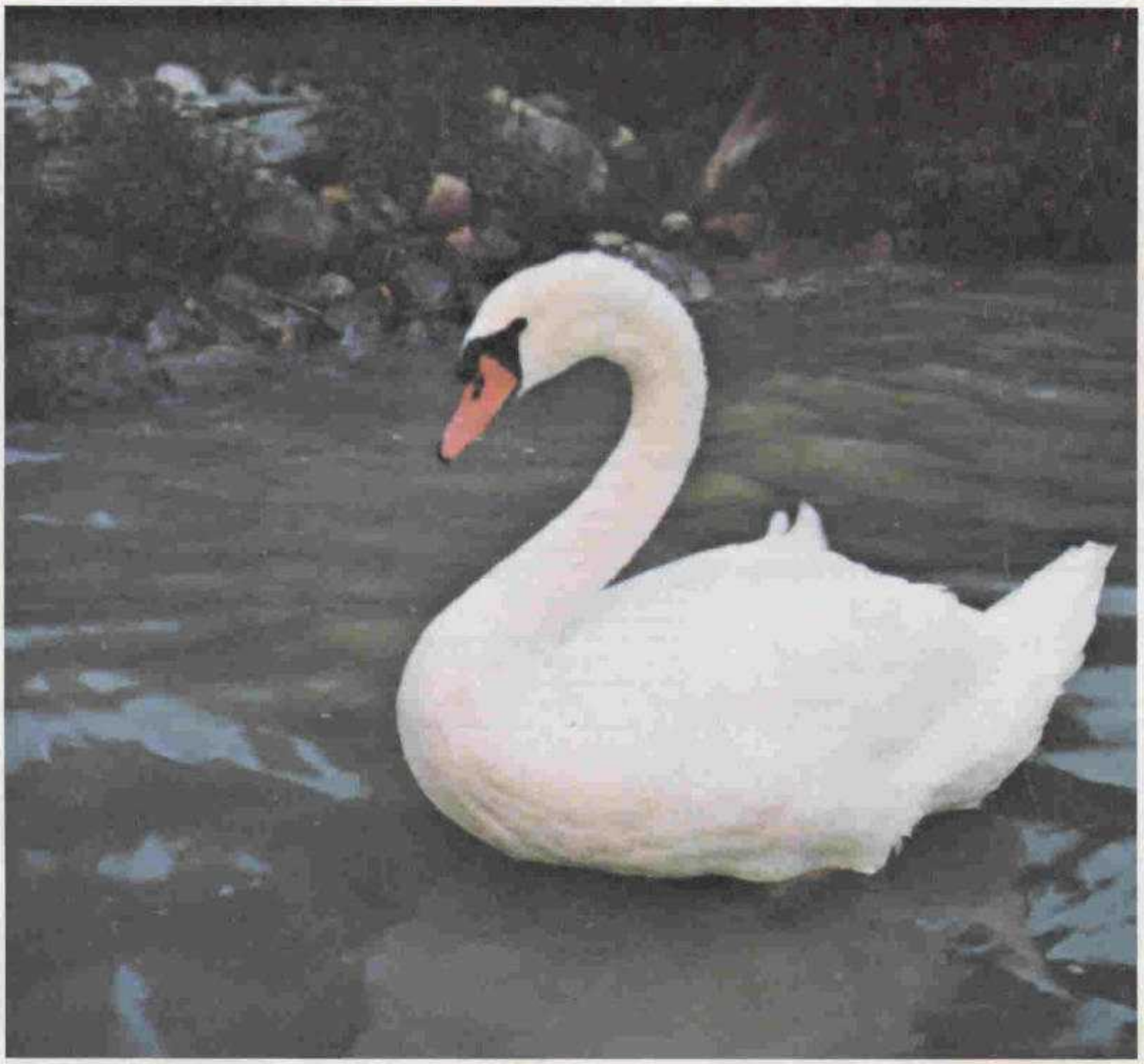
NOVEMBER 1981

$1.00

THE MICHIGAN RIPARIAN

READ BY MORE THAN 32,000 WATERFRONT PROPERTY OWNERS



PROFESSIONAL DIRECTORY

Front Cover Picture

The picture of the Mute Swan shown on the front cover was taken by the editor along the east shore of Intermediate Lake in Antrim county and at the home of George & Marie Pinkerman. George was elected Vice-President of Region II at the recent ML&SA meeting at Hilton Shanty Creek.

This species of Swan was introduced from Europe into the North-eastern United States. It differs from the Whistling Swan in having the orange bill and remains silent except for some hissing and grunting. The Mute Swan also bends its neck into a graceful curve while the Whistling Swan holds its neck erect.

CONSERVATION OF THE NATURAL RESOURCES OF THE STATE IS NOT NEW IN MICHIGAN. The following policy statement was written into Act 61, Public Acts of 1939:

319.1 Declaration of state policy as to conservation of oil and gas.

Sec. 1. It has long been the declared policy of this state to foster conservation of natural resources to the end that our citizens may continue to enjoy the fruits and profits thereof. Failure to adopt such a policy in the pioneer days of the state permitted the unwarranted slaughter and removal of magnificent timber abounding in the state, which resulted in an immeasurable loss and waste.

Within the past few years extensive deposits of oil and gas have been discovered which have added greatly to the natural wealth of the state, and if properly conserved can bring added prosperity for many years in the future to our farmers and land owners, as well as to those engaged in the exploration and development of this great natural resource. The interests of the people demand that exploitation and waste of oil and gas be prevented so that the history of the loss of timber may not be repeated.

TO OUR READERS: The daylight saving time hours printed in the August 1981 issue of the Michigan Riparian (page 23) were incorrect. The correct hours, together with quotes from DNR publications, are given below.

Water Skiing and High Speed Boating is prohibited from 7:30 p.m. to 11:00 a.m. (daylight saving time) the following day.

The authority and responsibility of the Department of Natural Resources to regulate the use of the surface waters of the state and to provide for the safety of all users of Michigan waters is provided by the Marine Safety Act, Act #303, Public Acts of 1967, and amendments thereto. Provisions of the Act together with adopted administrative rules is available from the Law Enforcement Division, Department of Natural Resources. The front of one of the DNR publications which contained all the statutes and administrative rules as they were written and as of April 19, 1975 is shown on the left below. Two sections from that booklet are printed on the right below.

State of Michigan

Marine Safety Act

[Act 303—P.A. 1967]

[As amended through—January 1, 1975]

• ADMINISTRATIVE RULES •

[EFFECTIVE APRIL 19, 1975]

LAW ENFORCEMENT DIVISION
DEPARTMENT OF NATURAL RESOURCES
STEVENS T. MASON BUILDING
LANSING, MICHIGAN 48926

Sec. 12. The department may regulate the operation of vessels, water skis, water sleds, aquaplanes, surfboards or other similar contrivances on the waters of this state. Where special regulations are determined necessary the department may establish vessel speed limits; prohibit the use of vessels, water skis, water sleds, aquaplanes, surfboards or other similar contrivances; restrict the use of vessels, water skis, water sleds, aquaplanes, surfboards or other similar contrivances by day and hour; establish and designate areas restricted solely to boating, skin or scuba diving, fishing, swimming or water skiing; and, prescribe any other regulations relating to the use or operation of vessels, water skis, water sleds, aquaplanes, surfboards or other similar contrivances which will assure compatible use of state waters and best protect the public safety. The department shall prescribe special local regulations in such a manner as to make the regulations uniform with other special local regulations established on other waters of this state insofar as is reasonably possible. •CL 281.1012

TIME DEFINITION

By authority conferred on the commission of Natural Resources by sections 12 to 17 of Act No. 303 of the Public Acts of 1967, as amended, being sections 281.1012 to 281.1017 of the Michigan Compiled Laws, the following rule was promulgated:

TIME DEFINITION—R 281.700.3

On the waters of this state where special local watercraft controls have been established prohibiting high-speed boating and water skiing, from 6:30 p.m. to 10:00 a.m. of the following day, the hours shall be 7:30 p.m. to 11:00 a.m. of the following day, when and where Eastern Daylight Saving Time is in effect.

Daylight Saving Time means the advancing of the standard time by one hour commencing at 2 o'clock antemeridian on the last Sunday of April of each year and ending at 2 o'clock antemeridian on the last Sunday of October of each year in conformity with the Federal Uniform Time Act of 1966.

30

THE MICHIGAN
RIPARIAN

ISSN 0279-2524
11262 OAK AVENUE
THREE RIVERS, MICHIGAN 49093

In This Issue. . .

EDITORIAL


Donald Winne

CLEAN AIR IS NOT NEGOTIABLE

We do not help ourselves by encouraging or supporting the relaxation of controls on air quality. We merely speed up the day of reckoning. Sulphur dioxide and nitrous oxides from the burning of fossil fuels is not confined to the elimination of fish from non-buffered lakes and streams, but has other wide-reaching consequences. In sufficient amounts, it can result in the loss of millions of dollars for the tourist and recreation business, damage to buildings and industrial installations, reduction in plant growth which may be imperceptible in some cases but very evident when the entire vegetative cover of an area dies, and impacts on human health in respiratory problems and consequent mal-function of normal body processes. The human problems from breathing polluted air needs to be addressed by the medical profession without further delay — a subject which they have been silent on too long.

The perception of industry and Johnny Q. Public being adversaries about air-pollution and controls for air quality is shallow and superficial. People demand electric power and products from industry which result in air pollution and yet want clean air at the same time. Therefore, both industry and the public should view themselves as partners in protecting human health. If it costs more to keep the air clean, then the consumer, whether he be worker, manager, or entrepreneur, must be willing to bear the costs of control programs.

If this problem were viewed in this manner, instead of as adversaries, we could accomplish our goal of a more healthful environment with less government and less delay.

Donald E. Winne

PUBLICATION MONTHS: February; May; August; November.

11,000
24 Page
Color in Cover

PUBLICATION DEADLINES: At least the 10th day of the preceeding month.

ADVERTISING RATES: Display advertising rates by request. **NOTE:** Stories of general interest are always welcome, especially those accompanied by pictures. All printing is done by offset process so we can use photos, negatives, or polaroid shots. All such material should include return address in pencil on the reverse side if return is requested.

THE MICHIGAN RIPARIAN magazine is owned and published by the Michigan Riparian Inc., a Michigan non-profit corporation. General office of the quarterly publication is located at 11262 Oak Avenue, Three Rivers, Michigan 49093. Phone (616) 244-5336.

Postmaster: send address change to 11262 Oak Avenue, Three Rivers, MI 49093.

SUBSCRIPTION RATES: A blanket subscription includes every dues paying member (family) of the subscribing association.
Blanket Rates (100% of membership) . . . . . $2.40 per subscription per year (4 issues)
Quantity Rates but not a blanket subscription:
100 or more (same as "blanket" rate) . . . . . $ 2.40 each per year
75-99 subscriptions . . . . . $ 2.60 each per year
50-74 subscriptions . . . . . $ 2.80 each per year
25-49 subscriptions . . . . . $ 3.00 each per year
2-24 subscriptions . . . . . $ 3.40 each per year
Individual . . . . . $ 4.00 each per year

2nd Class Postage paid at Three Rivers, Michigan and Additional mailing offices.

General Office
11262 Oak Avenue
Three Rivers, Michigan 49093

STAFF
Editor & Publisher . . . . . Donald Winne
Art Director. . . . . Joseph Ferriss

THE EFFECTS OF ACID RAIN ON MICHIGAN STREAMS

Thomas M. Burton, Richard M. Stanford and J.W. Allan*

THE ACID RAIN PROBLEM

The rain and snow falling in Michigan is considerably more acid than one would expect based on natural atmospheric equilibria. Some recent published maps from the U.S. National Atmospheric Deposition Program (NADP) and a similar Canadian network of precipitation collectors (CANSAP network) as well as published maps for the Great Lakes Region from the International Joint Commission in Windsor, Ontario indicate that most of the lower peninsula of Michigan annually receives rain that is an average of 15 to 25 times more acid than expected while the upper peninsula receives rain that is 4 to 16 times more acid than expected. Dr. J.R. Stottlemyer of Michigan Technological University reported in a recent paper that rain and snow for several specific sites in the upper penninsula varied from 5 to 54 times more acid than expected from atmospheric equilibria even in areas as remote as Isle Royale National Park.

The vulnerability of streams and lakes in Michigan and elsewhere to this acid precipitation is related to the neutralizing capacity of the soils, bedrock, and waters of the drainage basin. Streams and lakes in the lower peninsula are located in areas of limestone rich soils and are relatively invulnerable to acid rain inputs. On the other hand, streams and lakes of the upper peninsula often are located in areas of thin soils with little neutralizing capacity. Many such streams are characterized as soft water, low alkalinity streams and are especially vulnerable to acid rain inputs, especially in the headwaters.

DESCRIPTION OF STREAM STUDIES

In April, 1980, we initiated a project designed to allow us to describe the effects of acidification on the stream community. It is well known as reported by Dr. Cowling in the last issue of **The Michigan Riparian** that acidification will result in losses of much of the fish population. Thus, we decided to concentrate on other changes expected to occur in upper peninsula streams should they become acidified in the future. We wanted to know what direct effect acidification would have on the invertebrate community that comprises the food web for fish in these streams. We also wanted to know what effect acidification would have on the breakdown of leaves and other organic matter in streams by bacteria and fungi. Such organic matter is the basis of most invertebrate and fish production in small shaded streams since light limits plant production. In short, we wanted to know what effects acidification would have on the entire plant and animal communities in acidified streams.

Since adding acid to streams is not easily accomplished in nature because of objections from local residents, the difficulties of working outdoors during the winter with liquids, and the expense of such an operation (one such study has been conducted in New Hampshire by R.J. Hall and G.E. Likens of Cornell University), we decided to simulate acidification using two artificial streams at the Kellogg Biological Station at Gull Lake near Hickory Corners, Michigan. These artificial, concrete streams recirculate water from a lower chamber by pump to an upper chamber (Figure 1). The streams are 12 meters long and 1 meter wide at the bottom of the channel. They increase in depth and width downstream to simulate a riffle and pool environment; temperature and light are controlled to simulate upper peninsula conditions. These streams had been used extensively in the past by Dr. K.W. Cummins and co-workers to very successfully simulate natural stream conditions for a variety of studies.

We lined the bottom of both streams with a sandy substrate taken from small soft water, low alkalinity streams that drain directly into Whitefish Bay near Paradise, Chippewa County, Michigan. We filled the channels with deionized water and adjusted the chemistry to simulate

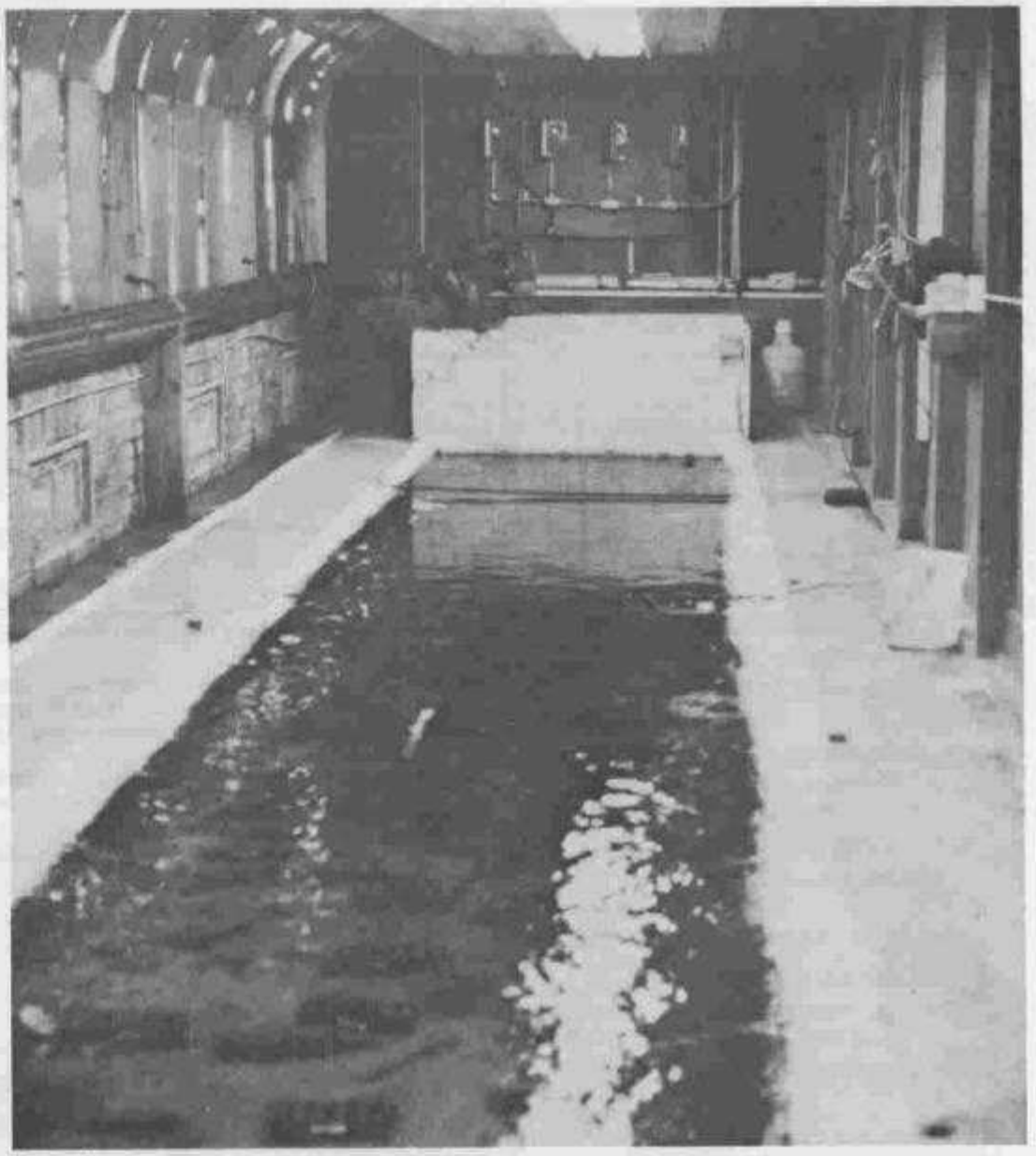


Figure 1:
View of the Artificial Streams in a Greenhouse at the Kellogg Biological Station, Hickory Corners, Michigan. The pump in the lower reservoir in the photograph pumps water by way of the pipe on the left to an upper reservoir which contains cooling coils for temperature control. The water spills from this upper reservoir into the concrete channel shown in the foreground.

*Associate Professor, Departments of Zoology and Fisheries and Wildlife, Research Associate, Institute of Water Research, and Graduate Research Assistant, Department of Zoology, Michigan State University, East Lansing, Michigan 48824

chemical conditions in the upper peninsula streams. We collected invertebrates and organic matter from the streams near Paradise and introduced them into the channels. The stocking and acclimation of invertebrates and development of microbial and algal flora was allowed to progress undisturbed for more than six months.

With the onset of leaf fall in the upper peninsula we collected newly fallen leaves and constructed leaf packs following techniques developed for the artificial channels and studies of Augusta Creek near Kalamazoo by Dr. Ken Cummins and co-workers. These leaf packs were fastened to the leading edge of bricks to simulate leaves caught on tree roots and fallen logs in streams and were placed facing into the current in streams (Figure 2). These leaf packs could easily be removed from the channel (Figure 3) and examined for colonization by microbes and invertebrates. Weight loss of these packs also gave an indication of leaf litter processing rates by stream organisms. The leaf packs were "conditioned", i.e. microbial colonization was allowed to occur, for one month prior to the start of acidification.

On November 28, 1980, one of the two channels was acidified to a pH of 4.0, a level of acidity equal to some of the more acid conditions for rain falling further to the east, using sulfuric acid. The other channel was maintained as a non-acidified control. About 70% of acidity in precipitation in Michigan is derived from sulfuric acid with most of the remaining 30% coming from nitric acid. Evidence is rather compelling that much of this sulfuric and nitric acid is derived from emissions of sulfur and nitrogen oxides associated with burning fossil fuels.

PRELIMINARY RESULTS OF THE STREAM STUDIES

The acidification of stream water caused no obvious immediate mortality of stream invertebrates in the first three days. However during the first month, total numbers of invertebrates were reduced to 53% of original numbers in the acidified channel while numbers actually increased in the control (non-acidified) channel. By the end of month 4, numbers of invertebrates in the acidified stream had been reduced to 9% of original numbers while 86% of original numbers remained in the control stream.

One of the first species to show a negative response was a water flea or isopod, **Asellus intermedius.** Its numbers decreased to less than 10% of original numbers during the first month in the acidified stream while showing an increase in the control. This species is a general detritus feeder and is one of the more common invertebrates in the upper peninsula streams.

The most common species of invertebrate in the upper peninsula streams is a caddisfly, **Lepidostoma liba.** This small but numerous case builder showed little decrease for the first two months. However, its number started to decrease rapidly from month 3 onward. After month 4, its numbers were less than 10% of original numbers in the acidified stream while 91% of original numbers remained in the control stream. After that time, numbers in both streams declined slowly so that 5% of original numbers remained in the acid stream after seven months while 67% of original numbers remained in the control stream.

Snails in the stream were rapidly eliminated by acidification although original numbers were rather low. Decomposition of organic matter has been slow in the artificial channels. No difference in decomposition rate of either white birch or sugar maple leaves was apparent for the first 6 months between the control and acidified streams. During month 7, differences did occur with decomposition rate being slower in the acid stream compared to the control. This slowing of decomposition rates by acidification has been reported elsewhere but was not as drastic in this study as in others.

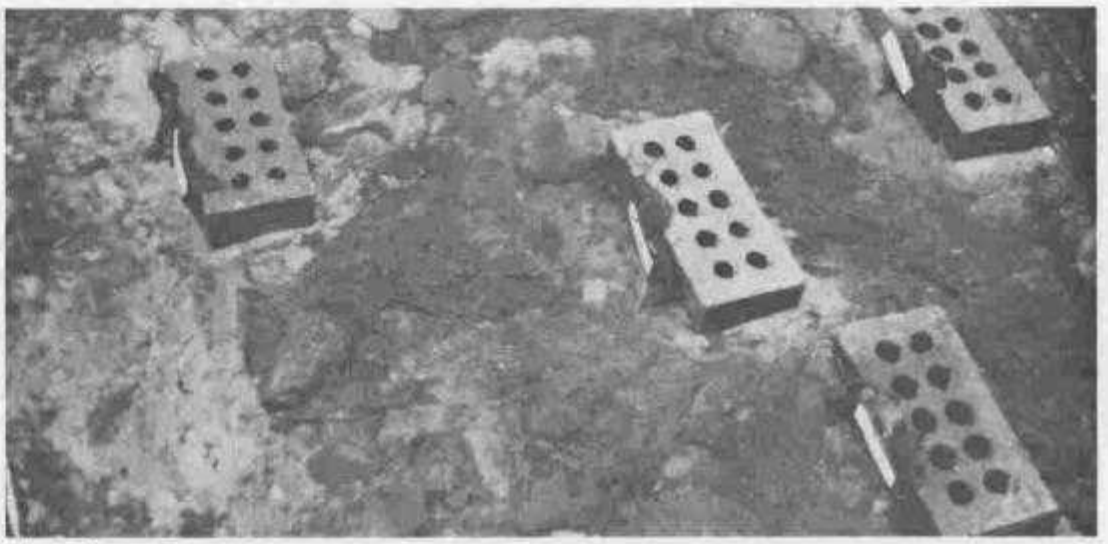


Figure 2:
Leaf packs fastened on the leading edge of bricks in the stream. Flow is from left to right.

Preliminary data from Dr. Rex Lowe and his students at Bowling Green University indicate that algal production was also slowed by acidification.

Our work has demonstrated that (1) the invertebrates that are important for fish production in streams are drastically reduced in number by acidification with some species very sensitive while others show effects only after several months of acidification. (2) The most sensitive species are snails and isopods with the least sensitive being certain species of caddisflies. (3) The decomposition rate for organic matter in streams is reduced slightly by acidification after 7 months. These changes certainly have the potential to decrease fish production with loss of recreational value for upper peninsula streams.

Figure 3:
Close-up of a leaf pack removed from the stream.

FUTURE RESEARCH PLANS

At present, we are repeating some of these experiments using actual stream water from the upper peninsula in smaller channels (Figure 4). The high organic content of this water could influence the findings, and we want to find out if there is a significant influence. We also are conducting individual growth and food consumption studies on several of the more numerous species of invertebrates. We also have taken samples for analysis of microbial populations. These analyses will be conducted by Dr. Keller Suberkropp of New Mexico State University. Dr. Rex Lowe and his students at Bowling Green are conducting follow up studies of algal populations. If we can obtain funding to continue these studies, we hope to examine the known relationship between heavy metal toxicity and acidity to determine the impacts of this interaction on Michigan streams.

Ultimately, we hope to be able to predict the effects of acid rain on Michigan streams. Such acidification could be accelerated if more coal powered power plants are built upwind of Michigan without adequate sulfur and nitrogen oxide removal. We want to be able to predict the effects of present and expanded production of sulfur and nitrogen oxides by fossil fuel combustion on the streams of Michigan, one of our more valuable natural resources.

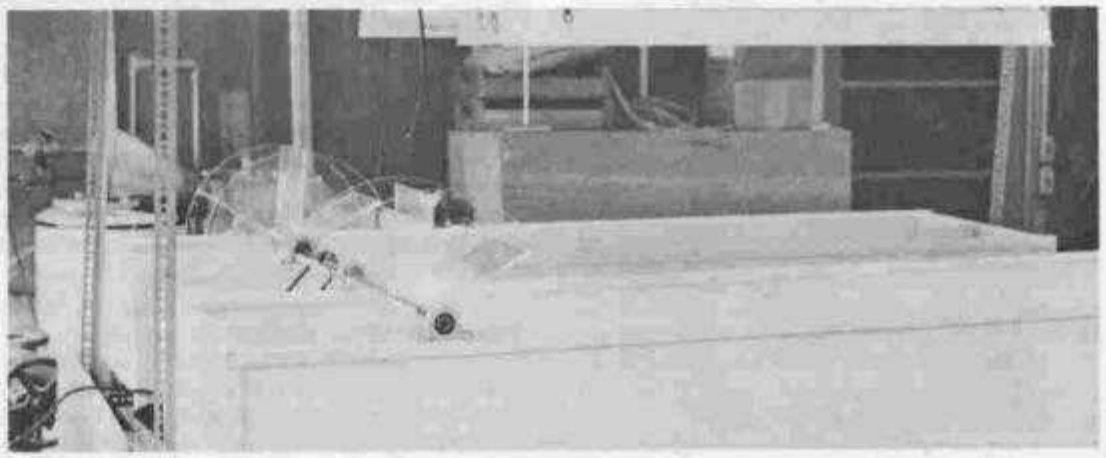


Figure 4: Wooden channels used in follow-up studies of acidification effects. Paddle wheels propel water around a recirculating trough. There are two channels with one used for experimental acidification while the other serves as a control.

The Acid Rain Problem As Seen By A Canadian

Remarks By
The Hon. Keith C. Norton, Q.C.
Minister of the Environment
Ontario Ministry of the Environment

To the Conference on Acid Rain:
A Transjurisdictional Problem in Search of Solution

Luncheon Address
State University of New York,
Buffalo, New York May 1, 1981

Make no mistake about it, Ontario citizens are very aware of the acid rain issue, and the need for its solution. It is not simply a **popular political issue,** but a matter which has transcended **ordinary partisan political** lines in our country.

Our politicians and our residents also agree that the solution means tough and concerted action from both countries. Because this is not a problem which can be limited to jurisdictional boundaries. Like our shared waterways, we also share a common airshed. Both countries are contributors to problems in our Neighbors' backyards and the control of emissions in both countries must reflect that fact.

However, when our media contains accounts of American groups seeking to relax pollution standards, when we see remarks from American officials which question the very existence of the threat to our environment, it is not surprising that Ontarians react with concern. In some of the conversations I have had and in the correspondence my office receives, that concern for some, manifests itself in anger.

In my view, the relationship between our two countries is a long-standing and valuable friendship for both of us. Clearly, one of the reasons it has stood the test of time, is that we have been able to deal honestly and openly with each other so we can work out our differences on a mutually satisfactory basis.

Today's event represents an opportunity for me to share with you honestly our concerns and explain where Ontario stands on the issue of acid rain, what we have done about it, and more importantly, what we will continue to do about it in the future.

Quite simply, the Ontario government's position is this-all-out war on acid rain.

Consider some of the following facts which should help to explain our concern:

Fact: Nearly ten percent of Ontario's economic base comes from the aquatic-based tourism and outdoor recreation industries. In 1980, direct expenditures alone are conservatively estimated at $900 million.

Fact: Tens of thousands of our lakes in these recreational areas are sensitive to the insidious damage of acid rain.

Fact: A U.S. Environmental Protection Agency report in July, 1980, concluded that Canada receives **two to four times as much sulfur dioxide and eleven times as much nitrogen oxides as the United States gets from Canada.** In Ohio alone, the 11 largest thermal power plants currently spew about 2.3 million tons of sulfur dioxide into our common airshed. All of Ontario's sources combined, including Inco Ltd., in Sudbury and Ontario Hydro, currently produce about 1.5 million tons.

Fact: In February 1979, a prolonged cold spell in Southern Ontario was broken by warm southerly winds which originated south of the Great Lakes. As the winds shifted from the south, sulfur dioxide concentrations began to rise dramatically. Within several days, pollution levels had risen above guidelines set by our ministry to protect public health. As a result, the ministry asked Ontario industries to cut back their operations to decrease emissions. The subsequent investigation conducted by the ministry, showed that **50 percent of the pollutants originated in the United States.**

In August 1980 your country and mine signed a memorandum of intent under which both parties agreed to enforce existing laws and regulations to control emission sources. During that same year, the Administator of your Environmental Protection Agency, a co-signer of the memorandum, relaxed controls for nine coal-fired plants in the United States. This relaxation approved the increased emission of about 800,000 tons of SO_2 per year, considerably more than the current emissions from all Ontario coal-fired power plants.

Finally, consider this. Sit on the shore of a particular lake, in Ontario's Muskoka area, or New York's Adirondacks. On the surface, the water appears crystal clear, almost shimmering in the sunlight. But look down beneath the surface — **there are no fish, no small water creatures, no** plants. In short there is no life at all. **The lake is dead.**

I repeat, for Ontario, the results of acid rain are a critical environmental problem. No debate exists on that in the minds of the Ontario legislators, the Ontario media or the Ontario public. There is also no question that action must be taken to significantly decrease the causes. The only argument that does exist, is how far and how fast.

In Canada, the actual responsibility for pollution abatement measures belongs to the provinces. In Ontario, our scientific research was clearly telling us that acid rain was a serious threat to the North American environment. A solution would mean stringent actions not only from our own jurisdiction, but from our neighbours' as well.

Sulfur and nitrogen pollution has been curtailed dramatically in local Ontario terms over the past ten years. But it was obvious to us that much more would have to be done.

The fastest way to get that action is to build public knowledge and awareness and hence public support for the necessary solutions. So in February, 1979, we took a big step in that direction by referring the issue of acid rain for public hearings before a legislative committee. Experts both inside and outside the government presented their evidence. Citizen groups raised their concerns and the media cooperated with extensive coverage. Since then, public response has been strong and consistent — they want action.

At those hearings my predecessor, Dr. Harry Parrott, called for joint international action as the only way to a successful solution. But he also pledged that Ontario was prepared to act on its own, to start the clean-up in its own backyard, even though he knew such actions could not solve the problem in Ontario because the **majority of acid rain pollutants come from the U.S.**

Acid Sensitive Areas of North America

Nevertheless, he felt we had to be prepared to shoulder our share of the responsibility.

The first step was Inco Ltd., the smelting operation in Sudbury, which represents the largest single point source of sulfur emissions in North America.

Inco had already reduced their emissions from approximately 2.0 million metric tons per year in 1969, to 1.2 million in early 1978. But in May 1980, armed with the knowledge that even tougher controls were needed, we ordered Inco to cut back to 833,000 metric tons per year and to have facilities in place by the end of 1982 to produce only 647,000 metric tons per year.

Incidentally, the government chose to implement these levels, not by the usual control order procedures which could have been stayed by company appeals, but rather, by using a government regulation which does not carry with it regular appeal mechanisms.

From 1969 to 1982, Inco will have reduced emissions by approximately 65 percent. But these limits are only the first step. Our goal is to reach the lowest emission level it is possible to achieve technically and economically. Studies undertaken by a joint federal-provincial task force will be completed by 1983 to give us the best solutions for accomplishing this.

Our second step? Ontario Hydro, a crown corporation which supplies almost all of the province's electrical energy. Its coal-fired plants together, form the second largest emitter of SO_2 in the province. In January of this year, we placed annual limits on Hydro's emissions which require the utility to immediately undertake approximately $500 million worth of control activities.

The size of Hydro's facilities and the complexity of the steps to be taken mean that considerable lead time is required before controls are fully implemented. However, by 1985, emission levels must be down to 390,000 metric tons per year from current average levels of 452,000 metric tons. By 1990, a ceiling of 260,000 metric tons of SO_2 per year is required. This is a reduction of approximately 43 percent from the current average levels. It will apply regardless of any increase in electrical demand.

The emissions of nitrogen oxides will be reduced to 60,000 metric tons per year by 1986 through the addition of low NOx burners and by reduced coal-fired generation.

We have also asked Hydro to explore a new operating philosophy, one which can result in substantial pollution reductions without the need for additional control measures. Called L.E.D.S., for Least Emissions Dispatching

System, it means that a utility generates power first from its "cleanest" plants leaving the "dirtiest" plants to handle excess loads. I understand this philosophy is also being explored by your government. We feel very optimistic that Hydro will be able to fully utilize this method of operation.

I want to stress one key element of our Hydro control program — flexibility. For an operation of this size, we are looking at a whole series of alternatives to achieve the maximum results for realistic prices.

It might seem that the solutions for acid rain will be costly. Inco has given estimates of $400 million for current and future control programs. I've already mentioned that Hydro will spend about $500 million. As for research, the Ontario government is spending about $5 million to develop more detailed information about the full extent of the problem and to develop the most effective strategies for fighting it. Even more money is going to be committed next year.

On the question of economics, David Stockman, the head of your Office of Management and Budget has been quoted as follows:

"I kept reading these stories that there are 170 lakes dead in New York. . .well how much are the fish worth in these 170 lakes that account for four percent of the lake area of New York? And does it make sense to spend billions of dollars controlling emissions from sources in Ohio and elsewhere if you're talking about a very marginal volume of dollar value. . .?"

He also has been quoted as saying that the Clean Air Act's ambient standards "are far too stringent relative to what both economic and public policy and the medical evidence suggest." And yet, it is his agency which has the job of scrutinizing the environmental regulation in the Reagan administration.

But responsible environmental regulation means you have to weigh those kinds of costs against the real price we pay if action is not taken. For those of you who are not convinced about the urgency of this problem, Ontario would have difficulty making a case if we asked you to weigh the costs of controls versus a few fish.

But that's not our argument. Instead, we are rapidly bringing together the dollar figures which will show the true costs of uncontrolled acid rain. Various estimates have been made, but part of our research efforts are going into producing definitive numbers so we can put accurate values on the other side of the cost-benefit scale — **1. The dollars in lost business in our tourism and outdoor recreation industry; 2. The costs of damage to man-made structures; 3. The potential loss of crops and trees;** and, if our worst fears are borne out, **4. The impact on human health and the costs to society that could entail.**

Right now, the Ontario government is asking **its citizens to bear the costs of control programs** which will actually produce as much of a reduction for our downwind neighbours in New York and New England as it does for Ontario. That's a tough road for an Ontario politician to travel. But, we are doing it because it demonstrates beyond doubt what our intentions are and how strong our commitment is.

With those steps underway, Ontario can turn to the real key to solution — cooperative international action. Along with the Canadian federal government, our province is one of the prime movers behind the Memorandum of Intent. And we are confirming our major involvement by fully participating with our federal and provincial colleagues in the working groups formed under the agreement to produce the data needed for the treaty we both must have.

This Memorandum was an excellent beginning for our two countries. Some of the statements it makes bear repeating.

The Memorandum of Intent declares that both parties will work "to develop a bilateral agreement which will reflect and further the development of effective domestic control programs and other measures to combat transboundary air pollution." Both governments agree to:

a) Develop domestic air pollution control policies and strategies, and as necessary and appropriate, seek legislative or other support to give effect to them;

B) Promote vigorous enforcement of existing laws and regulations as they require limitation of emissions from new, substantially modified and existing facilities in a way which is responsive to the problems of transboundary air pollution; and

C) Share information and consult on actions being taken pursuant to A) and B) above.

It would not be exaggerating to say that ministry officials felt some optimism about our chances for success the day the Memorandum was signed. We believed then, as we do now, that technical solutions are available, and that adequate resources exist to implement them. More importantly, the scientific evidence suggests, we have enough time to take these steps together, before irreversible and widespread damage occurs. However, I believe we do not have time to waste.

It has also been encouraging to see a recent report by the U.S. National Commission on Air Quality, "To Breathe Clean Air", recognize that both countries intimately share **the same regional airshed,** and therefore Ontario's environment must be studied, assessed and protected in close concert with adjoining American states. That report is before the U.S. Congress for discussion of amendments in The Clean Air Act.

But after such a promising start, we have become increasingly alarmed at what now appears to be happening in your country as reflected in comments like those quoted from Mr. Stockman. Despite the commitments given under the Memorandum of Intent, existing pollution control regulations are not being enforced. The promised consultation with Canada on setting and enforcing standards has not taken place.

The clearly demonstrable effects of acid rain on Ontario from current American emission levels are concern enough. We are adamantly opposed to the requests from various states and power plants to have the Environmental Protection Agency actually relax the pollution limits on sulfur dioxide emissions.

The potential for damage to Ontario if these requests are granted is serious, and we cannot ignore them. It is because of this that we took the unusual and unpredented step of legally intervening in relevant proceedings in the U.S. which have a direct bearing on relaxation requests. Briefly our actions are as follows:

1. On March 12, the Ontario Ministry of the Environment filed a legal intervention with the U.S. Environmental Protection Agency. It asks the EPA to reject proposals from six states for a relaxation of emissions limits governing 18 power plants in **Ohio, Michigan, Indiana, Illinois, West Virginia and Tennessee.**

2. We also ask that the EPA enforce existing emission limits, review regulations on levels which govern all U.S. power plants and consider permissable emissions from the perspective of total effect on Northeastern North America. We oppose applications to amend U.S. State Implementation Plans under which individual states would be permitted to increase pollutant emissions subject to approval of the federal EPA.

3. Finally, on April 9, Ontario filed a motion for leave to intervene as a respondent, in the U.S. Court of Appeals for the District of Columbia, where petitions are pending, filed by Ohio and two of its electrical power utilities. Their petitions, filed March 17, attempt to prevent the EPA from considering the effects to the Canadian environment when revising State Implementation Plans.

If I were to sum up our position it would be this: To have any chance at all of combatting acid rain, there cannot be any increases in North America's emissions. It makes little sense to me for the EPA and the American government to work towards international agreements aimed at reducing pollution on one hand, while allowing emitters a freer rein on the other. If the terms of the Memorandum are not strongly enforced and emissions are allowed to increase, then the levels set in the future agreement will be that much harder and will take that much longer to implement.

Ontario's evidence is firm. If SO_2 and NOx emissions continue at current levels, or if they are allowed to increase, the results could threaten aquatic life in thousands of Ontario lakes within the next ten to twenty years. We are also concerned about the potential damage to terrestial life forms, to crops, forests, man-made structures and possibly human health.

For those of us who bear the responsibility of decision making, guarding the environment is, I feel, a public trust. How our two countries handle acid rain will be the ultimate test. It is essential that we come to grips with it together.

To me, to my government, to our citizens, Ontario's environmental quality is simply not negotiable. We have enforced pollution controls in our backyard in the past and we will continue to do so in the future. Our research will continue so that we may constantly update and refine our knowledge of sources, effects and possible controls.

On the international front Ontario will stay a full participant in the Canada-U.S. working groups to lay the groundwork for the urgently needed air quality agreement between our two countries.

But we can't fight the problem alone. We need to cooperate, to work together, to share our research and to consult on standards. We have a history of success upon which we can build and of which we can be proud. With our record of success in joint action through agencies like the International Joint Commission, I am confident we can do it. I would prefer that we work closely, that we can solve this problem as friends.

However, it is a problem we both share. Ontario is waging the battle in our own backyard. We would ask you to do the same in yours.

Douglas Lake Association Appeals To Otsego County Commissioners and Road Commission To Save Their Lake.

Douglas Lake, located in the southeast corner of Otsego County and in Charlton township, is a 90 acre lake without inlet or outlet. Its total annual water budget is, therefore, limited to the precipitation on the surface of the lake and what else it gets from springs. Without an inlet or outlet, the flushing rate for the lake is minimal, and restoration of degraded water quality is more costly and time consuming.

Erosion and sediment problems from a county road which has been maintained to the waters edge has caused the Douglas Lake Association to take their case to the County Road Commission and to the County Board of Commissioners. Their appeal, which follows, was presented recently to both Commissions by Eugene Ochsner, Chairman of the Douglas Lake Association.

POLLUTION OF DOUGLAS LAKE BY SILT RUNOFF

Abstract: In the year 1936 the land surrounding Douglas Lake was subdivided into large lots by Robert L. Moore. In the year 1938 Mr. Moore reluctantly deeded a sixty-six foot wide right-of-way, extending from present Route F-97 directly east to the lake shore, about one-tenth of a mile in length. A road was constructed over said right-of-way by Otsego County, subject road being constructed with a continuous drop in elevation, some sections of which are quite steep. Runoff of water-born silt, sand, clay, chlorides and organic matter emanating from points along F-97 as well as from the access road proper is being discharged into Douglas Lake, as well as into an adjacent private garage. The lake is becomming increasingly polluted from this source.

From a cost-benefit standpoint, this road is no longer required. Only one existing cabin uses this access road at the present time and the owner states he will provide his own driveway.

Many lakes and streams in the immediate area are available to the public with approved access sites.

Since its inception in 1974, the members of the Douglas Lake Association, Inc. have urged the abandonment of this County access road. There are no facilities for parking private cars, or maneuvering boat trailers, without trespassing on private lands.

An objectionable use of this access road involves groups of persons who gain access to a private beach at the north end of the lake for private parties, generally in late evening and at night.

Maintenance of this access road has been a constant expense to Otsego County. Renewal of drainage ditches has been done by the County at a high cost in the past, only to have the ditches become clogged with silt and debris from runoff.

Personnel familiar with erosion control have studied the problem and have had no suitable solutions to remedy the situation. A large build-up of silt has occured in the north and east sides of the lake, a condition which will persist unless remedial action is taken.

Background: In the year 1936 the purchaser of the land surrounding Douglas Lake, Robert L. Moore, subdivided the property into large lots. At the time, a serpentine trail road existed and Mr. Moore wished to eliminate this road as it interfered with the proper layout of the lots. The County insisted a road was required for access and Mr. Moore was not in a financial position at the time to legally counter the County's insistance of an access road. Mr. Moore reluctantly deeded a sixty-six foot wide right-of-way extending along one lot line in an easterly direction from Douglas Lake road (now

F-97), to the shore of the lake, about one tenth of a mile. As per the Deed of conveyance, no camping was to be permitted, and no provisions were specifically made for vehicle parking.

Subject access road was constructed with a continuous drop in elevation, at times quite steep. There was little use of the road for quite some time, until two cabins were built on either side of the road near the lake shore. Subsequently, one of the cabins was used on a year-around basis and the owners at that time insisted on the road being kept in repair and winter snow removal be scheduled. This is no longer necessary as the property owner to the north of the County access road has built his own access road and has closed off his former access points. The property owner to the south of the County road has expressed his plans to provide an independent driveway to his cabin. The latter property owner has constant problems with silt and sand washing into his garage from the road runoff.

Over the past fifteen years or so, during periods of heavy rains and spring snow melt severe washing of silt, sand, clay, chlorides and organic matter occurs, emanating from F-97 as well as the access road itself, discharging into the lake. The lake is becoming increasingly polluted from this source. The drainage ditches along either side of the road soon become filled in and runoff proceeds down the road proper into the lake. Periodically, the County has expended funds to clean out the ditches and place fresh gravel in the road proper. Even with efficient ditches in place, and properly maintained, the runoff still passes directly into the lake.

To adequately use the road for boat launching by the public necessitates trespassing on private lands as there is insufficient space to do the necessary turning and backing down to the lake shore. In addition, any use of the road as a launching site is now impossible as a deep accumulation of silt is located at the end of the access road and extends well out into the lake.

On August 26, 1977 a report was issued to the Otsego County Road Commission, at their request, by Michael Forrest, District Conservationist. In his report he stated - Quote: "This is typical of gravel surfaced road on slopes in that runoff remains unchecked and non-erosive means of controlling are difficult to maintain. As with other sites in the county, the alternatives are limited". Unquote. Three alternatives were suggested by Mr. Forrest, the first of which mentions the abandonment of the road. The other two would merely, Quote: "minimize the effects of erosion". Unquote.

Present Status: At the present time, (August 1981) much silt, clay, sand, chlorides and organic matter have been washed into Douglas Lake with currents carrying it to the north, north east and east portions of the lake. There is a marked change in silt deposition on the northwest side of the lake, starting at the property line of D.W. Sargent where a small point juts out into the lake. South of this point the beach has no silt deposition, presumably because currents are diverting the silt toward the middle of the lake. The shorelines on the west, south, and southeast side of the lake show no silt deposition. About three years ago, during the course of recovering the body of a drowning victim in the northeast quadrant of the lake, aerial surveillance could not locate the body. This was due to the body being submerged in the accumulated silt. Divers engaged in the operation reported a deposit of silt several feet in thickness.

Photographs taken in August of 1981 reveal the extent of the deposit along the shorelines as well as the amount of erosion in the access road itself. A condition which will continue unless drastic measures are taken to correct.

It is proper to examine other facts and data regarding current thinking about access sites generally; the problem of siltation occuring in lakes and streams and regulations pertaining thereto.

One: A Bill is currently circulating in the Legislature in Lansing to regulate the, Quote: "development, control, use and maintenance of public access sites on inland lakes". Unquote. Introduced by Senators Bishop, Welborn and Ross on January 27, 1981. This Bill was passed by a thirty-three to three vote in the Senate in June, 1981 and is now in the hands of a House committee. The Bill sets a minimum lake size of one-hundred sixty acres for a public access site (Douglas Lake covers approximately ninety acres)

Two: The present access site installed by Otsego County violates provisions of P.A. 347. This Act provides for the control of soil erosion and to protect the waters of the State from sedimentation. In the minutes of the Otsego County Commissioners meeting, reported June 4, 1974, a resolution was passed by the Commissioners which states Quote: "WHEREAS, the Otsego County Commissioners did on April 2, 1974 deem it in the best interests of the citizens of the County that a County Agency administer and enforce P.A. 347 of 1972 and the General Rules of Act 347 as promulgated by the Department of Natural Resources Commission, etc. (what follows deals with fees, etc.) Unquote.

Also, the County has seen fit to establish soil erosion and sediment control regulations. Quoting from these regulations, under: SECTION B-PURPOSE: "Excessive quantities of soil are eroding within areas that are undergoing development for non-agricultural uses such as housing developments, industrial sites, **Roads** (our emphasis), recreation and wildlife areas in the County of Otsego. This soil erosion makes necessary costly repairs to gullies, washed out fills, roads and embankments. The resulting sediment clogs storm sewers and road ditches, **muddies streams and silts lakes** (our emphasis) and rivers. Sediment is expensive to remove and limits the use of water for more beneficial purposes. Sediment-choked streams are unsightly and their reduced channel capacity can result in flooding and associated damages, including the threat to public health and safety."

Three: In our opinion, should a similarly constructed road be built by a private landholder today, he would be called to Court and made to restore the land damaged and be required to constuct an approved roadway. We refer you to ARTICLE FIVE. SHORELAND DISTRICTS, SECTION 5.02.6, of the Otsego County Zoning Regulations. Quote: "Paths-any paths, roads or passages within the strip (Greenbelt) shall be so constructed or surfaced as to be effective in controlling erosion" Unquote.

Four: Abandoning the present access road will spare unnecessary expense for Otsego County in maintenance fees. The present sole property owner who still uses the County access road for ingress and egress to his cabin states he will build his own access road. This owner is quite perturbed about silt and sand emanating from runoff and ending up in his garage.

Five: Access to the lake will be permitted to Government representatives and fire equipment through any of the existing properties now owned by Riparian owners, as has always been the case.

Six: Permission to enter their property has been granted in the past by Riparian owners to citizens of Charlton Township and Otsego County without the necessity of their using the County access road. This practice will be continued.

Recommendations: In the opinion of Lake Association members, the only solution is the abandonment of the road. At the time of abandonment, soil conservation and erosion experts could recommend proper diversion ditches cutting the County access road to divert the runoff, some of which has its source from F-97 itself. The sloping portions of the abandoned road then to be planted with suitable ground cover to eliminate any further runoff into the lake. A public nuisance will be removed and an illegal type of road construction will be deleted from the record. For public access, over forty other lakes in Otsego County are available, six of them surrounding Douglas Lake, as well as several trout streams.

Comment : In view of the foregoing information and data, members of the Douglas Lake Association, Inc., representing over ninety percent (90%) of Riparian property owners, request the abandonment by the County of Otsego of the approximately one-tenth mile of illogically constructed access road to Douglas Lake at the earliest possible opportunity.

At the present time, no consideration is being given to the removal of the large deposit of silt which has built up on the bottom of the lake, but at some future date this may be necessary.

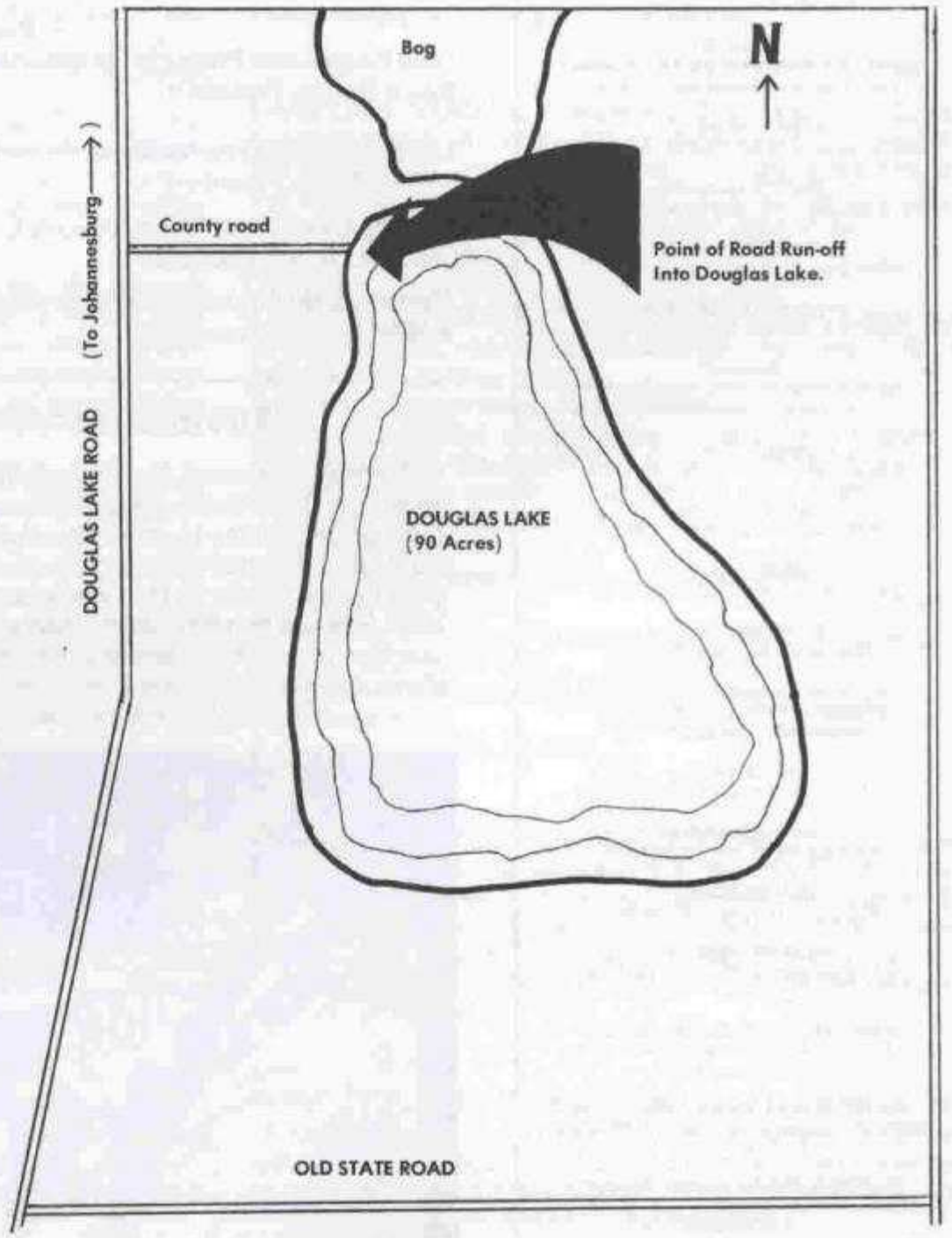
The attached plan of the lake illustrates the location of the major silt deposit in the lake. This is based on current knowledge and the amount and extent of the deposit could be drastically increased if a scientific study were to be made. At any rate, current shore conditions point up the necessity of taking remedial measures as soon as possible.

Invitations are extended to County officials and others who are interested in the prevention of soil erosion and sedimentation, to visit the point where the County access road enters the lake and determine for themselves the gravity of the situation. Also to view the projection of the slide pictures which have been taken to illustrate existing conditions.

Editor's Note:

Otsego County, which lies just 40 miles south of the Straits of Mackinac and halfway between Lake Michigan and Lake Huron, is in a strategic position in regards to water resources of a large part of the northern tip of the Lower Peninsula. Four important rivers — Black, Pigeon, Sturgeon and The Au Sable all have their beginning in Otsego County. The Manistee also crosses the southwest corner of the county. What happens to these rivers in Otsego County is of interest to all riparian property owners downstream and to property owners on lakes these streams enter, such as Burt, Mullett and Black Lakes.

Otsego County also has 65 lakes of 25 acres or more, but most of them are shallow lakes and can be easily impacted by misuse and erosion. The decisions reached by both Commissions in regards to Douglas Lake and similar lakes in the County are important for their future use by the public and riparian property owners.



ML&SA NEWS

By Cecile Harbour

New ML&SA Members

Region II

North Central Beach Association, Oceana County, Frank Klapperich, President

Green Lake-Betsie River Association Grand Traverse County
Ray Henry, President

Lakewood Association (Clear Lk.) Mecosta County,
Edwin Meier, President

Region IV

Sherman Lake Residents Association, Kalamazoo County,
Ardith Bishop, President

Chippewa-Waukazoo Shoreline Association, Ottawa County,
Clarence Bouws President

Region V

Bald Eagle Lake Property Owners Association, Oakland County,
Ralph Kubek, President

Lake Metamora Improvement Association, Lapeer County,
James Jones, President

Murphy Lake Association, Tuscola County,
Claude L. Roles, President

Manitou Lake Improvement Association, Oakland County,
Robert R. Kern, Treasurer

Another Decade of ML&SA Growth

This year's Annual Meeting of Michigan Lake and Stream Associations marks the 20th Anniversary of the organization. It started out in 1961 with six associations joining together to solve their common problems. The organization is now 159 members strong. Much of the credit for holding it all together goes to Mrs. Cecile D. Harbour who became secretary to the organization in 1972. She has served both ML&SA and The Michigan Riparian corporations in nearly every capacity where work was needed to be done. The picture below shows the newly elected President, Robert McAlpine presenting one of the three awards given to Cecile at the Annual Meeting.

ALGONQUIN LAKE COMMUNITY ASSOCIATION, Barry Co. A special meeting was called in August to discuss weed control. The Water Purity, Drawdown and Restoration, and the Weed Control Committees presented several proposals for members' consideration. An association sponsored garage sale was held in June to raise funds.

BIRCH LAKE IMPROVEMENT ASSOCIATION, Cass County. Arrangements have been made with a septic tank cleaner, with a discount price for the convenience of the membership. Water clarity is the best since enrollment in the DNR Self-Help Program--42'! Use of the Septic Snooper is being considered.

BIRCH LAKE MILLPOND ASSOCIATION, Cass County. Fund raising events are planned to help defray the costs of bringing the dam up to specifications.

BROOKS LAKE ASSOCIATION, Newaygo County. The association owns its own building which is available to all members for use. Church services are offered each Sunday during the summer and Bingo at least 2 times each summer.

CROKERY LAKE ASSOCIATION Ottawa County. A winter hayride was a first last winter. Plans are for a partial kill of stunted bluegills and alewives in the future. The association is gathering the history of the lake and surrounding area.

DEVEREAUX LAKE HUNT CLUB Cheboygan County. The annual meeting agenda included a discussion on the feasibility and cost for stocking fish in the lake, and a report on the DNR Self-Help Program. Glen Matthews, DNR Wildlife Biologist was the guest speaker.

EAGLE LAKE ASSOCIATION VanBuren & Allegan Counties. Reminders to members: compost leaves and weeds; use biodegradable detergents; flush toilets infrequently; use disintegrating paper towels; bring water skiers home at sundown to permit quiet fishing; and use courtesy and caution for lake safety.

ELK—SKEGEMOG LAKES ASSOCIATION Antrim, Grand Travers & Kalkaska Counties. A resurvey of the shoreline was planned for July to determine if changes had occured since the 1979 survey. The Skegemog Natural Area has completed the purchase of 40 more acres and has an option to acquire property on the north shore. With 440 members in April, the association is well on its way to the 1981 goal of 600 members.

HI-LAND P.O. ASSOCIATION Livingston County. Incorporated under the Summer Resort Act, PA#137 of 1927, the association is able to take care of the roads in the subdivision, dust control, snow removal, road maintenance, weed control and other matters pertaining to the preservation of the area. Each land owner is assessed for his share of the costs. The legality of this act is being challenged by a group of property owners, the outcome to be reported in the Riparian.

KEARSLEY LAKE ASSOCIATION Genesee County. The Self-Help studies indicate that water clarity is less than in 1980 but so are the weeds. (A good trade-off.) The quality of the water is good. The association is checking with the golf courses abutting Kearsley Creek to determine the amount of phosphorous used in fertilizing. The DNR fish survey in May showed good growth in bass, pike and walleyes. A 1982 netting will test further.

LAKE FENTON PO ASSOCIATION Genesee County. The annual meeting speaker was Dr. Leighton Leighty of MSU Natural Resources Department, who spoke on the Dauner Drain (a local problem), speed and noise ordinances, riparian rights and the wetlands law.

LAKE LAPEER ASSOCIATION Lapeer County. The association sells a special fertilizer prepared for lakeside lawns. Shoreline erosion is a problem that is being attacked in order to prevent greater siltation and consequently a shallow lake. Activity for the summer included ski lessons by the ski club, a ski show at the Annual Festival and fishing contests including a carp contest for the longest carp caught. Water testing continues under the Self-Help program.

LAKE CHARLEVOIX PO ASSOCIATION Charlevoix County. Water clarity in May and June was very good — 16 to 17 feet in the main part of the lake and 2 feet better than in 1980. All riparians should be members of this active group. A policy has been written on lake development as a result of a controversy last spring with a developer.

LAKE LEELANAU LAKE ASSOCIATION, Leelanau County. Organized in late 1980 with a potential of 1150 members, the association had 350 members in May. Concerns for the association are dredging the "narrows" to ease high water dangers and the condition of the Leeland dam.

LAKES PRESERVATION LEAGUE, Lenawee County. Approximately 350 members had paid dues by June. A list of association activities include:

1. Marking danger areas in the waters
2. Monitoring water quality under the Self-Help Program
3. Representing the association at township meetings
4. Publishing the monthly newsletter (a good one)
5. Monitoring local industries for impacts on the lake environment
6. Follow-up on health, zoning, building and noise complaints
7. Working with law enforcement agencies to enforce noise and speed laws
8. Maintaining emergency funds in the event of legal battles
9. Membership with ML&SA

PROPERTY OWNERS OF LINCOLN LAKE, Kent County. This year-old association, formed to protect the lake from overuse from development, is vital and successful. To finance the litigation that has ensued, numerous fund raising events have been held during the year to raise the 1981 goal of $5,000. The August newsletter reported over $3,400 raised.

THE LONG LAKE ASSOCIATION, Grand Traverse County. The annual meeting, August 29, included a pancake breakfast at Gilbert Lodge, Twin Lakes. The newsletter continues to carry interesting articles of the history of the area. This is the third year with the Self-Help Program.

ML&SA NEWS (continued)

PINE LAKE ASSOCIATION Barry County. Over 7800 fingerling pike were planted in the pike pond in April, average size 3". A water quality sampling program began in September. Township reports are included in the newsletters. Congratulations on the September newsletter. Looks great and reads great!

PINE LAKE PO ASSOCIATION Oakland County. A poll to determine the attitude of the members about time zoning to restrict water skiing and high speed boating showed that the majority favored the association's recommendation to make the matter voluntary for this year with an evaluation to determine the effectiveness. To increase the safety on the lake the newsletters carry reminders in each issue. Boating safety classes for 12-16 year old children are sponsored by the association and the Sheriff's Department. A Safety Weekend in cooperation with the Sheriff's Department was held for inspection of boats and the distribution of safe boating materials.

SHERMAN LAKE RESIDENTS ASSOCIATION, Kalamazoo County. One of our newest members included copies of back issues of their quarterly newsletter with their application for membership. A projected landfill in the immediate area of the lake has brought together the membership. (A crisis seems to draw us together but "business as usual" creates apathy.)

THREE LAKES ASSOCIATION Antrim County. The association is working toward tax exempt status. Wolfgang Miller is conducting the baseline research, a graduate study, on the streams that enter the north end of Torch Lake. Water quality is high in Torch, good in Clam but Bellaire has algal problems. A report on the algal survey in May is being prepared.

WATKINS LAKEFRONT OWNERS ASSOCIATION Oakland County. The newsletter entitled "Lake Living" contained several articles to keep members aware of lake management practices and the individual's part in this matter. A map of the lake showed the safest boating routes with directional arrows (counter-clockwise, of course). It is a very informative publication.

ML&SA Purposes

1. To promote research and study of the water resources of the State of Michigan.
2. To collect and disseminate information about the water resources of the State.
3. To encourage and assist lake and stream associations to plan and carry out programs designed to restore and/or preserve the quality of water in lakes and streams and the adjacent land.
4. To focus attention on uses of the water resources of the State which are or may become injurious to the public health, safety and welfare.
5. To publicize and promote the uses of the water resources of the State which have minimal negative impact on the water quality.
6. To encourage the formation of associations by riparians for the purpose of improving and conserving the water resources of the State.
7. To understand and support the current Michigan interpretation of Riparian Rights.
8. To do any and all other things lawful in connection therewith, for a non-profit corporation.

APPLICATION FOR MEMBERSHIP IN MICHIGAN LAKE AND STREAM ASSOCIATIONS, INC.

(Name Of Organization) _____ (Lake or Stream) _____

(Address) _____

(City) _____ (Zip) _____

LAKE INFORMATION:

Year Organization was formed _____ Lake Location (County) _____ Lake Size _____

Are you incorporated? _____ Under What Act? (Summer Resort #137) _____ (Non-Profit #327) _____

Membership _____

President's Name & Address: _____ (Township) _____ (County) _____

_____

(If communication should be sent to a person other than the president, please list below.)

_____

Michigan Lake & Stream Association's 1981-82 Board of Directors

FRONT ROW: Julius Martinek, Geraldine Rorabacher, Charles LaFontaine, Eugene Ochsner, Fred Matthis.
SECOND ROW: Harry Wills, Kenneth Brubacke, James Mann, Norman Paulson, George Pinkerman, Ray Henry.
BACK ROW: Claude Roles, Richmond Brown, Robert Swift, Charles Stutzman, Robert McAlpine. (other members not in the picture: Marilyn McKenzie, Margaret Beebe, Dennis Hansen, John Scurrah and Eugene Olson).

MICHIGAN LAKE & STREAM ASSOCIATION'S NEW PRESIDENT, Robert McAlpine and wife, Nyla.

FOUR REGIONAL VICE-PRESIDENTS FLANKED BY NEWLY ELECTED PRESIDENT, ROBERT McALPINE (front right) AND VICE-PRESIDENT, JULIUS MARTINEK (front left). Front center is Geraldine Rorabacher, Vice-President of Region III. Back row left is George Pinkerman, Vice-President of Region II. In the center is Robert Swift, Vice-President of Region V and Kenneth Brubacke, Vice-President of Region IV.

Newly elected member of the Board of Directors are shown below. Starting at the left is Fred Matthis, Region V, Ray Henry, Region II, Charles LaFontaine, Region III, Richmond Brown, Region II, Claude Roles, Region V, and Eugene Ochsner, Region III. Newly elected members not shown in the picture are Marilyn McKenzie and Eugene Olson from Region III, John Scurrah, Region IV.

ML&SA Christmas Gifts

Put ML&SA and Your Association Name In Print
Benefit From Pride, Interest, Membership and Visibility

1300-Q
1300-F (Optional)

1300-Q
1300-F (Optional)

1300-Q
1300-F (Optional)
JQ-3
JF-1 (Optional)

1300-Q
1300-F (Optional)
JQ-3
JF-1 (Optional)

1300-Q WINTER JACKET, Rib Knit, Quilt Lined. Rugged Nylon W/Hug-Knit Collar and Cuffs. Adult Sizes: XS, S, M, L, XL, XXL. Colors: Royal, Navy or Light Blue; Silver Grey, Scarlet.

$31.00 ML&SA plus Logo Front and Your Choice of Name plus Large Logo Back.

1300-F SPRING-SUMMER JACKET, Rib Knit Flannel Lined.
$28.00 Nylon; Colors, Sizes, Logo and Choice of Name Same As 1300-Q.

JQ-3 WINTER JACKET, Warm, Sherpa Pile Lining. Nylon With Elastic Cuff and Traditional Collar. Adult Sizes: XS, S, M, L, XL, XXL. Logo and Names Same As 1300-Q.

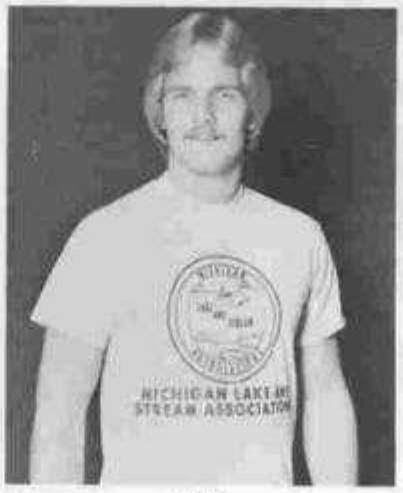
$26.00 Colors: Navy or Royal Blue; Scarlet, Black, Dark Green, Brown.

JF-1 SUMMER 2-PLY NYLON JACKET, W/Cotton Lining. Adult Sizes: XS, S, M, L, XL, XXL. Colors: Navy, Royal or Light Blue; Scarlet, Athletic Gold, Kelly Green.

$23.00 ML&SA Logo and Choice of Name Same as 1300-Q.

T-20B

T-20A



T-20B

T-20A 100% COTTON T-SHIRT. Small Imprint - ML&SA plus Logo Front Only. Adult Sizes: S, M, L, XL. Child Sizes: S 6-8, M 10-12, L 14-16.

$6.00 Colors: Royal, Navy or Light Blue; Scarlet, Gold, Kelly Green.

T-20B COTTON T-SHIRT, Large Logo With Your Choice of Name Front Only.

$6.00 Sizes and Colors Same As T-20A.

S-10A

S-10B

S-10A 100% COTTON SWEAT SHIRT. Small Imprint - ML&SA plus Logo Front Only. Adult Sizes: S, M, L, XL.

$9.50 Colors: Royal, Navy or Light Blue; Grey, Scarlet

S-10B REVERSIBLE (FRONT OR BACK) SWEAT SHIRT. Large Logo With Your Choice of Name On One Side Only.

$9.50 Colors and Sizes Same As S-10A.

ORDER FORM

GLC INCORPORATED
G-4040 Fenton Road
Flint, MI 48507
Phone (313) 767-2300

Name _____ Date _____

Address _____ Phone _____

City _____ State _____ Zip _____

Imprint (Association Name or Michigan Lake and Stream Assoc.) _____

Your Present Dress Coat Size (Men) _____ (Ladies) _____ Imprints will not wash out.

Cat. No	Quantity	Color	Description	Size	Unit Price	Amount

Enclose Check Payable To:
GLC INCORPORATED

4% Sales Tax
Shipping
Total

Christmas orders must be received by December 1st.

Keynote Speaker and Seminar Leaders for the 20th Annual Meeting of Michigan Lake and Stream Associations, Inc. Held at Hilton Shanty Creek Sports Resort and Conference Center, Bellaire, Michigan. September 25 & 26, 1981

KEYNOTE ADDRESS
Dr. Thomas Straw, Geology Dept.
Western Michigan University
Kalamazoo, Michigan

LAWS OF THE ENVIRONMENT
(Barry Commoner)

1. Everything is related to everything else.
2. Everything must go somewhere.
3. Nature knows best.
4. No such thing as a free lunch.

From Dr. Straw's "Keynote" Address.

THE LEGISLATURE AND WATER PROTECTION - Rep. Carl F. Gnodtke, 43rd District of Michigan, Lansing, Michigan

IS YOUR LAKE OR STREAM CLEAN?
Dr. Darell King, Director, Institute of Water Research, Michigan State University, East Lansing, Michigan

ACID IN OUR RAIN - Dr. J. Robert Stottlemyer, Department Biological Sciences, Michigan Technological University, Houghton, Michigan

WHAT MUST BE DONE TO PROTECT GROUNDWATER?
Robert H. Powers, Hope College
Holland, Michigan

IS YOUR DRINKING WATER DRINKABLE - Bill Marks, Assistant Chief, Bureau of Environmental Protection, Department of Natural Resources, Lansing, Michigan

WETLANDS AND YOU - Dr. Nevin Grossnickle, University of Michigan Biological Station, Pellston, Michigan

MEASURING WATER QUALITY
Dr. Laverne Curry, Three Lakes Association, Kewadin, Michigan

WORKSHOP FOR NEW & PROSPECTIVE ML&SA MEMBERS
Cecile Harbour, President ML&SA
Portage, Michigan

ALTERNATIVE DISPOSAL SYSTEMS - Paul Todd
Kalamazoo, Michigan

THE DNR SELF-HELP PROGRAM
Mary Vanderlaan, Department of Natural Resources, Lansing, Mich.

ARE YOU LOOKING FOR A CHRISTMAS GIFT SUGGESTION?
WHY NOT SEND THEM A FULL YEAR'S SUBSCRIPTION TO THE MICHIGAN RIPARIAN?

All you need to do is fill out the coupon below and mail it with your check for **$4.00** to: THE MICHIGAN RIPARIAN, 11262 Oak Ave., Three Rivers, MI 49093

THE MICHIGAN RIPARIAN SUBSCRIPTION COUPON

Please enter my subscription to THE MICHIGAN RIPARIAN magazine, published quarterly, and send to my permanent address.

One year rate:

First Name _____ Initial _____ Last Name _____

Street _____ Address _____

Town _____ State _____ Zip Code _____

RATES FOR BLACK & WHITE ADVERTISING IN THE MICHIGAN RIPARIAN

ADVERTISING DEADLINE: At least the 10th day of the preceeding month.

Amount of Space	Number of Issues One	Two	Three	Four
1 page	492	468	444	420
2/3 page	350	325	300	275
1/2 page	250	240	230	220
1/3 page	210	200	190	180
1/4 page	190	180	170	160
1/6 page	160	150	140	130
1/12 page	90	85	80	70

Inquiries regarding advertising can be sent to our General Office at: 11262 Oak Avenue, Three Rivers, Michigan 49093

The Exhibitors at the 20th Annual Meeting of Michigan Lake & Stream Associations

Mudcat Division, National Car Rental System, Inc. pictured, Dick Tillotson, Sales Director, and wife. The Tillotson's are members of Lake Sherwood Association.

Tony Groves is pictured with his display for Inland Water Quality Control.

Scott Jorgensen and Tom McNabb identify the special services they are ready to carry out for lake associations.

Arthur Laing is pictured with his display of multiple inversion method for cleaning lakes.

LOIS G. WOLFSON, pictured at left, presented a slide and tape program about the Institute of Water Research of Michigan State University. Lois is the editor of the monthly report of the Institute of Water Research entitled **"Water Impacts".** If you want to know more about the work of the Institute, write to Lois at the following address:

Institute of Water Research
334 Natural Resources Building
Michigan State University
East Lansing, MI 48824

Wanted: Walleye Rearing Ponds

By John Block
Kalamazoo Gazette Outdoor Writer

Dave Johnson, head fish biologist at the Department of Natural Resources Plainwell District Office has a problem.

High on his list of priorities now is expanding the walleye fishery in the district. Rearing the fish for stocking in local waters is the problem.

"At this point, it isn't really feasible to raise walleyes in a hatchery," says Johnson. "They just haven't been able to get them to feed on pellets. We've had the most success raising them in ponds."

There's his problem. The covered bridge ponds in St. Joseph County have been lost to the program and the district's most productive pond at Hastings, one measuring about seven acres, is being phased out.

"The city there filled in half of it and that will really hurt the production," says Johnson.

Fish reared in the pond at Hastings were earmarked for use in Barry County. There are walleye rearing ponds at Gun Lake, but those fish are stocked in that lake.

Only pond left in the southern portion of the county is a small one in Berrien County.

So Johnson has been searching the area for ponds or a site on which to construct some.

"We really need something in the southern and northern parts of the district. That's our immediate need because we are already involved in walleye management in those areas," Johnson says.

The northern tier of the district takes in Allegan and Barry counties. Berrien, Cass and St. Joseph counties are the areas being looked at in the southern section.

"I wouldn't overlook a good site in the central section," says Johnson, "because we could go both ways with the fish."

Just having a pond doesn't mean it would be adaptable as a rearing site. Johnson wants something that is at least seven feet to 10 feet deep and would take up to 10 to 15 acres. That's either one pond or more.

The ponds also have to be drainable. "If you can't drain them, you lose too many fish," Johnson points out.

Johnson has been looking at state-owned land to try to find a suitable site, but so far has been thwarted in his search.

"Sewage ponds, surplus ones, are just right," he says. "They would at least serve a short-term program until they were needed.

"I'm sure there are old ponds available in the district that nobody knows about. We'd like to find some."

Until he does, the search continues and the fishery suffers, though not from a lack of effort on the part of local DNR personnel.

Kalamazoo Gazette, April 19, 1981

Drilling For Gas And Oil In Michigan

Where? How Much? How Deep?

Do We Need Senate Bills 298, 327 and 328?

The affirmative is given by Larry Kamer, Director of Programs, Lake Michigan Federation of Chicago, Illinois.

The negative position is stated by Webb A. Smith of the law firm of Foster, Swift, Collins and Coey, P.C. of Lansing, Michigan.

YES!

Remarks by Larry Kamer
Director of Programs
Lake Michigan Federation of Chicago, Illinois

Thank you for the opportunity to express our views on Senate Bills 327 and 328. I am Larry Kamer, representing the members of the Lake Michigan Federation, an eleven-year-old public interest group which seeks to protect the valuable resources of the lake and encourage its wise use.

There appears to be renewed fascination with the idea of developing domestic oil and gas reserves, and a number of areas throughout the nation are being eyed with increasing interest for exploration. Unquestionably, much of the impetus behind this movement stems from policies determined at the highest levels of the federal Departments of Energy and Interior. This obligates officials at the state level to make determinations which strike a necessary balance between development and preservation. Such a balance takes domestic energy needs, as well as the importance of resource and habitat conservation, into account.

Already this year we have seen the unfortunate results of a decision which pushed rapid oil development without regard to environmental safeguards or even economic realities. Interior Secretary James Watt attempted to open up vast tracts of offshore lands in California which prompted some critics to label the action a "spree" and a "bonanza". Some 200 million acres of coastal land would be unlocked each year for five years under the plan, amidst the howls of protest from environmentalists, advocates of state prerogotive, and, to everyone's surprise, the oil companies themselves. Exxon protested it had neither the facilities nor the manpower to cope. Sohio complained of labor shortages. And one oil executive commented that: "Some of the 'production, production, production' talk is a little simplistic." The protests brought the faults of the plan to widespread attention, and Mr. Watt was forced to defer his actions for at least a couple of years.

Here in Michigan decisions relating to drilling in Lakes Michigan and Huron - perhaps the state's most valuable natural resources - are being considered now, at the appropriate time. Now, before the prospect of Great Lakes drilling is immediately upon us, before discussion reaches the fever pitch of California, is indeed the best time to look at the question of drilling.

The Lake Michigan Federation has always stood for wise use of the lake, not merely for preservationism. We seek a balanced set of policies which allow for industrial development and economic wellbeing as well as conservation of those resources so important to the millions who depend on the lake.

We do not, however, believe that oil drilling in the lake can be justified, and we strongly support Senate Bills 327 and 328. Let me offer several reasons for this support:

1. Senate Bills 327 and 328 are consistent with progression of policies relating to drilling in the Great Lakes. In 1967, with the International Joint Commission acting as mediator, the governments of Michigan and Ontario agreed to prohibit offshore drilling in Lakes Huron and St. Clair, and the St. Clair and Detroit Rivers. In 1969, the IJC itself recommended that offshore drilling be limited to dry gas alone, that wells containing oil be plugged, and that drilling be prohibited in areas such as the western basin of Lake Erie, which were known to contain oil. SB 327 and 328 take this previously-expressed intent and finalize it in the law.

NO!

Statement by Webb A. Smith
on behalf of
Shell Oil Company

Mr. Chairman and committee members, I come before you today to discuss SB 298, the so-called Hydrocarbon Development Act, and SB's 327 & 328, which would ban oil and gas development in our Great Lakes. Let me begin my testimony with a discussion of SB 298 which we vigorously oppose.

SB 298 purports to be a comprehensive plan for hydrocarbon development on state lands. What in fact this legislation would accomplish would be to create an enormous bureaucratic maze while at the same time causing the state's growing oil and gas industry considerable harm. My review of SB 298 indicates four major failings.

First, it is overly broad, requiring consideration, testing and assessment of all land in the state regardless of potential hydrocarbon development or even any known desire to initiate hydrocarbon retrieval efforts. The consequent waste of resources is something the state should not encourage and the citizens of Michigan should not permit.

Second, even if the state had sufficient resources to analyze and prioritize all land in the state for hydrocarbon development, the assessments would often be without purpose. Much land is already subject to exploration and production, and exploration and production may not even be contemplated on an even greater amount of acreage. Thus the Bill encompasses much land which need not come within any analysis.

Third, the Bill places a burden on the state which present resources and technology cannot meet. Analysis of all land in the state for hydrocarbon potential is an enormous undertaking, technologically impossible and more costly to attempt than can be calculated. Moreover, as more acreage is put into production and as drilling continues, data are developed that are useful in assessing hydrocarbon development potential. Thus, not only is it impossible to conduct an all encompassing analysis and priority plan, but such an overall analysis would be subject to a constant influx of new data and would be obsolete before it is completed.

The fourth general failing of the Bill is its neglect of significant state interests. The Bill is tilted in favor of preservationists' interests and gives no weight to the benefits of development. It transposes the need for hydrocarbon development into hydrocarbon conservation, and fails to address the public policy issues which would protect from impairment the development of the natural resources of the state. This ignores and violates the Michigan Constitution.

More specifically SB 298 contains proposed changes that would without question severely hamper the working abilities of the oil and gas industry in Michigan.

Sec. 7(2) (B) calls for an increase of state royalties to 25%. A 25% royalty would represent a doubling, within the year, of the royalty rate. Such an increase is unjustified. In practice, the 25% royalty would discourage oil and gas development and might cause much of the industry to move from Michigan to states with more favorable royalty terms. To the extent that development would be undertaken in Michigan, that development would occur only in areas with proven hydrocarbon production capabilities. Skyrocketing royalty payments would discourage risk taking and would stagnate development in new areas. In total, doubling the royalty would slow hydrocarbon development and add to the economic slowdown currently experienced by other industry in the state.

YES! (continued)

2. Senate Bills 327 and 328 would have the force and standing of statutory law, voted on by elected representatives accountable to their constituents, as opposed to administrative edict. Following the Santa Barbara Channel spill in 1969, a variety of administrative actions were taken in Pennsylvania, New York, Illinois, Ohio, and Michigan. Some of these policies remain intact, such as in Illinois, but all are subject to reversal or alteration. For example, Pennsylvania lifted its ban in 1977, Ohio in 1978. In Michigan, where policymaking rests with the Natural Resources Commission, it is conceivable that such a ban could be lifted with a change in Commission membership.

3. The detrimental effects of oil spills or other damage associated with oil drilling, as they affect the environment or the economy, have been documented. The Santa Barbara Channel spill, the worst offshore mishap in this country's history, incurred losses valued at more than $16 million*, specifically:

1. Cleanup costs and property damage
2. Damage to tourism
3. Damage to commercial fishing industry
4. Decline in property values
5. Damage to marine environment
6. Loss of oil
7. Reduction in recreational opportunities for resident population

Granted, this spill is distinctive as a massive, one-time eruption in an oceanic environment, but the same sorts of damage could be reasonably expected from spills in the Great Lakes, bringing us to our next point . . .

4. The full extent of possible damage related to oil drilling on Great Lakes environments has not been fully explored. Unlike other types of offshore development, drilling in Lakes Michigan or Huron would occur in potable water supplies, which could be severely damaged or temporarily lost with a spill of oil or salt brine**. The cost of alternative water supplies would have to be evaluated, as would the costs incurred on the public of incomplete treatment of available water. Effects on the lake ecosystem of long-term exposure to oil or salt brine have not been completely evaluated, an ecosystem which supports commercial fisheries valued at more than $9 million from Lakes Michigan and Huron alone***, and invaluable to thousands of fishermen and boaters.

Additionally, the Organization for Economic Cooperation and Development has summarized the adverse effects of oil pollution:

1. Decrease of aesthetic and cultural value due to spills along beaches and coasts.
2. Modification of the marine ecosystem, elimination of species, diversity and productivity.
3. Modification of habitats.
4. Decrease of fishing resources and damage to other wildlife.
5. Possible human hazards through eating contaminated seafood.****

Again, similar if not identical impacts could be expected from a lake spill, especially when the "cleansing time" these bodies of water require for elimination of certain contaminants is taken into account - 100 years or more in the case of Lake Michigan.

There is often a "hurry-up" attitude surrounding the prospect of new domestic sources and their exploitation, an attitude which can have profoundly adverse consequences. Senate Bills 327 and 328, we believe, pose the only truly effective obstacle to developers who may be overzealous or would not give adequate consideration to possible adverse external ramifications.

Furthermore, such legislation exemplifies almost perfectly the direction that environmental policymaking is necessarily taking under this federal administration - back to the states. Michigan, which not only can draw upon its experience with oil drilling in other sensitive areas, but which has long been a leader in progressive environmental laws affecting the Great Lakes, would set an important example with these bills.

We are pleased to appear before this committee, and I thank you for this opportunity to present these views.

---

* John B. Braden and Daniel W. Bromley, Natural Gas from Lake Erie: An Economic and Environmental Appraisal (Madison: Institute for Environmental Studies, University of Wisconsin, July 1980), pp. 64-65.
** ibid.
*** Great Lakes Communicator 11:8 (May 1981), special insert.
**** Braden and Bromley, p. 56.

NO! (continued)

Sec. 7 (2) (B) further calls for alternative leasing methods, including a provision that at least 50% of state land be leased by other than bonus bidding sales. This section specifies royalty bidding as an alternative to be used. This provision ignores the USGS experience with alternate leasing systems and the current Natural Resources Commission's consideration of Task Force recommendations for bidding systems. The suggested changes in the bidding system are completely at odds with that Commission's conclusions.

Also significant to this discussion is the position the state would place itself in under a royalty bidding system. Under the present bonus bidding process the state receives up-front revenues regardless of the success of the drilling activities. Under royalty bidding the state assumes the risk of receiving no revenues if the drilling is unsuccessful. As witnessed by the recent bonus bidding activity whereby the state received more than 23 million dollars from lease sales, the risk of losing substantial revenues by moving to alternative bidding procedures is great.

SB 298 would also call for limiting the leasing of hydrocarbon rights to specific depths. These depth limitations would serve to discourage new development such as the current deep tests.

Additionally, this provision may cause unnecessary and therefore wasteful drilling on our state lands. By requiring new leases for differing depths this bill may create a situation where more than one well would be necessary to reach varying depths. Moreover, the additional administrative and bureaucratic involvement in the leasing process would create more problems and provide little or no benefit to the state.

Section 8 of this legislation would impose most of the provisions incorporated in the Pigeon River agreement on all state lands considered for hydrocarbon development. This approach to controlling hydrocarbon activity on all state lands is totally unreasonable and in most cases unnecessary. The provisions of the Pigeon River agreement which appear in SB 298 were developed to meet the special situations which prevailed in that particular state forest. This should not imply that at some point in the future one or possibly all of these provisions may not be used by the D.N.R. in preparing development plans for state lands. However, it is totally unnecessary to impose these requirements on hydrocarbon development on all state lands regardless of its environmental and recreational values. It would seem more reasonable to allow the D.N.R. to prepare specific requirements for the specific needs of any state lands considered for development. In conclusion of this point, I would caution the committee not to view the limited experience under the Pigeon River agreement as a model for all future hydrocarbon activities on state lands. Let me remind the committee that only twelve wells have been drilled during the months of activity in the forest. Hardly enough experience to call for this agreement to be used for all state lands in the future. Furthermore, the bill contains many more onerous provisions for both the State and industry than does the Pigeon River agreement.

This last April, the D.N.R. adopted new rules following an 18-month effort by the Oil and Gas Task Force. That Task Force developed its recommendations through several public hearings and with impressive expert assistance. In several important respects Senate Bill 298 would sweep aside that work before its recommendations and the resulting rules have been tested. The new D.N.R. rules should be given a chance.

These above-mentioned points are just a few of the more obvious concerns we have with this legislation. Not mentioned in detail are the bill's requirements for plans, committees, reports, disclosures of seismic data and other bureaucratic processes that appear to have no public purpose while placing new strains on an already beleaguered state budget. This bill would be extremely burdensome to both the State of Michigan and industry and will cause delay and loss of hydrocarbon reserve development and corresponding revenue to the State due to loss of incentive and increased cost and delays to industry.

Let me now shift my remarks to SB 327 and SB 328 which would ban oil and gas activities in the Great Lakes. At the present time Shell Oil Company is studying the impact of these bills and withholds detailed comment until later in the legislative process, except it would like to make two specific points. First, we would note Sec. 28 Part (2) of SB 328 which reads, "a person shall not remove oil or gas from/or under the bed of the Great Lakes or the bays or harbors connected with the Great Lakes." This language would not only prohibit offshore activity but would also prevent directional drilling activities from onshore which may tap hydrocarbons beneath the bottom lands. This prohibition would serve no purpose in protecting the environmental integrity of the Great Lakes. In fact this language would require that six existing wells be closed and that production lost. (See attachment of D.N.R. memo for locations of these localities.)

Decaturites Harvesting Weeds to Save Lake

By PAM MOORMANN
Kalamazoo Gazette Correspondent

DECATUR — In a move to keep Lake of the Woods from becoming "Lake of the Weeds," property owners here are harvesting them.

The property owners, who formed the Lake of the Woods Improvement Association about a year ago, have set out to improve the water quality with a number of projects.

The most recent is an odd-looking craft which cruises the lake gobbling up under-water weeds.

The harvester pulls the weeds from the water, taking with them some of the nutrients which spur their growth. The more the harvester is used, the less likely weeds are to return, says Brown Grosvenor, who heads the lake's board.

The 90 members of the lake association assessed themselves $25 each to raise the $2,200 to buy the machine, which is one of two manufactured by Clark Equipment Co. several years ago. Decatur's weed harvester came from the village of Cassopolis, which used it on Stone Lake for a time but then let it sit idle.

The device needed a lot of attention — provided by lake residents Sam Strykul and Bernard Thomas — and an infusion of $2,000 for repairs and new equipment.

The machine was launched June 16 amid the popping of champagne corks. Strykul and Greg Thomas, who have been doing the "driving" hope to de-weed the entire lake at least once and possibly twice this year.

"We are proud of the machine, and feel we have met a tremendous weed infestation problem head-on," Grosvenor said. "And we did it in a way we feel is environmentally sound."

When the lake association first contacted the Michigan Department of Natural Resources about the weed problem, the DNR cautioned against the use of chemicals. The poisoned weeds would just rot in the lake and provide more nutrients to nourish still more weeds, the association was told.

Lake residents felt water quality threatened by burgeoning weed population.

Strykul and Thomas rig the harvester to a conveyor of the type farmers use to fill silos, and channel the uprooted weeds onto the shore to dry.

The weeds, which in large measure grow because of excess nutrients in the lake, are themselves excellent sources of nitrogen. People interested in picking up some of the free mulch can contact Grosvenor at 423-2211.

Greg Thomas hoists a mound of weeds. Dried they make a good garden mulch.

THE MICHIGAN RIPARIAN

11262 OAK AVENUE
THREE RIVERS, MICHIGAN 49093

2nd Class postage paid at Three Rivers, Michigan and additional mailing offices.

(Note to Subscribers: So that you will not miss a single issue, please notify us promptly of any change in address.)