Waterworks

Winter 1991 Volume 7 Number 1

COUNTY WATER QUALITY STRATEGIES

Solutions to preventing both surface and ground water pollution from nonpoint sources lie in assisting land users and local officials in making informed decisions about the effects of land use changes on water quality. Recognizing this need the NYS Soil and Water Conservation Committee in cooperation with the NYS Department of Environmental Conservation have undertaken an effort to begin development of county water quality strategies by county governments.

The goal is to integrate the diverse nonpoint source water quality pollution control and abatement programs of various county, state and federal agencies into a coordinated, comprehensive, interagency approach at the county level.

The key components of the strategy include establishment of county water quality coordinating committees, identification of available technical expertise within the county, identification and prioritization of impacted water bodies needing corrective actions, development of a procedure for involving the public throughout the process and increasing overall public awareness, and development of comprehensive nonpoint source implementation strategies. Presently twenty counties in New York State are in the process of initiating county water quality strategies. Local soil and water conservation districts are serving as a catalyst for fostering the development of these county strategies. Lake associations will be invited to participate as members of the coordinating committees.

A uniform, organized, well thought out county nonpoint source water quality strategy will result in a better informed public (including business and industry that recognizes there is a problem and a need to take action), and will provide for more effective delivery of county, state and federal programs, reduce agency turf battles, result in less duplication of effort, identify program gaps, clarify agency roles and responsibilities, provide a means of identifying future funding and legislative needs and, overall, have a major impact on enhancing the quality of life and the environment within a county.

David Pendergast, Executive Director
NYS Soil and Water Conservation Committee

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The Citizens' Statewide Lake Assessment Program 1991 Update

1991 will mark the sixth year of the Citizens' Statewide Lake Assessment Program (CSLAP). The Federation of Lake Associations is now working with the Lake Services Section of the Department of Environmental Conservation to finalize plans and to secure funding for the upcoming sampling season.

Several important changes are anticipated, depending on the availability of this financing. If enough funding *cannot* be secured, each CSLAP lake community will be required to provide partial payment for continuation in the Program. If funding *can* be secured, the most significant change anticipated for lake communities involves decisions regarding reduced sampling.

Reduced CSLAP Sampling Plan

Up to twenty five lakes that have been involved in CSLAP since 1986 or 1987 will be moved to a Reduced Sampling Plan. These lake communities will be asked to continue monitoring secchi disk transparencies, but chemistry analyses will no longer be provided for free. These lakes will, however, have the option of participating in water sample collection and laboratory chemistry analysis on a cost basis. If lake associations choose to continue with the laboratory analyses, a fee should be submitted to the FOLA Rochester office by May 10th. These samples will continue to be tested at the New York State Department of Health (NYSDOH), since continuity of sampling procedures at a State certified laboratory is still expected. Beginning in June, in-depth reports summarizing five years of chemistry data and watershed

Waterworks is published four times a year. Individuals who wish to submit articles, calendar items, artwork, or photography to **Waterworks** are welcome to contact the editor, Anne B. Saltman, 2175 Ten Eyck Avenue, Cazenovia, New York 13035 (315) 655-2236. For additional copies of **Waterworks** and address changes, contact John Colgan, FOLA President, 273 Hollywood Avenue, Rochester, New York 14618 (716) 271-0372. Permission to reprint articles is granted with credit.

MARK YOUR CALENDARS!

Small Lake Problem Solving - It's Time for Action!

Federation of Lake Associations, Inc. Annual Conference

June 7, 8, 9 1991
Paul Smith's College

recommendations will be distributed to lakes within this category. The decision regarding reduced sampling for these lakes will be made by the CSLAP Review Committee in order to free up the necessary funding for the inclusion of additional lakes currently on the waiting list.

We strongly encourage these lakes to continue their involvement with CSLAP, with the expectation that a routine sampling schedule will again be resumed at a later date. In the coming weeks we will send you information on the lakes chosen for the Reduced Sampling Plan, laboratory costs, and recommendations on the type of analyses and testing frequency for your lake.

Additional Sampling Sites

Since its inception, CSLAP has provided water laboratory analyses and interpretive summaries from one site (normally the deepest point of the lake basin) on each lake. Several communities, however, have expressed an interest in collecting water samples from additional sites, including tributary sampling. In 1991, we will provide an opportunity for associations to add additional sites for sample collection and laboratory analyses, but again, this will be on a cost basis for the association. Laboratory analyses for samples from the *primary* site will continue to be provided at no cost to the lake association. The total cost for supplies and chemistry analyses at each additional site will be sent to you at a later date, and the new sites will be determined by CSLAP professionals in conjunction with the lake volunteers.

Regardless of funding decisions, **all** lakes are encouraged to continue on with the aquatic vegetation sampling program which was introduced in 1990.

These anticipated changes in 1991 are necessary in order to meet our overall objective for CSLAP, which is to work with volunteers in providing a solid, scientifically-based, high quality water monitoring program on lakes throughout the State. Since we realize that volunteers are beginning to make plans for the upcoming season, we will notify each CSLAP lake community by mail as soon as funding decisions have been finalized. In the meantime, questions regarding CSLAP can be addressed to either Scott Kishbaugh (NYSDEC) at 518-457-7470 or Anne Saltman (FOLA) at 315-655-4760.

AN ASSESSMENT OF SHORT AND LONG TERM SEDIMENT ACCUMULATION IN A SHALLOW, EUTROPHIC LAKE

by Thomas C. Young, Professor, Anthony G. Collins, Associate Proressor*
Robert L. Sinsabaugh, Assistant Professor
Clarkson University, Potsdam, New York

**Corresponding Author*

Situated in St. Lawrence County, the largest and historically most productive dairy county of rural northern New York, Black Lake has exhibited symptoms of eutrophy for at least 60 years. During the past two decades, however, anecdotal evidence from riparian landowners and other watershed residents suggests an accelerating decline of recreational water quality because of increased macrophyte populations.

Previous work on Black Lake strongly indicates current objectionable levels of aquatic weeds and algal blooms result from a relatively small number of causes:
- Black Lake is large in surface area (ca. 40 km^2), but it has extensive areas of shallow water;
- The lake bottom substrate is generally well suited to vascular hydrophytes; and
- The watershed imparts excessive fertility to the lake, largely due to phosphorus (ca. 95% from non-point sources).

The lake's shallow character is a robust index of the success achievable by macrophyte populations, because it means sunlight reaches the lake bottom over extensive areas of sediment. This encourages and sustains the growth of rooted aquatic vegetation.

In the past we have explored several hypotheses concerning ways Black Lake sediments may affect present levels of fertility and how sediments may be managed to alter the future course of eutrophication. Here, we report some results from an evaluation of the temporal rate and spatial extent of sediment accumulation in Black Lake. These data provide insight into the history of sedimentation in Black Lake and yield information about the processes that lead to decreased water depth and increased macrophyte habitat.

To quantitate sediment accumulation we measured sediment thickness at discrete locations and systematically interpolated the measurements to unmeasured locations. For collecting data on sediment accumulation depth, we deployed a ground-penetrating radar system (GPR) along continuous transects much in the same way one might use the familiar sonar system (depth finder) to obtain bathymetry data for lake mapping. We also collected sediment cores from the lake to allow us to put dates on sediment depth using radioisotopic methods.

A representative GPR reflection profile from Black Lake is shown in Figure 1. The horizontal scale for Figure 1 is determined by the speed of antenna advance across the ice surface at the time the data were collected; the length of the transect represented by Figure 1 is approximately 1220 m (4000 ft). The vertical scale for Figure 1 depends on the speed of the radar wave as it traveled through the

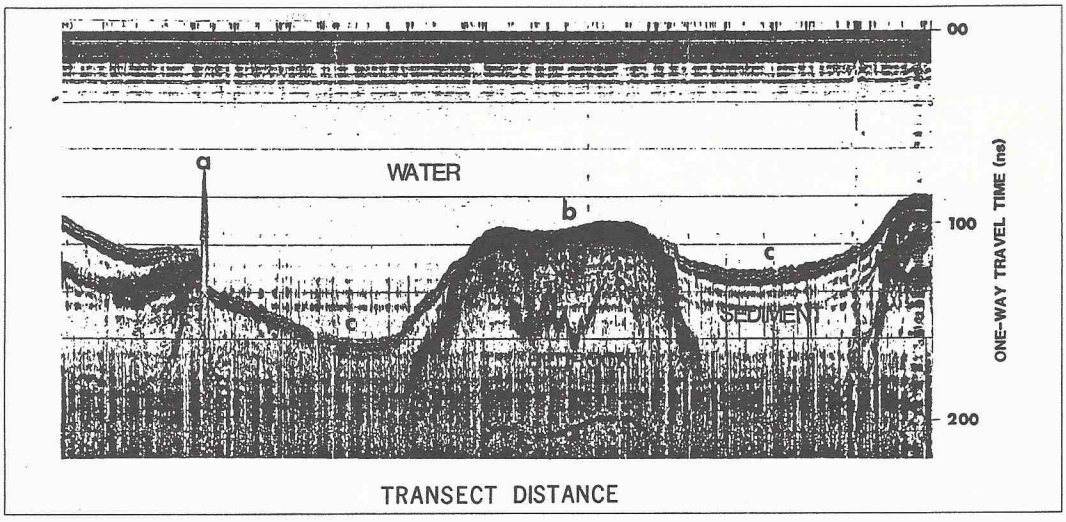


Figure 1. Representative GPR echogram, Transect 15, February 1989

various media, which included at least ice, water, sediment, and bedrock in this example.

A rock pinnacle (annotation a) and a bedrock mount (annotation b) are evident from the data shown in Figure 1. Additional features within the bedrock mount also are clearly evident from these data and represent contact between bottom sediments and either bedrock or possibly consolidated, post-diagenetic sediments, fracture planes or veins of dissimilar materials within the bedrock. The bedrock mount separates two troughs which are filled with sediments. In Figure 1, the trough on the right has filled more rapidly than the trough on the left. Furthermore, in the center of these troughs, the thickness of sediment accumulation can only be specified as a lower bound: the limit of depth quantitation by the GPR system due to signal strength attenuation.

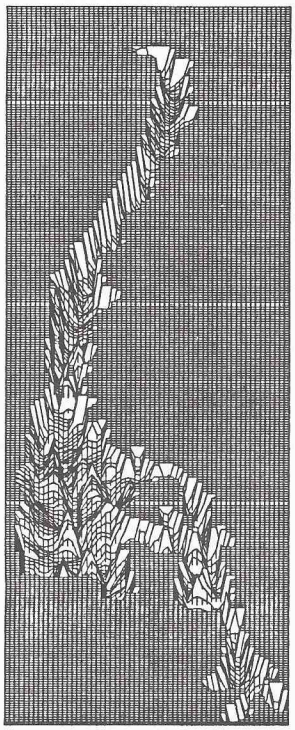


Figure 2.
Vertical and horizontal distribution of sediment accumulation interpolated from GPR data; viewing angle is 30° from horizontal

Nearly all the GPR information can be visualized at once in a three-dimensional graphical image (Figure 2). In Figure 2, vertical relief corresponds to sediment accumulation depth (i.e., distance from sediment-water to sediment-bedrock interface, or GPR detection limit). One may view this representation in the same way one would view water depth but the view is of sediment, of course, rather than water. The location of the sediment-water interface in Figure 2 is an imaginary horizontal extension of the planar surface that surrounds the lake outline.

Analysis of Figure 2 indicates a median sediment accumulation depth of 4.3 m (14 ft), and nearly 20% of the lake overlies sediments that have accumulated to a depth exceeding 6 m (20 ft). As indicated previously, these data likely provide lower bound estimates of accumulation depth. The median water depth in the lake has been shown to be only 2.15 m (7.05 ft). It appears, therefore, that Black Lake has lost a minimum of approximately 67% of its original volume to sediment accumulated from the watershed over time.

Radioisotopic sediment core dating indicates a lake-wide median sediment accumulation rate of 0.63 cm/yr (0.25 in/yr) since the early 1960's. This rate may be cast into a historical context by considering that post-glacial sediment accumulation in Black Lake began at least 5000 years ago and has been continuous to the present. Given this and several other assumptions, 4.3m of sediment accumulation in 5000 years corresponds to an annual accumulation rate on the order of 0.1 cm/yr (0.03 in/yr). This value is markedly smaller than the estimate of sediment accumulation since the early 1960's, and cannot be accounted for by sediment compaction or other obvious factors.

It appears, therefore, that sediment has accumulated more rapidly during recent times compared to rates over the long-term for Black Lake. Consequently, Black Lake volume loss seems to be occurring more rapidly in modern compared to post-glacial times. This increase may be an outcome of recent watershed development. If so, a review of soil conservation practices in the watershed may reveal ways to reduce the amount of solids that enter and accumulate in the lake and, thereby, reduce the lake volume loss rate and stem the proliferation of macrophyte habitat.

This article was taken from a paper entitled "Assessment of the Role of Sediment Accumulation in the Eutrophication of Black Lake, New York" which was presented by the authors at the 10th Annual Meeting, North American Lake Management Society, November 1990, in Springfield MA, and which may be published in Lake and Reservoir Management during 1991. Anyone interested in more information about this work is asked to contact Professor Thomas C. Young, William J. Rowley, Research Laboratory, Department of Civil and Environmental Engineering, Clarkson University, Potsdam, NY 13699. Professor Young is a current member of the Scientific Advisory Board of the New York State Federation of Lake Associations. This work received partial funding from a grant to Clarkson University from the State of New York through the St. Lawrence County Soil and Water Conservation District; Nick Carbone, Project Officer.

Canaries of the Stream

By Janet Essman and Stephanie Zarpas

Stroll by a stream and you will see water spilling over rocks, glinting in the sunlight. Shadowy forms of fish dart in still pools. Opalescent insects skim the surface.

But there is more life in that stream than you can see from the water's edge. Reach in; turn over a rock. Stir up the bottom with your hand. Look closely: you will see the tiny inhabitants of the stream. Some are barely visible, others are easier to spot: crayfish, worms, tiny clams and snails, the nymphs of aquatic insects and the worm-like larvae of flies.

Anglers know them, especially the mayflies, stoneflies and caddisflies that tell them this stream is likely to be full of fish. Scientists know them, too, as a handy and reliable way to identify a healthy stream.

Living Barometers

Stream-dwelling insects, worms, mollusks and crustaceans are macroinvertebrates, visible creatures without backbones. Like the canaries once used by coal miners to detect poisonous gases in the mines, these critters are living barometers that can tell us whether their watery environment is clean or polluted.

But unlike the canaries that had to be carried into the mines, macroinvertebrates live in streams naturally. What happens to the water affects them in observable ways that help us to discover and understand pollution.

Contamination Changes the Picture

Clean streams are full of life. And abundance of clean-water species thrives in just the right numbers -- neither too few nor too many. Each species is in balance with the others in a complex web of life.

But as streams become contaminated, the picture changes. Organic pollution, such as runoff of fertilizers, can produce an overabundance of algae and nuisance weeds. Other contaminants, such as chlorine and pesticides, can kill certain forms of life, allowing more pollution-tolerant species to flourish and disrupt the stream's natural balance.

As early as 1908, scientists noticed that some types of macroinvertebrates found in clean waters were absent in polluted streams where other types were predominant. But is was not until about 20 years ago that macroinvertebrates were commonly used for monitoring water quality.

ConventionalTesting Procedures are Limited

Scientists and engineers test stream water for contamination in several ways. They collect and test water samples to identify chemicals, check the pH to see whether the water is acid or alkaline, measure the amount of oxygen dissolved in the water, test for bacterial contamination and an overabundance of nutrients. They also analyze bottom sediments for the presence of certain chemicals, including toxic substances and heavy metals.

Water tests provide a great deal of information about the condition of a stream on the days it was tested. But only repeated testing, which is expensive and time-consuming, can give a picture of stream water quality over time. And sometimes contaminants are so diluted by the water that it is difficult to test for them at all.

Some toxic substances gradually accumulate in animals as they continue to live in polluted environments. Scientists examine fish flesh to identify pollutants too dilute to be apparent in water samples. But fish may move from stream to stream making it hard to tell where they picked up the contamination.

Macroinvertebrates Fill in the Pollution Picture

Aquatic biologists employ biomonitoring -- the use of organisms to test water quality -- to fill in the gaps left by conventional water quality tests.

"A single sampling of a macroinvertebrate community provides a 'fingerprint' of water quality in that stream for the last several months," says Robert Bode, who heads a staff of three in DEC's stream biomonitoring unit, a part of the Division of Water.

Why They Work So Well

Macroinvertebrates make valuable tools for water quality studies because they stay put. They are not very mobile and cannot move to avoid pollution. Like fish and other forms of life, macroinvertebrates accumulate toxic substances in their bodies. Because macroinvertebrates do not travel far, however, they are ideal subjects for studies that will pinpoint the source of pollution.

Most macroinvertebrates have life cycles of a year or less, making them well-suited for studies of streams over a relatively short span of time. If a macroinverte-

brate community appeared normal and uncontaminated when it was last checked, but now appears to be affected, the pollution must have occurred during the interim.

Microinvertebrates vary in their ability to tolerate pollution. Some species, such as worms and midges, can thrive in a wide range of water conditions, from clean to polluted; others can live only in clean waters.

Because moderate to severe pollution alters the macroinvertebrate population so drastically, it is easy to assess the condition of the water by looking to see which species are present. Pollution is readily apparent if a sampling reveals a population composed entirely of pollution-tolerant species and no pollution-sensitive species.

More often, pollution is less severe. More subtle cases are detected by using precise organism identification and detailed analysis of data to map slight shifts in species composition.

EPT Values and Other Indicators

The three key groups most indicative of health are the old favorites of fly fishermen: mayflies (Ephemeroptera), stoneflies (Plecoptera) and caddisflies (Trichoptera). Scientists calculate a numerical value -- called an "EPT value" from the initials of the Latin names of the three insects -- based on the numbers of species of these key organisms present in an average 100-organism sample from a stream.

EPT values greater than 10 usually indicate that a stream is not impacted by pollution. From six to 10, it is slightly impacted; from two to five, moderately impacted and from zero to one, severely impacted.

Along with the EPT value, scientists look at other biological indicators to make a complete stream quality assessment, including the total number of species in the stream, the diversity of species present and the total numbers of each species in relation to the others.

You Can Get Involved

Macroinvertebrate biomonitoring is so quick and inexpensive, its use is becoming more widespread. You do not have to be a scientist or engineer to do it. Using simplified biomonitoring techniques, you can learn to assess your local streams. It is easy to get involved -- check the resources listed on page 10. All you need are instructions and a few simple tools.

Biomonitoring in New York State

DEC has used macroinvertebrate biomonitoring since the early 1970s. DEC's Stream Biomonitoring Unit evaluates streams across the state in conjunction with DEC's overall water quality monitoring program, keeping track of changes in water quality overtime by sampling the same sites periodically.

Stream biomonitoring is one aspect of the Division of Water's Rotating Intensive Basin Studies (RIBS) program. The division routinely gathers data from different stream basins. Such data are used to determine whether the water meets standards for drinking, swimming or supporting fish, and to regulate industrial and municipal wastewater discharges.

DEC also uses macroinvertebrate biomonitoring for special surveys, to document water quality changes following improvements to a sewage treatment plant, gather evidence after a fish kill or assess biological damage caused by violation of a wastewater discharge permit.

Biomonitoring indicates the presence of toxic substances such as PCB's or mercury in New York waters where contamination may be too dilute to detect in water samples. The contaminants accumulate in the tissues of macroinvertebrates up to levels that are thousands of times higher than the levels in the water. When these organisms are eaten by fish, the contaminants become magnified as they go higher up the food chain, sometimes resulting in fish that are unhealthy for human consumption. By collecting macroinvertebrates and analyzing their tissues for these toxic contaminants, biologists can measure the levels of contamination in aquatic food chain and identify the responsible source.

The stream biomonitoring unit has studied macroinvertebrate communities to track PCBs in the Hudson River, determine the effects of acid rain on Adirondack and Catskill streams, document water quality improvement in the Mohawk River and assess impact of wastewater discharges in the Ramapo River.

Scientists and anglers alike know which members of the macroinvertebrate aquatic community should be present in a healthy habitat. When some of these stream canaries are missing, nature is sending a signal that water quality problems are almost surely present.

(continued on page 10)

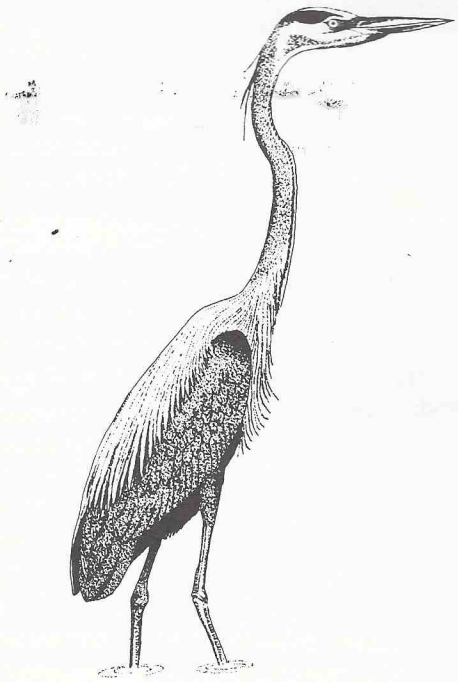
Save the River! It's Not a Sewer!

Would you swim in a sewer?

That question received an overwhelming response when Save the River asked it of St. Lawrence River residents. It was the quickest and most hard-hitting method of getting people to think about where their waste is going.

Save the River, a non-profit environmental organization concerned with the conservation of the 1000 Islands area of the St. Lawrence River, began its ''Save the River - It's Not a Sewer'' campaign in 1988 with the help of a grant from the New York State Department of State. The organization's leadership decided that state officials were not paying enough attention to enforcement of existing sewage disposal laws and that sewage pollution in the busy summer resort area of the 1000 Islands was a very real problem, primarily due to the many non-functioning and improper sewage disposal systems of private residences.

Since Save the River had no legal enforcement authority, it was felt the best way to get river residents to clean up their own sewage disposal systems was through education. It was hoped that, once it was pointed out that a system was polluting, the owner would voluntarily choose to make improvements out of a sincere desire to do his or her part to help clean up the river.



First, Save the River printed a four-color brochure outlining the sewage problem and stressing the negative health impacts of such pollution. Second, recognizing that much of the 1000 Islands area is unsuitable for standard septic tank/leach field systems because of bedrock and undersized lots, the organization updated and reprinted a booklet outlining various alternative methods of sewage disposal. This booklet had been researched and printed by Save the River several years ago, but the information on alternative sewage systems, prices, and laws changes rapidly and must be constantly updated. The booklet discusses state laws pertaining to sewage disposal, and introduces several alternative methods of sewage disposal, such as composting toilets and aerobic treatment systems.

The third and most important component of the program is the free on-site sewage disposal system surveys offered every summer by Save the River. These are voluntary inspections, made by trained Save the River personnel, at a homeowner's request. Save the River stresses that the surveys are completely confidential and are not for legal or enforcement purposes. The survey consists of a brief interview with the homeowner about the existing system (if any), household use, types of toilets, etc., dye tests of both the black- and greywater systems, and a septic tank inspection to check for proper function.

The homeowner ''passes'' the inspection if Save the River determines his or her system is not polluting the river. In this case, he or she is presented with the Save the River Great Blue Heron Clean Water Award, a hand-crafted statuette the organization purchases and gives out (very successfully) as in incentive award. The homeowner ''fails'' if the system is leaching into the river. In that case, Save the River makes practical and cost-effective recommendations on how the system could be improved. If there is no system in place, Save the River recommends one, based solely on the individual's circumstances, including lot size, depth of soil, amount of bedrock, how much useage the system will have, etc. There is encouragement to implement the recommendations and follow-up to see if the homeowner needs further assistance.

(continued)

The Loon Conservation Project Needs Your Help

The New York Loon Conservation Project is looking for volunteers to participate in a loon census of lakes north of the Mohawk River Valley.

The New York Loon Conservation Project (Loon Project) will be conducting a one-day, one-hour Loon Census on Saturday July 27, 1991. Loon Project Administrator, John Santacrose, said, "The Census will be instrumental in our efforts to better document the breeding activities of the Common Loon in New York State and we can also record the ranges of individual loons and their feeding areas."

The Common Loon is a large fish-eating bird that breeds throughout the northern tier of the U.S. and Canada. Both male and female are striking in their appearance with black heads, black and white "necklaces", white chests and large white spots on their backs. The Common Loon is listed as a species of special concern by the State of New York. This means that changes in the bird's habitat or impacts by humans could cause the loon to become threatened or endangered. Loss of Loon habitat due to lakeshore development, deterioration of water quality (from acid rain and chemical contamination), predation (especially on nests that are located near human populations), artificial fluctuation of water levels and disturbance of loons during the nesting season all contribute to a decline in the loon population.

"Loon Rangers", Loon Project volunteers, survey many of the North Country lakes and ponds during the summer and pass out educational materials about the special needs of the loons. Loons can successfully coexist with people, but we must educate lake users of the problems that face loons and what we can do to minimize our impacts on this bird (which is often called the spirit of the northern wilderness) during the critical periods of the breeding season.

You and members of your lake associations can help protect the loons by participating in the Loon Census on July 27, 1991. To participate in the Census, you will be asked to tell us your observations of loon activities on your lake. We will also need to know if no loons are seen on the Census day. Participation in the one day Census is free. But, you may also consider becoming a Loon Ranger by enrolling in the Loon Project (dues for 1991 are $10.00).

If you are interested in participating in the Loon Census or in becoming a member of the Loon Project write or call John Santacrose at New York Audubon, Rt. 2, Box 131, Selkirk, NY 12158. Phone (518) 767-9051. The New York Loon Conservation Project is a project of the Audubon Society of New York State, Inc. (New York Audubon). New York Audubon is an independent state-wide Audubon Society working toward a healthy environment through research, education and public involvement.

(Save The River! continued from page 8)

Save the River has completed almost 450 of these surveys. It's about a 50-50 split between those who pass and those who fail. Largely because of the non-confrontational approach of the program, and the practical, affordable solutions offered, Save the River has a high success rate in convincing property owners to voluntarily upgrade their systems.

This is a program that can be tailored to fit any lake or river, no matter how large or small an area. All that's needed are volunteers to conduct the surveys, some type of written material to explain the program and some type of small incentive reward -- preferably something known in your area, such as a loon or wood duck -- to be awarded for having a good sewage disposal system.

While the Alternative Sewage Project is Save the River's biggest effort right now, it is by no means the organization's only program. Save the River was founded 12 years ago when river residents banded together to fight the concept of winter navigation of the St. Lawrence Seaway and this is still an active committee. The organization also annually marks 70 shoals on the U.S. side of the river with special markers it purchases, and jointly sponsors a muskie release program, in which anglers releasing legal-sized muskellunge receive an award. Wetlands protection and water level committees round out Save the River's current slate of activities.

For more information on any of these topics, please contact Save the River, Box 322, Clayton, NY 13624, (315) 686-2010.

by Laurie Marr, Administrator, Save the River!

Backyard Biomonitoring

Almost anyone can determine the general water quality of a stream simply by examining the undersides of a few rocks and looking at the critters that live there. Biomonitoring can be fun and educational -- children and adults will learn biological principles and scientific methods as they develop an appreciation for stream resources. Citizen biomonitoring can also help the environment by identifying water quality problems.

To biomonitor on your own, all you need is a net or screen, a magnifying lens and a field guide to stream or pond life. The following organizations and information sources will send kits or information to help you biomonitor your stream.

You may need a scientific collector's license from DEC to collect aquatic organisms, so contact your regional DEC office before you begin. It is illegal to take any invertebrates from any trout stream in New York State.

And please be careful not to disrupt stream habitat or injure aquatic wildlife. Remember that macroinvertebrates are an essential part of the stream ecosystem, and an important food source for fish and other animals. Release the macroinvertebrates you collect after you examine them.

Assessment and Watershed Protection Division, U.S. Environmental Protection Agency, WH-553, 401 M Street, S.W., Washington, D.C. 20460. Attention: Alice Mayio. (202) 382-7018. The EPA will direct you to citizen-based stream monitoring programs run by state environmental conservation departments. (Please note that New York State does not have a citizen-based stream monitoring program.)

Cooperative Extension Service, Cornell University, College of Agriculture and Life Sciences, College of Human Ecology, Ithaca, NY 14853. Consult your phone book for location of county agent offices. Cooperative Extension can provide information about aquatic environments and instructions for making dip nets and other sampling devices.

Hudson River Clearwater Sloop, School Program Coordinator, 112 Market Street, Poughkeepsie, NY 12601. (914) 454-7673. Ask for Lesson Packet III: "Understanding Food Webs," which includes information about aquatic invertebrates and instructions for making sampling devices.

Project Riverwatch, Environmental Sciences Program, Division of Natural Sciences, SUNY Purchase, Purchase, NY 10577, attention: Dr. Barbara Dexter, (914) 251-6641. College and high school groups and conservation organizations receive equipment and supplies to collect biological, chemical and physical data at a waterbody. Results are compiled into an annual technical report. This project is mainly for streams in Westchester, Rockland and Putnam counties.

Project WILD, a supplemental environmental education curriculum for K-12 teachers, has an activity called "Water Canaries" in which students learn to identify aquatic organisms and assess the environmental quality of a stream or pond. Activity guides are available to teachers who attend free Project WILD workshops. Contact the Project WILD Manager, NYS DEC Bureau of Environmental Education, Room 504, 50 Wolf Road, Albany, NY 12233-4500 or call (518) 457-3720 for times and locations of Project WILD workshops.

River Watch Network, 153 State Street, Montpelier, VT 05602. Attention: Jack Byrne, (802) 223-3840. A national program that provides methods and techniques to assist high school and college science students and teachers, conservation groups and citizens in starting river monitoring and protection programs.

Save Our Streams, Izaak Walton League of America, 1401 Wilson Blvd., Level B., Arlington, VA 22209. (703) 528-1818. The league provides a variety of resource materials including a citizen's guide to stream monitoring methods, an instruction and reference packet and a quarterly newsletter. It also provides lesson plans, student project ideas and classroom materials for teachers.

Reprinted, in part, from The Conservationist/NYSDEC - May-June 1990. For reprints of this article and information about stream biomonitoring call the DEC Bureau of Monitoring and Assessment, (518) 457-3495.

Etcetera

A computer software package called **GEODEX** has recently been developed for use by anyone interested in environmental mapping and planning. This program is designed to assist municipalities, developers, citizens' groups and others in storing and mapping water quality and land use information. GeoDex costs just under $1,000, and can be used on an IBM-PC, XT, AT or PC/2 with 10 meg of hard disk space. For more information, contact Jeffrey Sabol, International Science and Technology, Inc., 100 Carpenter Drive, Suite 206, Sterling, Virginia 22170, (703) 471-4261. Have you tried it? Give the FOLA Cazenovia office a call at (315) 655-4760 and let us know how you like it!

THE NATIONAL ASSOCIATION OF CONSERVATION DISTRICTS is now distributing coloring projects, activity books, posters and other environmental education materials for elementary age school children. For more information and an order form, call Ruth Chenhall at (713) 332-3402.

LIMING ACIDIC SURFACE WATERS, written by Harvey Olem, is now available from Lewis Publishers. This comprehensive volume integrates European and North American research on aquatic liming. It includes an objective review of liming successes and failures, with additional information to help the reader determine how well a particular method will likely restore and protect the affected biota. The book is available for $69.95 from Lewis Publishers, P.O. Drawer 519, Chelsea, Michigan 48118, (313) 475-8619.

THE RURAL ASSISTANCE INFORMATION NETWORK (RAIN), operated by the New York State Office of Rural Affairs (ORA), is a computerized directory of over 1,500 federal and state financial and technical assistance programs. Data searches are provided to rural communities either through a computer modem or through a direct phone request to the ORA Albany office. For additional information, call the ORA office at (518) 473-9003.

(continued)

The Federation of Lake Associations

We are a coalition of organizations dedicated to the preservation and restoration of all lakes, ponds and rivers throughout New York State. We welcome and encourage the memberships of lake associations, property owner groups, fish and game clubs, corporations and individuals. The Federation is incorporated under two mirror organizations with the same officers and board of directors.

The Federation of Lake Associations, Inc. purposes are:

* to provide a clearinghouse of environmental information and expertise in all matters pertaining to lake management.
* to promote by education the wise use and appreciation of the lakes in New York State.
* to provide a pool of technical knowledge and expertise to advise and assist member associations and individuals.
* to establish liaison with other environmental groups and agencies.
* to provide a coordinating structure for lake-related research projects.

The Federation of Lakes, Inc. purposes are:

* to monitor and report to members on legislation and administrative actions affecting the waters of New York State.
* to support and lobby for legislation and admistrative actions which promote the sound management of the waters of New York State.

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 members....$150.00/year
Individuals.....$20.00/year Corporations.....$100.00/year
Additional copies of *Waterworks*.....$.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., 273 HOLLYWOOD AVE., ROCHESTER, NY 14618

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: _____

Information on **SMALL COMMUNITY WASTEWATER SYSTEMS**- brochures, handbooks, manuals, videos and films - is available from EPA's National Small Flows Clearinghouse. Call (800) 624-8301.

CANADA HAS DOUBLED spending for Great Lakes Programs, earmarking $125 million over five years for a human health effects study, clean-up for hotspots and a Great Lakes Preservation program.

Drafts of twenty eight State of Science and Technology Reports on **ACIDIC DEPOSITION** causes, effects and control options are available from the National Acid Precipitation Assessment Program. For copies and more information contact Charles Herric at (202) 395-5771.

COST FREE INFORMATION AND TECHNICAL ASSISTANCE to Extension Service personnel, support groups, farmers and agricultural researchers is provided by Appropriate Technology Transfer for Rural Areas (ATTRA) which is funded by the US Fish & Wildlife Service. Information on a broad range of agricultural issues is included, but ATTRA is especially concerned with minimizing the environmental impacts of agriculture and plant and livestock management. Requests can be made over the phone or in writing. A response will usually consist of a literature search, possible contacts and other information from available databases. For more information, write to ATTRA, PO Box 3657, Fayetteville, Arkansas 72702, or call at 1-800-346-9140.

The **34TH ANNUAL CONFERENCE ON GREAT LAKES RESEARCH** and the Annual Meeting of the International Association of Great Lakes Research will be held on June 2-6, 1991 on the North campus of the University at Buffalo. The Conference is being hosted by the Great Lakes Program of SUNY Buffalo and the New York Great Lakes Research Consortium. The Conference theme is *Integrating Research and Management of the Great Lakes*. For more information, contact Dr. J. V. DePinto or Dr. R. R. Rumer, at the the Great Lakes Program, SUNY Buffalo, 207 Jarvis Hall, Buffalo, NY 14260 or call (716) 636-2088.

The **ZEBRA MUSSEL INFORMATION CLEARINGHOUSE** was established in 1990 to focus attention on the collection of zebra mussel information, to provide continuity to the timely dissemination of information, and to help coordinate formal and informal zebra mussel research. The Clearinghouse works with Sea Grant programs, universities, government agencies, raw water users, and others involved in zebra mussel information and research projects throughout the United States, Canada, and abroad. For more information, contact the New York Zebra Mussel Clearinghouse, 250 Hartwell Hall, SUNY College at Brockport, Brockport, NY 14420-2928, or call (716) 395-2516.

Interested in receiving information on good fishing locations in New York State? The **"NEW YORK STATE FISHING HOTSPOTS AND INLAND LAKES MAP CATALOG"** can provide some help. For a copy of this useful reference catalog, write to Inland Sportsman, Inc., P.O. Box 116, Springbrook, New York 14140 or call 1-800-688-3310.

Celebrate Water Week! May 5 - 11, 1991

I Care For Our Waters - that's the message for 1991. The NYSDEC is working with a team of other agencies and organizations to promote stewardship for water resources. During Water Week and throughout the year, school children and adults, individually and in groups, are invited to "adopt" a water body or a water-related structure. Adoption means making a commitment to care for a specific resource such as a section of a stream, an aquifer, a beach, or a marsh, or a structure such as a well or a flood control levee. By adopting a water body or structure, people can help clean up past pollution and learn how to prevent future problems.

To obtain materials, to get on the mailing list, or to receive more information about Water Week activities, please contact: Public Participation Section, Division of Water, NYS Department of Environmental Conservation, 50 Wolf Road, Room 310, Albany, NY 12233-3501, Phone: (518) 457-0669

Federation of Lake Associations, Inc.
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Rochester, New York 14618

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