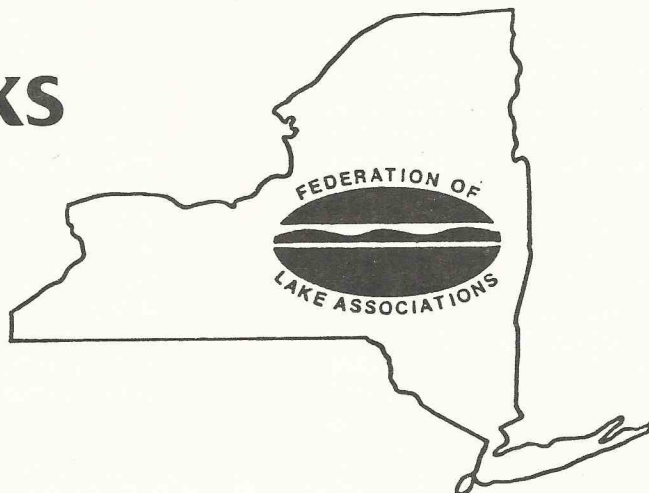


WATERWORKS



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ACID RAIN, A PROBLEM FOR ADIRONDACK LAKES

It has been more than two decades since people first noticed a decline in fish populations in some Adirondack lakes. During that time there have been many studies to determine the extent of the fish decline and its causes. Decline has been attributed to acid rain which occurs when airborne sulfur and nitrogen oxides combine with water to form acids.

While acid rain affects many parts of the country, it is now recognized as a particularly serious problem for the Adirondacks because of the physical properties of the Park's lakes. The type of bedrock and soil and the high elevation of many lakes contribute to the seriousness of the problem.

Today, scientists are conducting an extensive study of all the lakes in the northern and western Adirondacks. The Adirondack Lakes Survey Corporation, funded jointly by the Department of Environmental Conservation (DEC) and the Empire State Electric Energy Research Corporation, is measuring lakes for fish life as well as a range of different nutrients and chemicals.

Initial results show that one-third of all lakes studied have a pH of less than 5. A slightly different third of the lakes in the study have no fish. Many of these are bogs or seepage ponds that are naturally acidic. The majority studied in the first years of the survey are those lakes at highest elevation within the Forest Preserve. As the study extends to lower elevation, larger lakes, scientists wonder whether the proportion of seriously affected lakes will decrease. Whether it does or not, the Adirondack problem is most serious and there is still much to learn about the way fish life is affected by acid rain.

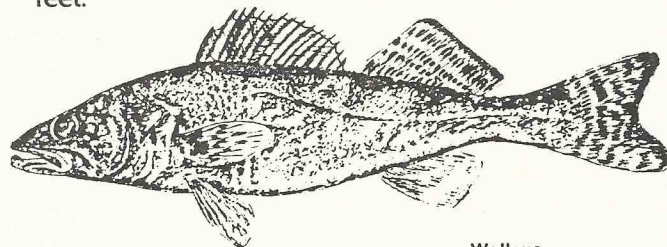
However, studying the affects of acid rain on fish looks at only part of the potential problems. Acid rain affects every aspect of a lake ecosystem and decomposition to the growth of plants, insects, and microorganisms. Scientists are just beginning to determine what happens to the different elements of the food chain. Since a change in any element may effect the whole balance of a lake, it is obvious that acid rain can have a devastating effect on the ecosystem of a lake.

Acid Rain and Its Effects on Adirondack Watersheds

If acid rain falls on rocks such as limestone, it reacts with the limestone to become less acidic or more **alkaline**. Other substances such as soda produce the same results. This process is called **buffering**.

Adirondack rocks and soils have very little lime or other buffering agents. In fact, most Adirondack bedrock is composed of granites and gneisses which have little or no buffering capacity. Here the shallow soils are also infertile and calcium deficient since they are composed of the same weathered igneous and metamorphic rocks. This lack of buffering capacity explains why rain falling on Adirondack slopes often reaches lakes with the same or greater levels of acidity than the rain itself. This is why the problems of acid rain are so acute here in the Adirondacks.

Research thus far indicates that the effects of acid rain are most pronounced in small lakes, those of less than fifty acres, and at higher elevations, those above 2000 feet.



Walleye

Acid Rain and Its Effects on Fish

The decline in fish populations in Adirondack lakes is well documented. Aluminum, the most common metal in the earth's crust, is not normally soluble in water. However at low pH levels, less than 5.2, it becomes more soluble. Water that is this acidic can leach aluminum from the soil; and ground water and run-off can carry dissolved aluminum to lakes and streams.

Because dissolved aluminum clogs the gills of fish and deprives them of oxygen, it is highly toxic to fish and is actually the cause of death of fish in acidified waters.

Not all lakes and ponds respond equally to acid rain. In water with high levels of organic particles, aluminum can bind these particles, reducing its impact on fish. Thus two different waters with similar pH and total aluminum content can have very different toxic effects on fish. Water which appears clearer may be the most harmful to fish.

Adult fish can survive in water that is more acidic with higher concentrations of aluminum than can fish fry. This explains why many lakes that are critically effected still have a population of mature fish.

Different species of fish react differently to acidified lakes. Brook trout are the most acid tolerant among trout and salmon species; rainbow trout the least. In spite of the fact brook trout are somewhat tolerant, they have disappeared from many Adirondack ponds because they are usually found in the small, high elevation waters that are currently the most affected by acid rain. These are the waters that were among the first to lose their fish populations.

Walleye, small and large mouth bass are very sensitive, and unable to reproduce at pH levels in the 5.4 to 5.7 range. Northern pike and chain pickerel appear quite tolerant of low pH levels. Some non-sport species can survive in waters of low pH, while some minnows for instance succumb at levels below pH 6.5.

While it may turn out that as much as a third of all Adirondack ponds and lakes are without fish, many are as yet visibly unaffected by acid rain. Fishing remains good in most larger lakes and in most of the Eastern Adirondacks. The current studies of lakes will be most informative in relation to lakes with pH between 5 and 6, the lakes where brook trout are as yet only endangered.

Acid Rain and its Effects on Lake Ecosystems

No one believes that acid rain can affect only the fish in lakes, but scientists are only beginning to understand the way it affects other life.

Among the preliminary, but incompletely understood findings, are those that indicate that acid lakes have low levels of phytoplankton or algae. These lakes are extremely clear and often deep blue. Their clarity permits sunlight to penetrate deeper levels, affecting the whole food chain.

Snails, clams, and other animals with shells of calcium carbonate, which are readily dissolved by acid water, are among the first animals to succumb in acidified lakes.

Some plants do well in acid waters; other aquatic plants such as broad-leafed pondweeds do not survive acidic conditions. This in turn could affect the breeding and feeding habits of animal species. Thick algal or moss mats are becoming obvious on the bottom of some acidified lakes. This is a common occurrence in many Adirondack lakes and may be linked to water clarity. Several things might contribute to the development of mats: nutrients which might be available to other plants may be tied up within them, the ability of light to penetrate to the bottom of lakes, or the disappearance of snails and other animals which eat algae.

Some animals such as midge larvae and aquatic worms do not appear to be as abundant in acidified lakes as in neutral lakes. On the other hand, black flies, mosquitoes, and deer flies are very abundant in lakes where fish are eliminated, so they appear to thrive in

acid conditions. Some insects like dragonfly larvae and water boatmen appear to flourish in acidified lakes. These insects are replacing fish as the top of the food chain in acidified lakes.

The activity of bacteria and other microscopic animals is reduced in acidified waters and may account for the fact that dead leaves and other accumulated materials on the bottom of lakes are not as rapidly decomposed.

Finally, no one knows the indirect effects of acid rain on the higher animal forms like ducks, loons, and otters that are dependent on the food chain of healthy lakes. Nor are the effects of acid rain on watersheds fully understood and these effects will not be easily reversed and do not appear to be corrected by liming.

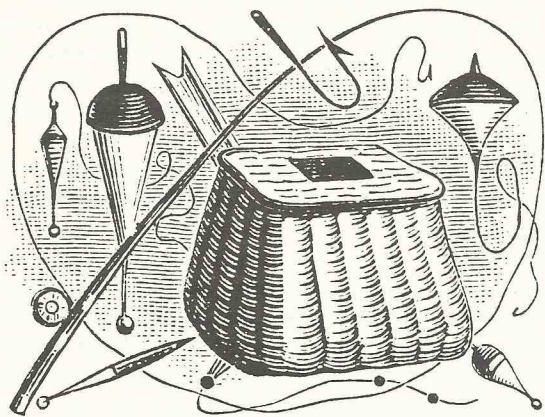
What Will Liming Acid Lakes Achieve?

Because of their accessibility, size, and water flow, some Adirondack lakes can be and have been limed. It has been shown that these lakes can be restocked and that with continued liming, they will support populations of game fish like trout. This has protected "heritage" strains of brook trout, thus maintaining the genetic pool of these strains in their native waters.

Relatively few lakes have characteristics which make liming possible and economically feasible, even with the assistance of volunteer groups. With volunteer assistance and vehicular access, the cost of liming a lake can be as low as \$40 per acre, but if helicopters are needed the cost rises above \$200 per acre. There is no question that liming is not a solution to problems brought to Adirondack fisheries by acid rain; nor is liming a substitute remedy for the pressing need to reduce airborne pollutants.

However, even more important is the question of what effects liming may have on all the other biological elements of lakes and ponds. No one knows if liming will restore the natural balance of a lake or if that balance can be maintained through liming.





Lake Management Problems and Issues

by William B. Morton

Associate Environmental Analyst NYS DEC

PROBLEMS

- Lakes are one of New York State's most valuable resources, however, through lack of a coherent, well-defined lake resource management program with strong executive leadership and broad legislative support, the importance of lakes to the state is not fully recognized.

As such, a state-wide lake management planning and program development focus is non-existent. An overall lake management strategy does not exist.

- By default, management of lakes in most areas of the state has been delegated to local government. It is local government which has land use control responsibilities. Local land use controls or the lack thereof is the one factor that has the greatest overall influence on lakes. Local government has not been provided with proper guidance and resources to do an adequate job of managing lakes.

- Local planning agencies generally do not have an adequate understanding of lake management issues, management needs and lake management opportunities.

- Lake management problems currently are addressed in a fragmented manner among various units of government. There often is a lack of coordination among agencies that have a role to play. This frequently results in conflicting and competing demands which contribute to the overall degradation of lakes.

- There generally is a lack of specific direction in terms of articulated goals and objectives for the management of individual lakes.

- There generally is not a planning framework or process established to focus on strategies and identify resources to achieve lake management goals and objectives for specific lakes.

- For management purposes, lakes and their tributary watersheds are not treated as ecological systems or units.

- Public and private land use decisions often are made without an adequate understanding of the impacts of their decisions on lakes.

- Most land use decisions which ultimately impact lakes are made without the benefit of reliable information in the form of natural resources inventories and environmental constraints and ecosystems analysis.

- For many lakes, inadequate attention is given to restoring, enhancing and perpetuating "quality of life" factors in lake watersheds such as protection of water quality, open-space preservation, and ensuring that development, including the type, quality, location and density of development, is in harmony with the natural environment.

- Uncontrolled growth and development is adversely impacting lake resources including shoreland resources, water resources and the uplands in lake watersheds. For many lakes this is leading to impairment of natural beauty, inefficient patterns of development, water quality impairment, loss of fish and wildlife habitat, loss of cultural and historic resources, and conflicting and competing demands for water-based recreation.

- Impairment of Natural Beauty

The shoreland areas of most lakes in the state have been subdivided into small lots. Ensuing development has given the shoreland areas of many lakes a cluttered, unattractive appearance that detracts from open-space amenities and the natural beauty of the shoreline. Excessive shoreline development may ultimately result in a blighted recreational area.

With the disappearance of vacant shorelands, development is becoming increasingly evident on the uplands in lake watersheds. Homeowners are attracted to the upland areas for a view of the lake. The problem is that for many lakes, development of hillsides is undertaken without giving adequate attention to screening the development from the lake. As upland development proceeds without control, natural scenic amenities deteriorate.

Also, commercial development in urbanizing areas of lake watersheds frequently is indistinct from commercial development elsewhere, - i.e., commercial/urban development in lake watersheds often looks like commercial development "any place else" which precludes development in the lake watershed from taking on a "special" or distinct appearance.

- Inefficient Patterns of Development

Scattered cabins and resorts are being built to form continuous ribbons of buildings along lakes. When prime lands immediately adjacent to the shore are in use, a second tier of cabins often is built behind the first forming a linear pattern of sprawl. Linear patterns of development tend to be inefficient from the standpoint of providing for sewerage and the control of nonpoint source containments in stormwater runoff. Usually, development of shoreland areas has outpaced the capability of local government to provide for sewerage and stormwater management.

As in the case of shorelands development, the type, location, density and timing of development in upland areas frequently is inefficient thereby making it difficult for government to adequately provide services that are required to protect natural resources including streams and lakes.

- Destruction of Fish and Wildlife Habitat

Shoreland areas provide some of the most productive fish and wildlife habitats to be found. Fish and wildlife habitats may be found in wetlands and other landforms which interface with water to provide for fish spawning, and habitat for many birds and mammals. Yet despite the importance of shoreland areas to fish and wildlife, development often proceeds in environmentally sensitive areas, including areas of

cultural and historic significance without full recognition of the values that are being lost and, in turn, without full recognition of needed control for protection.

As development of lake watersheds shifts to the upland areas, a result of limited opportunities for further shoreland development, critical environmental resources are being destroyed. This is being caused by misdirected growth and development of the uplands due to inadequate natural resource inventories, environmental constraints and ecosystems analysis which should form the basis for sound land use planning and decision making.

- Conflicting and Competing Demand for Water-Based Recreation

Intensive shoreland development is the driving force that culminates in increased demand for water-based recreation. In many lakes, development resulting in competing and conflicting demand is such that a quality recreational experience among lake "users" cannot be assured.

Where shoreland development is intensive, "quick launch" sites are being developed to accommodate boats from storage facilities constructed as many as several miles away in the uplands or, in fact, in different watersheds. This is placing increased demand and pressure on lakes for water-based recreation.

- Water Quality Impairment

Shoreland development is proceeding without good information on the suitability of soils for on-lot sanitary wastewater disposal systems, without proper control of stormwater runoff in urbanizing areas of lake watersheds, and without proper control of nonpoint sources resulting from uncontrolled shorelands development. This, combined with the difficulties of sewerage when and where it is needed is resulting in the loading of nutrients and other contaminants to numerous lakes in the State. In effect, shoreland development in many lake watersheds exceeds the assimilative capacity of soils to treat and remove contaminants from sanitary wastewater effluent and from stormwater runoff. This as much as anything is contributing to lake eutrophication and the growth of nuisance aquatic vegetation.

Uncontrolled development in upland areas is contributing to nutrient loading and sedimentation. Many of the contaminants from upland development are transported to streams and ultimately lakes following storm events.

ISSUES

• There are a variety of issues implicit within the above problems. Some of the most obvious issues are as follows:

- Is there a need for the state to take on a stronger leadership role in lake resources planning and management for lakes throughout the state, or should lake resources management remain largely a local prerogative? Should the Massachusetts model of establishing and facilitating planning in numerous watershed/lake management districts be adopted? Should the state have a greater regulatory presence, e.g., the Minnesota model of shoreland regulations or should the state have an advocacy planning role e.g., the Lake George Model?

- If the state takes on a greater role in the overall management of lakes, how should lake resource management priorities be established? First come first serve basis? A lake management and priority ranking system? Other?

- Is it possible or practical to manage lakes and surrounding watersheds on an ecosystems basis or as an ecological unit?

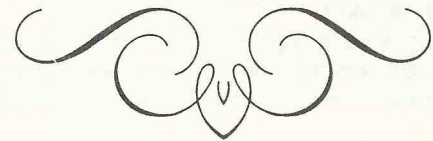
- Should the state increase its lake resource management budget? Should state funds be used as seed money to get local lake management planning initiatives underway? Should the state initiate a state-local cost/share program for lake management? What should the cost/share formula be?

- How can lake resources management funds be obtained at the state level? Through special appropriation . . . a bond act . . . a statewide lake users tax?

- Should a program be initiated to acquire public lands in lake watersheds to protect open space and scenic areas, and to provide for greater public access? Should a program, similar in intent to the "urban renewal" approach, be implemented to re-develop or reclaim abused shoreland areas? If so, should these programs be implemented on a state/local partnership basis? How might programs such as these be funded . . . a real property transfer tax . . . other?

- What kinds of technical land use planning guidance should local government have? Who should prepare the guidance material?

- If greater state involvement is not the answer, should the local role be strengthened and enhanced? How? Or are currently lake resource management arrangements adequate and should a status quo policy be maintained with respect to the overall management of lakes resources in New York State.



Macroinvertebrates and Water Quality

by Robert W. Bode
Division of Water, DEC

Since 1982 and under the auspices of DEC's Bureau of Monitoring and Assessment, the Stream Bimonitoring Unit has been using macroinvertebrates to assess water quality in New York.

WHAT ARE MACROINVERTEBRATES?

By definition, macroinvertebrates are large animals without backbones. In freshwater, they range in size from clams 15 cm long to mites which are less than 1 mm. They are all visible with the naked eye although microscopes are needed to identify most of them. Macroinvertebrates include crustaceans, worms, clams, and snails, but the majority are larvae and nymphs of aquatic insects such as mayflies and midges. Nearly all aquatic macroinvertebrates are benthic (bottom-dwelling); they occur in bottom sediments or are attached to rocks or plants on the bottom. Although macroinvertebrates are an often ignored component of aquatic systems, they represent an essential link between micro-organisms such as protozoans and higher food chain levels such as fish.

WHY ARE MACROINVERTEBRATES USEFUL IN WATER QUALITY EVALUATIONS?

Of particular importance when considering water quality evaluations is the fact that many macroinvertebrate species are more sensitive than fish to environmental pollutants and can be used as an accurate barometer of water quality. They are also less mobile than fish and cannot move to avoid a pollutant. Thus a single sampling of a macroinvertebrate community can provide a "fingerprint" of what the water quality has been of that waterbody for the last several months. Such samples have been used to detect "slugs" of organic or toxic inputs that may have gone undetected by spot checks of water chemistry. Also, since different species have different sensitivities to pollutants, the general type of pollutant and its severity can be determined by the species composition.

MONITORING STREAM WATER QUALITY

Two major functions of New York's Stream Biomonitoring Unit are ambient water quality evaluations and toxic substance monitoring.

Ambient water quality evaluations are performed on selected waterbodies at approximately five year intervals to determine overall water quality trends. In large rivers, macroinvertebrates are usually sampled using artificial substrate samplers, devices which are suspended from buoys to allow colonization. Bottom dredges and grab samplers may also be employed in large rivers. For wadeable streams, a rapid assessment technique using kick net samples were recently developed by the Stream Biomonitoring Unit and is being adopted by the USEPA.

Toxic substance monitoring using macroinvertebrates is based on the premise that macroinvertebrates concentrate contaminants, and can be collected and analyzed to monitor bio-accumulation levels in the aquatic food chain.

Over the years, the Stream Biomonitoring Unit has conducted many surveys that have increased our knowledge of the state's surface waters. These surveys included tracking PCB trends in the Hudson River, providing evidence of heavy metal pollution in the Hoosick River, describing biological communities from acid-stressed streams in the Adirondacks, and documenting improving water quality in the Mohawk and Hudson Rivers. Biological monitoring of macroinvertebrate communities provides us with another tool for obtaining a complete picture of trends in New York State water quality.

The Babcock Lake Environmental Management Committee

by Janet Nyquist

Babcock Lake residents have the same concerns about the quality of the environment in and around their lake as do other members of the Federation. These concerns led to the Lake Association hiring RPI's Fresh Water Institute in 1984 to conduct a water quality survey and evaluation of the lake. The study identified the lake as mesotrophic with nitrogen as the limiting nutrient. It recommended continued surveillance to identify any changes in water quality.

Presently, water quality is satisfactory as documented by secchi disc readings of 3-3.5 meters during the late summer.

The study's recommendations and the residents concern over inadequate septic tanks polluting the lake led to the formation of the Environmental Management Committee in 1985. The chairman is a Board member of the Babcock Lake Association (Babcock Lake Estates). Its responsibility is to monitor and recommend actions to preserve and enhance the human environment in and around the Lake. A number of programs have or are being developed to meet these responsibilities. Each program has a chairman who is also a member of the Environmental Committee.

The programs are:

1. Trout stocking program. In both 1985 and 1986, approximately 700 trout were purchased and placed in the lake.
2. Septic system identification and evaluation program. The second phase will be meetings with owners to advise and assist them in repair or replacement of their systems.
3. Septic tank clean-out program. A septic tank cleaning firm will be hired next year to clean out the tanks of 24 homes that were signed up. The individual owners will pay for their system's cleaning.
4. Environmental education program. In 1985 and 1986, this included six classes for children and three for adults taught by Pierce Hoyt of the Dyken Pond Environmental Center. The children's program will be continued next year and may even be expanded.
5. Mapping program. This is scheduled for next year in order to map septic systems, wells, storm culverts, ditches, springs, property lines, etc. \$1,500 has been appropriated to hire an RPI student next summer to assist in this and the septic tank identification and evaluation program.
6. Lake monitoring program. Secchi disc and temperature readings were taken from May through mid-October on a monthly basis in 1985 and bi-weekly in 1986. The Lake Association has requested the NYSDEC and the Federation to include Babcock Lake in the lay monitoring program for 1987.

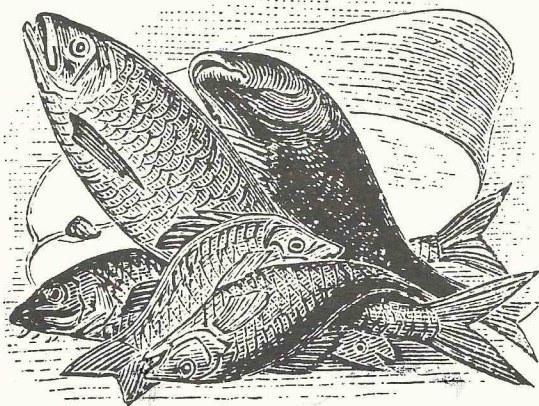
Clean Water Act Finally Passes After Two Presidential Vetoes

Congress resubmitted Clean Water Legislation to the President which was identical to the bill he vetoed last November. The President vetoed the bill for a second time on January 30, but this time the bill was not subject to a pocket veto. Reagan based both of these vetoes on unacceptably high costs.

The House and the Senate quickly scheduled a vote to override the veto. By a 401 to 26 vote the House rejected the President's veto. By a vote of 86 to 14, the Senate also rejected the President's veto. There was a two thirds majority that is necessary for overriding a veto, so, on February 5, 1987, the Clean Water Act finally became law.

Of the 40 Members of Congress who voted against overriding the President, 39 were Republicans, among them was Jack Kemp of New York State.

The Clean Water Act will provide \$18 billion through 1994 to help communities build sewage treatment facilities and \$2 billion more to clean up the nation's water supplies including the first federal effort to tackle pollution from non-point sources (such as the runoff from mines and city streets). New York will receive \$267.9 million annually through 1990 in federal grants. The allotment for 1991-1994 will be determined later. This amount represents the highest annual amount to be received by any state.



Boating Legislation Passes

by Donald S. Mazzullo, Esq.

The big news in boating regulation is the one bill with statewide applicability which **did** pass in 1986, the boating while intoxicated legislation (Assembly 1686 D, Assemblyman McNulty). This bill provides that it is a crime to operate a vessel on the waters of this State in an intoxicated condition or in a condition where one's ability to operate the vessel is impaired by the consumption of alcohol or the use of a drug. The bill provides relatively stiff penalties, especially for repeat offenders. For example, a person convicted of boating while intoxicated three times in a five-year period would be subject to a \$1,000 fine, a prison term of 180 days, or both. Even tougher sentences can be imposed in cases where an individual boating while intoxicated or impaired causes physical injury to another.

The legislation does contain one major weakness, however. It provides that an individual cannot be compelled to submit to a chemical blood test or a breathalyzer type test unless the individual has been arrested in connection with an accident which has

caused an injury to another. A police officer cannot even arrest a person he suspects of boating while intoxicated without a prior warrant, unless the individual causes an accident. While it may seem that the Legislature has been unduly lenient, there is an underlying reason for the reluctance to impose forced testing on an operator. Under Constitutional Law, all citizens have a right to refuse to incriminate themselves. It is believed that taking a chemical blood test or breathalyzer test is a form of self-incrimination. This difficulty is circumvented with respect to the operators of automobiles by providing that a person who refuses to take a test will lose his license for a specified period of time, even though he cannot be forced to take such a test if he refuses to do so. Such a system cannot be used in a boating while intoxicated case, since there is currently no full blown licensing requirement for the operation of a pleasure vessel.

Both Houses of the Legislature would like to impose mandatory testing on the operators of pleasure vessels, but they are reluctant to adopt the statewide licensing, common testing, standards of competence, remedial competency programs, enforcement mechanisms and record keeping system which would be required. In short, they are reluctant to pass laws which would necessarily give rise to a new bureaucracy along the lines of the Department of Motor Vehicles. Incidentally, this reluctance to regulate boating on a large scale also led to the defeat of a bill which would have required the operators of certain mechanically powered pleasure vessels to obtain boating safety certificates (A 5828, Assemblyman Halpin) and a bill which would have established a task force to study the feasibility of requiring insurance for motor boats operated upon the waters of the State (A 7843, Assemblyman Halpin).

WATER WEEK IS MAY 3 - 9

WATERFRONT REVITALIZATION OF INLAND WATERWAYS

The approach to managing waterfront areas taken by New York State is significantly different from the approach used in other states. While State government can promote development and provide protection for critical resources and environments, it is recognized that municipalities are in the best position to determine their own waterfront objectives and to adapt statewide approaches to specific local needs. Accordingly, the Department of State, pursuant to the State Waterfront Revitalization and Coastal Resources Act, has encouraged waterfront communities to prepare their own Local Waterfront Revitalization Programs with federal funding provided on a 50-50 matching basis.

A Local Waterfront Revitalization Program (LWRP) is a comprehensive program that refines legislatively established waterfront policies and programs by incorporating local circumstances and objectives. It is a voluntary grass roots effort which brings together local and State governments, commerce and industry, environmental interests, private organizations, and community citizens to assess current problems and opportunities and to build a consensus on the desired future of the community's waterfront. More importantly, the LWRP provides a strategy for achieving that vision.

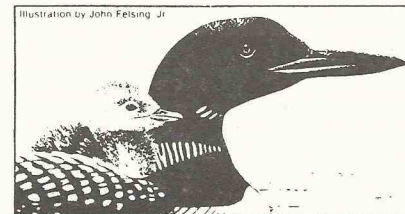
In general, a LWRP is a detailed realistic effort to promote and protect waterfront resources. By preparing a LWRP, a community has the opportunity to evaluate its waterfront resources and to develop and implement a management program for the best use and development of those resources. Decision-makers will then be able to respond with increased knowledge and purpose to future events affecting their waterfront area and to actively pursue an agreed upon program.

One of the components of such programs is the identification of specific waterfront projects that can be accomplished over the short term. These projects, in conjunction with a long-term management program, can significantly increase a community's ability to attract development activities that will take best advantage of the unique cultural and natural characteristics of their waterfront.

Communities eligible for the inland waterways program would be entitled to compete for 50% matching grants, of up to \$25,000, to prepare a LWRP. Once a LWRP is approved by the Secretary of State, the community would be eligible for implementation grants of up to 10% (not to exceed \$25,000) of the project cost to cover preconstruction expenses (e.g. feasibility studies, engineering studies) of identified projects. In addition, when a community has approved LWRP, State agency actions within the waterfront area will be required to be undertaken in a manner consistent with the policies and purposes of the local program.

Once completed and approved by the Secretary of State, a community has in place the local controls to guide waterfront development and -- a distinctive benefit of LWRP -- the legal ability to ensure that all State actions proposed for their waterfront only occur in the fashion prescribed in the LWRP. This "consistency" provision is a strong tool that assures both State and local governments work in unison, and not at cross purposes, to build a stronger economy and a healthier waterfront environment.

Development of a LWRP can be a cornerstone for a resurgence of community waterfronts -- not only in their local economies, but also in community pride. Moreover, the process of program preparation and the provision of consistency can only serve to enhance State-local relations regarding the waterfront areas of New York. The demonstrable success of the current federally financed Local Waterfront Revitalization Program and the level of community enthusiasm thus far help assure the viability of expanding the LWRP to the State's inland waterway communities. Questions about the program should be directed to Robert Hansen, Coastal Program Manager, NYSDOS, (518) 474-6013.



Loon Population on the Rise

The common loon, famous for its eerie calls and water dances, appears to be doing well in the Adirondacks despite fears that it might be threatened by lakefront development and acid rain, according to a survey.

A two-year study begun in 1984 by the State Department of Environmental Conservation found 157 breeding pairs of loons and 247 nonbreeding adult loons on 557 lakes. A similar survey completed in 1979 found 114 breeding pairs and 96 nonbreeding adults on 420 lakes.

A summary of the study concluded that although New York's loon population is small compared to that of more northern states and Canada, the productivity rate, .96 chicks fledged per breeding pair, is one of the highest in North America. That's nearly twice the average fledgling rate.

A significant finding of the New York survey was a 50 percent increase in the number of lakes with loons on them and a doubling of the number of nonbreeding pairs, said Nan Chadwick, Director of the National Audubon Society's New York Loon Conservation Project.

"This may indicate the loon has increased and expanded into additional habitats," said Chadwick in an interview at the Audubon office in Delmar, near Albany. The nonbreeding loons may be young birds that will pair off when they reach maturity, she said.

Volunteer Sampling Effort to be Renewed

by Tracey Clothier

It's time again to begin planning for the second season of the Citizen's Statewide Lake Assessment Program. Scott Kishbaugh and I will be lining up lake association volunteers from the 25 lakes throughout the State that participated in the program last year. The DEC, which is co-sponsoring the program with the Federation, has reported that the program exceeded all expectations in its first year both as to the quality and quantity of data collected. The final report for the 1986 season is due to be released in early May.

Board Member Don Mazzullo reports that the Division of the Budget is considering a request submitted by the DEC for the increased funding which would be needed not only to carry on the program at its current level, but also to increase the scope of the program both with respect to the number of lakes to be studied and the number and complexity of the tests to be taken at each lake. If the request of the DEC is accepted, funding for the CSLAP would be guaranteed through the 1987 season without the necessity of a line item. 1986 program funding was provided in the form of a line item adopted as part of the Aid to Localities portion of the 1986 State Budget.

November 3 - 5
7th Annual International Symposium, NALMS
Peabody Hotel, Orlando, Florida
Contact (202) 833-3382

SONAR: A Chemical Controversy

by Tracey Clothier

When Eurasian watermilfoil was discovered growing in Lake George in 1985, a debate quickly arose over the issue of treatment for the control of the non-native aquatic plant. Lake riparians, area residents and lake managing agencies have expressed fear that if watermilfoil is not checked this season that it is likely to spread and become a serious problem over the next few years.

The Lake George Association believes that a possible solution to the problem is chemical control. The LGA, several private citizens, and the Lake George Park Commission have applied to the Department of Environmental Conservation for an aquatic pesticide permit to apply the herbicide fluridone (trade name "Sonar") to 103.3 acres in four treatment zones. The actual watermilfoil bed sizes amount to a total of 6.5 acres and the remainder of the treatment zones is composed primarily of scattered plants.

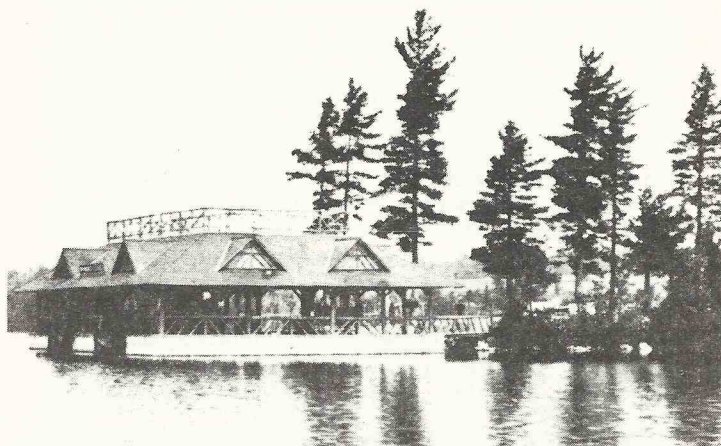
According to the permit applicants, the proposed action will mean the reduction in biomass and the elimination of root viability so that regrowth of the watermilfoil is precluded in those areas for a number of seasons. However, the objective is not complete and permanent eradication, but rather the establishment of an ecological condition which does not favor Eurasian watermilfoil.

Sonar works by releasing the chemical fluridone into the hydrosol. The plant then absorbs the fluridone, which then systematically destroys the plant by inhibiting the plant's ability to make food. The visual symptom of fluridone is bleaching, or the development of chlorosis on the growing points of the plant.

Sonar was registered by the U.S. Environmental Protection Agency in May of 1986 and is currently being reviewed for possible registration in New York State by the DEC Bureau of Pesticides. The State's review process has recently been complicated by the finding that a major breakdown product of Sonar is N-methylformamide (NMF), a substance that has proven to cause birth defects in rats and mice in laboratory experiments. Elanco, manufacturer of Sonar, has said that there would not be enough NMF in the lake to create a health hazard. However, the new information has prompted the Bureau of Pesticides to give Sonar a restricted use classification. This would require that Sonar could only be dispensed by persons holding state certification and, that a 60-day waiting period would be necessary after the Bureau publically advertises the restricted use classification before the chemical could be registered in the State.

The classification would certainly delay any permits pending for use of Sonar for treatment this season. It also could mean additional restrictions placed on drinking, swimming and general lake use adjacent to and within the treatment zones since Lake George is a Class AA special lake and is used for municipal and private drinking water supplies.

Adjudicatory hearings are being held in the Town of Lake George to explore the pros and cons of the permit application. Experts, being brought in by both advocates and adversaries of the project, must testify under oath and are open to cross-examination. The Environmental Impact Statement and the formal hearing record are likely to generate a tremendous amount of useful information that will eventually benefit all the lakes in New York State.

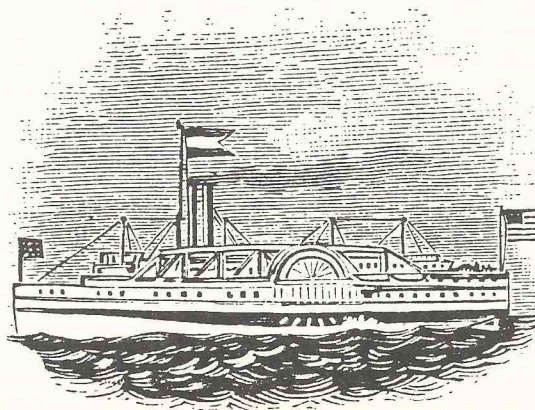


Dance pavilion at Caroga Lake

From "The Sacandaga Story"

Welcome New Members

China - Barrett Lake Association
Little Fresh Pond Association
Lake Dutchess Association
International Technologies Corporation
Association of Property Owners at Pine Grove Lakes
Lamoka - Waneta Lakes Association
Geneganslet Lake Association
Lake Missapogue Association
Garnet Lake Civic Association
Lake Lauderdale Improvement Association
Lake Muskoday Homeowners Association
Melody Lake Association
Sunrise Corporation
Scott Kishbaugh
Mark Millspaugh
Harold Nagler
Robert Lyon
Bernard Kelleher
Robert Johnson
Ray Pfenninger



New York Lake Associations Conference Planned

This is an early announcement of the Federation of Lake Association's Fifth Annual Conference. We hope you will circle June 5, 6, and 7, 1987 on your calendar now and plan to be with us for the Conference, which will be held at the State University of New York College at Oswego. This year's meeting is being co-hosted by the Federation of Lake Associations, Inc. and the Research Center at SUNY College at Oswego. The theme of this year's Conference will focus on Land-use and Watershed Planning Effects on Lake Basins.

The Conference is shaping up to be an enjoyable and informative weekend for all of us and should prove to provide something for everybody's interest. Besides the formal sessions, we are planning a lakeside picnic for Saturday evening. I have been involved in these before and guarantee that it can be a nice social event. In addition to the scientific topics, there will be an opportunity for you to meet your Directors and members of the Scientific Advisory Board.

We hope you will reserve June 5, 6, and 7, 1987, and watch for our formal program and registration folder, which will be mailed out in the early spring. Because of the lack of adequate motel/hotel facilities in Oswego, we are trying to put together a very attractive package for everybody to stay on the Oswego Campus.

*Warren Flint,
Conference Chairman*

Friday, June 5

- 5:00-7:00 p.m. REGISTRATION
- 7:00 p.m. RAP/BRAINSTORMING Session:
Techniques for Handling Lake/Watershed Problems
Jaya & Anjan Bhattacharyya, New City, NY
- 7:45 p.m. - Federation of Lake Associations (FLA), Inc.
Board of Directors Meeting

Saturday, June 6

- 7:00-8:30 a.m. BREAKFAST
- 8:00 a.m. REGISTRATION
- 8:30 a.m. Conference Opening Statements
Dr. John Colgan, President FLA
- 8:45 a.m. Holistic Perspective to Understanding Lake/
Watershed Interactions
FLA Scientific Advisory Board Members
- 9:30 a.m. BREAK
- 10:00 a.m. Microcomputers As An Environmental
Management Tool
Dr. Paul Rogers, LTI Limno-Tech, Inc.,
Ann Arbor, MI
- 11:00 a.m. Development of an Overall Water Quality
Program on a Watershed Basis
Mr. Robert Brower, Cayuga County
Environmental Management Council,
Auburn, NY
- 12:00 noon LUNCH
- 12:45 p.m. Luncheon Presentation:
Goals and Future Activities of FLA's Scientific
Advisory Board
Dr. Warren Flint, SUNY College at Oswego
- 1:30 p.m. *Aquatic Vegetation Control in New York State*
- The Ecology of Aquatic Plants
Dr. Thomas Storch, SUNY College
at Fredonia

- Herbicide Control of Aquatic Vegetation
Ms. Marilyn DuBois, NYSDEC, Albany, NY
- Innovative Aquatic Vegetation Control
Technologies
- Current Studies on Use of Grass Carp
Mr. Pat Festa & Mr. Edward Woltmann,
NYSDEC, Albany, NY

PANEL DISCUSSION OF VEGETATION CONTROL

- 3:15 p.m. BREAK
- 3:40 p.m. So You Want to Fish in Your Lake?
Mr. Cliff Creech, NYSDEC, Cortland, NY
- 4:15 p.m. Citizens Statewide Lake Assessment Program:
Update and Future Directions
Mr. Scott Kishbaugh, NYSDEC, Albany, NY
- 4:45 p.m. Federation of Lake Associations, Inc. - Annual
Business Meeting
Dr. John Colgan, President
- 5:15 p.m. ATTITUDE ADJUSTMENT (Cocktails) - Sponsored
by Fulton Chain of Lakes Improvement
Association, Inc.
- 6:00 p.m. LAKESIDE PICNIC DINNER
- 8:00 p.m. Guest Speaker:
Dr. Jack Vallentyne (aka "Johnny Biosphere")
Canadian Co-Chairman
International Joint Commission
Scientific Advisory Board

Sunday, June 7

- 7:00-8:30 a.m. BREAKFAST
- 9:00 a.m. *How to Obtain Funds for Small Lake Management*
- Establishment of Special Districts
Mrs. Shirley Gordon, NY Div. of Legal
Services, Albany, NY
- Saratoga Lake Experience
Mr. Stanley Weaver, President, Saratoga
Lake Property Owners
- Lake Mahopac Experience
- Greenwood Lake Approach
Mr. William Hermann, President,
Hewitt, NJ
- Federal Grant Opportunities - The Clean Water
Act
Dr. Jay Bloomfield, NYSDEC, Albany, NY
- 10:30 a.m. BREAK
- 10:45 a.m. *Recreational Boating in Lakes*
Moderator: Mr. John Blyth
- Recreational Boating Safety
Chief Paul D. Bellona, U.S. Coast Guard,
Oswego, NY
- New York Navigation Laws and Regulations
Bureau of Marine & Recreational
Vehicles, Albany, NY
- A Success Story
Canandaigua Lake Pure Waters
Association
- Status of New Boating Regulations in State
Legislature
Mr. Don Mazzulo, Lobbyist, FLA

PANEL DISCUSSION

- 12:30 p.m. Conference Conclusion

Lake George Management Plan Released

The Plan for the Future of the Lake George Park, presented to the Lake George Park Commission at its regular monthly meeting by Environmental Conservation Commissioner Henry G. Williams, recommends that significant improvements should be made by local, regional and state agencies and the private sector in their efforts to protect the resources of Lake George and its surrounding area.

The plan, which contains more than two hundred recommendations to be implemented by local governments, state agencies and private groups, was prepared by an intergovernmental task force consisting of nearly 90 persons drawn from government and the private sector.

"I created the task force in response to increasing public concern about widely perceived environmental and land use problems at Lake George," Williams said. "Many of these problems, but not all of them, are the result of Lake George's popularity and accessibility."

He said that the outstanding pure waters of Lake George and its scenic qualities are almost "too attractive" and that the Lake and its environs are suffering from environmental degradation brought about primarily by extraordinarily rapid growth and a marked increase in human activities.

Commissioner Williams said that he was pleased with the cooperation given to the Task Force by local officials, state agencies and other organizations. He singled out the county and local governments, the Lake George Association, the Adirondack Park Agency and the Lake George Park Commission in particular.

The Lake George Park is a 300-square mile area of mountains, pure waters and islands lying about 60 miles north of Albany. Lake George itself has an area of 44 square miles. The Adirondack Northway, the main route to Montreal, swings to within a half mile of the southern end of the lake. One-third of the Park consists of State Forest Preserve land, which is "forever wild" under New York's Constitution. This state-owned land has helped to buffer 32-mile long Lake George from the adverse effects of too-rapid growth. However, the remaining 156 square miles of the Lake George Park are primarily in private ownership and, therefore, are subject to development. The Lake George Park lies within three counties -- Warren, Washington and Essex -- and encompasses all or part of 11 towns and two villages.

The major findings in the plan are that:

- Inadequately controlled land development is taking place on sites with environmental constraints that should either preclude development or result in substantial modification of development. The qualities, and even the existence, of some critical environmental resources are threatened.
- The scenic qualities of the shoreline and mountainsides are being diminished as lands that formerly were open or forested are developed.
- The water quality of Lake George is deteriorating at an alarming rate. As the landscape becomes more developed, nutrients and other pollutants increasingly are being carried directly into the lake by unmanaged stormwater runoff. Failing septic systems also are contributing to the problem.
- Development is not being coordinated adequately with infrastructure capacities, with the result that wastewater treatment facilities, highways, parking area, marinas and shoreline facilities are overloaded, crowded and insufficient.
- Lake George is a public resource, yet opportunities for its use by the public through the development of waterfront parks, beaches and public boat launching areas have been largely foreclosed as a result of inadequate planning for such uses.
- Overcrowded, noisy and increasingly unsafe conditions on the surface of the lake for boating and other water-based recreation activities have brought about a marked reduction in the quality of the recreation experience that was once enjoyed.

MEMBERSHIP CATEGORIES

MEMBERSHIP CATEGORIES	
Associations with up to 99 members	\$30.00/yr.
Associations with 100 to 199 members	\$50.00/yr.
Associations with 200 or more members	\$100.00/yr.
Individual	\$15.00/yr. Corporate
	\$100.00/yr.

Membership dues over \$5.00 are tax deductible contributions to the Federation of Lake Associations, to 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 () _____

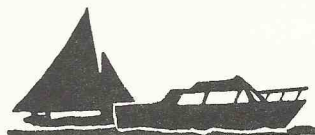
The plan recommends that significant improvements be made in the area of land use planning and regulation by local governments, the Adirondack Park Agency and the Lake George Park Commission. The Commission also would have an increased role in overseeing water quality improvements, in cooperation with local governments, DEC and DOH, and in regulating boating, marinas, docks, moorings and other uses of the surface of the lake.

"The Task Force found that no new agencies or organizations are needed to halt the environmental degradation that is taking place at Lake George," Williams said. "Rather," he continued, "what is needed is more concerted action by all agencies and organizations with jurisdiction in the Lake George Park." He noted that some recommendations in the

plan would require enhancement of existing legal authority for certain local or state agencies whereas others could be undertaken administratively, under existing authority. He also said that additional funding, primarily, from state and local sources and user fees, would be needed to implement some of the recommendations.

A number of public meetings have been held since work on the plan began in 1984 to establish a consensus on the problems and to examine preliminary recommendations.

Copies of the Plan for the Future of the Lake George Park or the Executive Summary are available from the Office of Land Resources Planning, Room 412, NYS-DEC, 50 Wolf Road, Albany, NY 12233-4255. Phone (518) 457-0904.



NEW YORK STATE MOTOR BOAT REGISTRATION STATISTICS.

YEAR	under 16'	16' -- 25'	26' -- 39'	*Total #	Revenue	
1978	180,284	124,662	18,925	326,151	\$1,488,314	
1979	174,669	125,680	18,697	321,440	1,476,027	
1980	<u>171,936</u>	<u>126,972</u>	<u>18,265</u>	<u>319,492</u>	<u>1,470,830</u>	
TOTAL	526,889	373,314	55,887	967,113	\$4,435,171	
1982	168,250	132,703	18,441	321,881	1,496,508	
1983	167,662	138,373	18,942	327,700	1,534,484	
1984	<u>164,645</u>	<u>154,056</u>	<u>19,256</u>	<u>338,742</u>	<u>1,599,383</u>	
TOTAL	500,557	(-26,332 since 1978-80)	416,132 (+42,818 since 1978-80)	56,639 (+752 since '78-80)	988,323 (14,210 since 1978-80)	\$4,599,383

*Remainder of total includes boats over 40' and uncoded boats.

Boat registrations are issued for a three-year period.



NOTES AND PUBLICATIONS

Publication of "Inland Fishes of New York State"

Return a Gift to Wildlife funds have made possible the publication of the book "Inland Fishes of New York State" by C. Lavett Smith. The book contains detailed descriptions of distribution, ecology, and life history of 242 freshwater and marine species of New York State. For further information on ordering the book, contact NYSDEC, Biological Survey Unit, Room 522, 50 Wolf Road, Albany, NY 12233.

Stream Reclassification Hearing Schedule

The New York State Department of Environmental Conservation will hold public hearings on the classification of surface waters of the state. Anyone can petition the department of reclassify or classify a specific surface water before the date shown below for the applicable drainage basin. Certain waters will be proposed for reclassification by the department.

Drainage Basin	Submit Petitions By:	Hearing Date
Susquehanna	January 6, 1987	July 1987
Marine Waters	February 2, 1987	August 1987
Lake Erie-Niagara R.	March 9, 1987	Sept. 1987
Upper Hudson	April 6, 1987	Oct. 1987
Seneca-Oneida-Oswego	May 4, 1987	Nov. 1987
Lake Champlain	June 8, 1987	Dec. 1987
St. Lawrence	July 20, 1987	Jan. 1988
Black	August 17, 1987	Feb. 1988

For more information contact: Allan C. Tedrow, Division of Water, Room 312, DEC, 50 Wolf Road, Albany, NY 12233.

The Federation of Lake Associations, Inc.
273 Hollywood Avenue
Rochester, New York 14618

Weeds A Problem

Lake Como is a 64-acre eutrophic lake located in the town of Summerhill, Cayuga County, New York State. We have both year-round homes and summer cottages, and use the lake for skiing, boating, swimming and fishing.

The Lake Como Lake Association was formed in 1982 by a group of concerned property owners whose primary goal was the preservation of Lake Como. Our first target was establishing an effective weed control program. While we are not a privately owned lake, the majority of our water quality improvement programs have been funded by membership dues and contributions.

Weed control is our foremost project, but we are also researching the possibility of a water-level control device in the outlet. Where do we obtain information about procedures and methods, professional contacts, available funding?

*Elsie M. Wilcox,
President
P.O. Box 2
Homer, NY 13077*

Waterworks is published four times a year. Individuals who wish to submit material or articles to Waterworks are welcome to contact the editor: Tracey M. Clothier, RR #2, Box 2300, Lake George, NY 12845. For additional copies of Waterworks and address changes, contact: Dr. John Colgan, President, 273 Hollywood Ave., Rochester, NY 14618, (716) 271-0372. Please note that all mail should be sent through the Rochester office.