions much faster than muddy water. In clear water, you might expect that bacterial numbers would decline significantly in a few hours. In muddy water the die-off rate is more a function of the food supply and environmental stress. In general, the population of bacteria in suspension might be expected to drop by a factor of 10 each 24 hours. Actually, numbers of bacteria often drop faster when they attach to particles and sink to the bottom of the lake. These can be re-suspended by lake waves, or high flow in a stream. Settled bacteria in a protected environment are usually dying off at a fairly slow rate.

Test procedures are straight forward, and can be carried out by an indi-

vidual homeowner or lake association at fairly modest cost. A "local" sampling program has the advantage of being flexible and responsive to new information. When local people actually track a coliform problem to its source, improvements that will have a significant effect on the water quality can often be advanced more effectively than when government agencies become involved.

If coliform levels are high, there may be a need for improved septic systems or improved management of animal manure. By keeping both further back from the edge of the water there can be opportunity for natural retention and elimination of bacteria by grass and soil ecosystems. In more intense situations, there may be a need to close the beach area and boiling drinking water for a short time after large rainfalls. A successful coliform testing program depends on timely collection of sufficient data, especially during and after stormwater events.

In summary, coliform tests can be very useful in determining sources of water quality problems in a stream or lake. It's usefulness increases significantly when samples are collected after storms, when the worst conditions occur.

*by Richard Burton,  
Laboratory Administrator, Monroe  
County Health Department, and  
member of the FOLA Board of  
Directors*

*If you are interested in coliform testing on your lake, contact your County Health Department or a certified state laboratory.*



The Tax Education Committee was organized in July 1990 as a new committee under the Keuka Lake Association (KLA). The committee was established to respond to the repeated expressions of concern from members about the alarming escalation of lakeshore property taxes.

The KLA was founded in 1956 as a membership organization of lakefront property owners to be concerned with preserving and enhancing the quality of life in and around Keuka Lake. Today the Association has 1,700 members, having expanded its membership to include anyone with an interest in the lake.

The first year objectives included initiatives to educate KLA members. The members believed they had to educate themselves and then share what they had learned with local property owners. We developed data about the total assessed value of the lakeshore property and compared it to the value of all the property in each of the six towns to calculate the percentage of the total taxes paid by lakeshore owners. Based on 1990 figures we found the percentage ranged from a high of 71% to a low of 20% with an overall average of 50%. Shoreline property comprises 26% of the total parcels of land in the six towns.

We looked at how the total property tax dollars are spent. We learned that locally the greatest share, 50%, is spent in the support of two local school districts. Of the remaining 50%, approximately 30% is earmarked for county and 20% for town expenditures. Revenues generated through local property taxes are supplemented by federal, state and other local revenue. However, with federal and state revenues to local government and schools declining, and local service expenditures increasing, greater reliance is placed on local property taxes to generate the needed revenue.

During our first year, the committee members spent a good deal of time learning about the assessment process,

## THE KEUKA LAKE ASSOCIATION'S TAX EDUCATION COMMITTEE

culminating in two meetings, one in each county, with the town assessors. In June 1992 the committee sponsored a meeting in each of the six towns for all town residents. The meetings were promoted as an opportunity for residents to meet their town assessor(s), and to learn about the assessment process. Residents also learned how the property assessment value is used in determining the taxes owed, and how local taxes are apportioned.

The committee members also met with the Superintendent and Business Manager of one of our school districts to discuss mutual, as well as separate concerns. We arranged to meet with the Regional Director of Equalization and Assessment to clarify their process and learn how the equalization rate is used in determining local taxes.

The KLA has a quarterly newsletter that is distributed to its 1,700 members. An article about an aspect of taxes has been included in each issue over the last two years. There have been articles about the formation of the committee, information about the data developed, articles about the assessment and grievance process, important tax dates, pre and past articles about the "Meet Your Assessor" meetings, and recently, an article on understanding the equalization rate.

A pervasive concern that has surfaced through our discussions is the reliance on the value of recreation property as a major resource to generate tax revenue in resort areas. This is further compounded by the removal of large parcels of valuable lake frontage from the tax rolls as a result of tax exemptions. As one of the local tax assessors has observed, "You (lakeshore property owners) are the only industry in town." Granted, lakeshore property is more valuable, however that value is only realized at the time of sale. Further, lakeshore property owners are more likely to be retired or seasonal residents and therefore do not use tax based services such as schools and social services.

The lake as a recreational attraction is used by a broad spectrum of the population, but maintained primarily through the use of local property taxes. Without the diversified tax base to help spread the tax liability, a disproportionate tax burden is felt by one segment of property owners.

Many counties were recently given permission by the New York State Legislature to raise the local sales tax to 7-1/2 or 8%. Since sales tax in excess of 4% is retained for use by the locality, an increase in the sales tax would increase local revenue. In resort areas the increase would be paid by vacationers, as well as by local residents, thus creating a more equitable distribution of the tax burden.

Involvement in this cause does not bring with it instant gratification based on success. However, we can no longer allow, nor can we afford a business as usual approach. It is imperative we become involved in decisions about the distribution of limited tax resources that do affect our lives and our communities.

*by Priscilla P. Osswald,  
Chairperson  
Keuka Lake Association  
Tax Education Committee*



## NEWS, VIEWS AND OPPORTUNITIES

### **"Watershed Management: A Policy-Making Primer"**

This is a recently published Cooperative Extension bulletin that serves as a primer to prepare the way leading up to consideration of a formal watershed management plan. It was written by Lyle Raymond, Jr., who works with the Local Government Program, the Center for the Environment and the Water Resources Institute at Cornell University. The intention of this publication is to provide a sense of watershed management policy making in which responsibilities are shared in a cooperative context.

Questions are highlighted in the bulletin that must be dealt with in policy making. What issues must be considered? What problems are likely to be encountered? How can conflicts be resolved or mediated? What are the typical steps in policy making? Why is an educational program needed? What management tools or methods may be applied and what are the common obstacles?

Copies of "Watershed Management: A Policy-Making Primer" (1741B224) are available for \$1.60 from the Cornell University Resources Center, 8 BTP, Ithaca, N.Y. 14850, or at each county Cornell Cooperative Extension office throughout the state.

**SAREP, the 4-H Sportfishing and Aquatic Resources Education Program**, is an innovative 4-H program that blends fishing education with an awareness of aquatic ecology and angling ethics. Adult volunteer instructors represent a wide variety of professional interests, and include teachers, environmental educators, contractors, parents, public health workers, retired people, and people working with youth at risk. Youth in SAREP clubs live in urban, suburban and rural areas, and range from 9 to 18 years of age. For information on instructor training workshops call (607)255-2814.



### **Green Hope**

Green Hope, an organization formed last year in France to facilitate exchanges of letters among young environmentalists from different countries, has been overwhelmed by requests from Eastern Europe. The requests are made by teenagers, young volunteers, scout leaders, teachers in need of help, documentation, ideas, etc. They usually write in excellent English. Green Hope is looking for groups and individuals to match with letter writers in Eastern Europe. Send your name, address, age (if a young person), special environmental interests, the country to which you would like to write, and the language(s) in which you write, to: Green Hope, Chemin de Clodolio, 06790 Aspremont, France. Please enclose an International Reply coupon to pay for return postage.

### **FOLA Newsletter Contest**

Does your lake association have a newsletter? FOLA is again sponsoring a newsletter contest to recognize lake associations that make an effort to inform, educate, involve, and entertain their members through newsletters. The newsletters will be judged on readability, content, and interest. All submissions will be displayed at FOLA's annual conference in June (see page 12 for details). Please take a moment to send your latest issue to the Federation of Lake Associations, 2175 Ten Eyck Avenue, Cazenovia, NY 13035, Attn. **NEWSLETTER CONTEST**. Entries must be received by June 1st, 1993.

### **FOLA Conference Friday Night Open Forum**

If your association has a special project that has been implemented on your lake or watershed, please share your success stories with other lake associations at the Conference Friday Night Open Forum. Associations are encouraged to present a brief (no longer than five to ten minutes per person, please) summary of your projects and experiences. Please contact the Conference Coordinator at the FOLA office to secure a time on the agenda. (315) 655-4760.



**ZOOPLANKTON***(continued from page 4)*

Collected material is then removed from the net and treated with a preservative for future identification. Since the composition of the zooplankton community changes as lake conditions change, several collections are usually made over the summer season at the same time and location where other water samples are taken. A net and short training session are all that is required to enable volunteers, such as those participating in CSLAP, to collect zooplankton samples.

**Identification and Enumeration:**

The identification of zooplankton species and the counting of individuals requires a compound microscope at high magnification and a knowledge of the

taxonomy of zooplankton species. This usually requires the help of a trained and experienced person.

**Analysis:**

While overall knowledge of the zooplankton community composition can provide important information, a complete picture of the lake ecosystem must include all data available for both the biological and non-biological components. All major contributors to the bottom-up and top-down processes must be considered. This procedure requires the skill of an individual trained in the analysis of aquatic ecosystems.

**Completing The Story**

Analyzing a few components of an ecosystem is like reading two or three random chapters of a novel. All major biological and non-biological components of

both the lake and its watershed must be considered together before the entire story can be understood. Combining zooplankton analysis with knowledge of a lake's fish populations, aquatic plants, chemistry and physical characteristics establishes a data base that can be used to more accurately assess the cause and effect relationships that determine water quality in a lake. Further analyses of the watershed and related human activities completes the story.

*by Bruce Cady, Center for Applied Aquatic Science and Aquaculture, Department of Biological Sciences, SUNY Brockport, and CSLAP Field Technician*

**The Federation of Lake Associations, Inc.****MEMBERSHIP CATEGORIES**

Lake associations with less than 50 members.....	\$30.00/year
Lake associations with 50 to 99 members.....	\$50.00/year
Lake associations with 100 to 199 members.....	\$75.00/year
Lake associations with more than 200 member....	\$150.00/year
Individuals.....	\$20.00/year
Corporations.....	\$100.00/year
Additional copies of <i>Waterworks</i> ..... \$ .50 each	

*Membership dues over \$5.00 are tax deductible contributions to the Federation of Lake Associations, and will be used for educational, scientific, and public information activities of the Federation.*

**APPLICATION FOR MEMBERSHIP**

THE FEDERATION OF LAKE ASSOCIATIONS, INC., 2175 TEN EYCK AVENUE, CAZENOVIA, NY 13035

Type of Membership (please check)

☐ Association

☐ Individual

☐ Corporate

Association Name: \_\_\_\_\_

Assoc. Address: Street \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_ County \_\_\_\_\_

President/Contact Person: \_\_\_\_\_

Summer Address \_\_\_\_\_ Winter Address \_\_\_\_\_

Summer Phone ( ) \_\_\_\_\_ Winter Phone ( ) \_\_\_\_\_

Total number of newsletters requested of each issue: \_\_\_\_\_



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## The Federation of Lake Associations Annual Conference

### "Strategies for Protecting Water Quality"

June 11 - 13, 1993

Hamilton College, Clinton, New York

*Mark your calendar for this important event!*

Please join us for FOLA's 10th anniversary conference. The new format is designed to enhance the effectiveness of our group discussions and to provide for hands-on participation and learning. The conference will focus on:

- \* on-site tributary sampling techniques
- \* interaction and networking during round-table discussions
- \* hands-on workshops
- \* discussion groups on a statewide approach to lake management
- \* an exchange of innovative lake association projects at the Friday night discussion group
- \* a presentation of the "Environmental Achievement" award
- \* a Saturday night wine and cheese party, outdoor barbecue, a keynote address and entertainment
- \* a wide variety of exhibitor displays
- \* we're also planning on a repeat of last year's successful newsletter contest

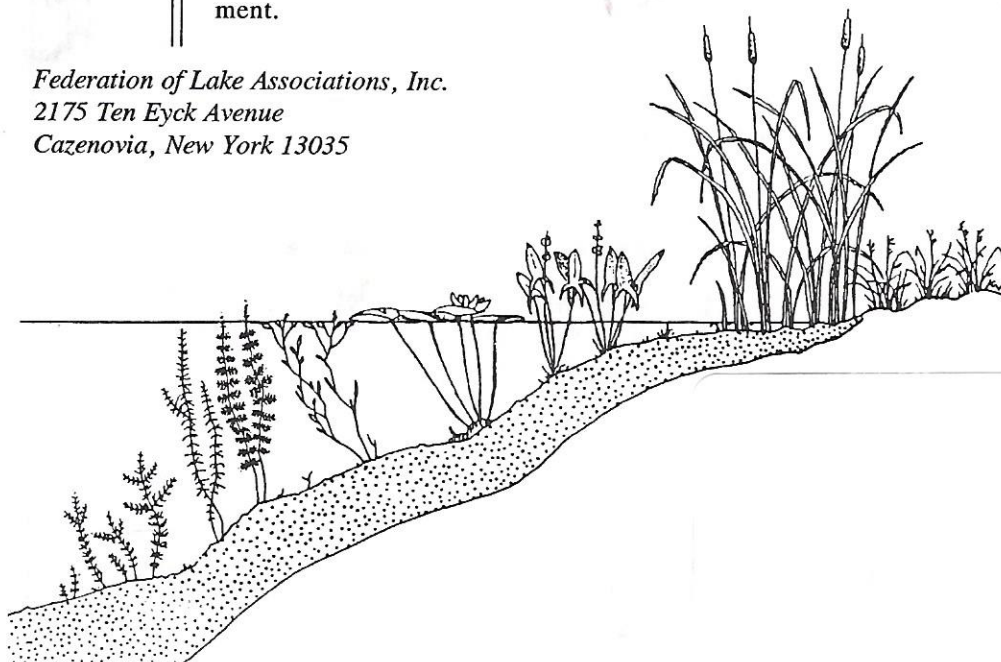
### Environmental Achievement Award

The Federation of Lake Associations is now accepting nominations for the Environmental Achievement Award. This award is designed to publicly recognize individuals, groups, schools, businesses, municipalities or government agencies that have participated in some activity or program that contributed to improving the quality of surface water resources in New York State. Individuals or groups will be recognized who are involved in projects that promote community action towards an ecologically healthy lake and watershed environment.

Nominations should be sent to the Federation office by June 7th. Please submit the following information: name of nominee, address and phone number, description of the lake or watershed project/activity (who, what, when, how long, where, and why), scope and effectiveness of the project. Any background or supporting materials, such as photos, newspaper articles, or other printed materials are optional.

Federation of Lake Associations, Inc.  
2175 Ten Eyck Avenue  
Cazenovia, New York 13035

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