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Pictures on Front Cover

The pictures on the front cover were taken by the Editor on August 22, 1992.

If you have not visited the Soo Locks or taken the Boat Tour in recent years, you owe it to yourself and your family to do so as soon as you can arrange it.

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GUEST EDITORIAL

Lakes Preservation League
THE PRESERVER
October, 1992

By Ann McKie

As a private citizen of Lenawee County, Michigan, I submitted this communication to the Woodstock Township Board at their monthly meeting on August 3, 1992:

I would like to speak as a private citizen in behalf of an entity which cannot speak for itself — the gifts which were bequeathed by Nature to fortunate areas of our state — the inland lakes of Michigan. The desirability of these gifts has been demonstrated in recent decades by the proliferation of "man-made" lake development.

Were the 2,000 acres which Devils and Round Lakes cover evaluated as commercial holdings I would maintain that their value would far exceed 2,000 acres of farm land in this county. At $1,000 per acre the lakes ticket would amount to $2,000,000. But I am not speaking in an attempt to assess the specific value of these lakes. I am here to persuade that their protection and preservation is worth your attention.

Were anyone capable of buying these beautiful expanses and moving them to another site, as manufacturing plants can be relocated, how much would governing bodies such as Woodstock and Rollin be willing to concede in persuading the owners to remain in your township? Here is an asset which is better than a commercial establishment with no start-up cost and minimal upkeep.

The Department of Natural Resources is attempting to enforce the laws which protect our lakes, but what are the governing bodies and citizens doing to assist the DNR in its effort?

In these tight economic times mistakes are being made — monumental errors which could devastate our environment. Pressure is being applied by commercial enterprises to relax our regulations in the name of recovery.

I think I need only remind you of the devastation visited upon the Great Plains states during the 1929-1941 depression. Have they yet recovered from the over cultivation which created the "Dust Bowl?"

I plead with you to support and encourage vigorously the efforts of the DNR. Enact protective regulations and invest in their enforcement!

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Shakey Lakes Association Strives for Solution to Aquatic Weed Problem

By: T. M. Burton, Professor, Departments of Zoology and Fisheries and Wildlife, Michigan State University, East Lansing, MI 48824 (Ph.D in Aquatic Ecology from Cornell University, 17 years teaching at MSU - 1975-92);
M. J. O'Malley, Department of Zoology, MSU (at the time of the study — currently working with wetlands mitigation with the Department of Transportation, Lansing, MI) (B.S. in Environmental Science from MSU);
R. E. Kinnunen, District Extension Sea Grant Agent, Michigan Sea Grant Extension, Michigan State University, Upper Peninsula Extension Center, 1030 Wright Street, Marquette, MI 49855.

Introduction

In the mid-1980's, the Michigan State University Cooperative Extension Service and Michigan Sea Grant Extension were invited by concerned property owners of Shakey Lakes to examine the aquatic weed problem in their lake system. The aquatic weed problem was beginning to interfere with a variety of recreational activities such as boating, fishing, and swimming.

The Shakey Lakes system consists of five lakes located in the southwestern part of Menominee County in the Upper Peninsula of Michigan a few miles inland from the mouth of Green Bay near the Wisconsin border *(Figure 1)*. The interconnected lakes making up the system are Bass and Baker (92 acres), Becker (8 acres), East (70 acres), Resort (100 acres) and Long (80 acres) Lakes. The depths of these lakes

Figure 1 —**Map of the Shakey Lakes system. Drawn by D.A. Burton from a USGS topographic map with 10 feet contours (dotted lines) drawn by eye from the Institute of Fisheries maps of the lakes available from the Michigan United Conservation Clubs.**

range from 8 feet to 43 feet with all of Becker, most of Bass and Baker, and a substantial part of East Lake being less than 10 feet deep (Figure 1). Depths of less than 10 feet, water of reasonable clarity (Secchi depths usually exceed 10 feet), and nutrients brought in by the Shakey River make growth of rooted aquatic plants in these areas of Shakey Lake almost a certainty. In fact, the 1942 map of the lake by the Institute of Fisheries Research showed that most of the shallow areas supported weed growth at that time. The deeper, central portions of Resort and Long Lakes have minimal weed problems. Riparian owners around Becker Lake, in particular, have difficulty keeping access to the rest of the lake system because of the aquatic weed problem. Bass and Baker Lakes are separate lakes, although they are connected to Resort Lake by a culvert, while the other four "lakes" are all a part of a single lake system on the Shakey River, a tributary of the Menominee River. The Shakey River enters the shallow Becker Lake and exits from Long Lake at an outlet structure that controls water level in the system.

Several of the property owners of Shakey Lakes expressed an interest in forming a lake association so that the aquatic weed problem could be addressed from a unified front. The Michigan State University Cooperative Extension Service and Michigan Sea Grant Extension hosted several meetings to assist property owners in forming a lake association. Shortly after the Shakey Lakes Association was formed, some of the members wished to explore the effects of a winter water drawdown on the aquatic weeds in the lake system. A partial drawdown could be accomplished by removing the water level gates at the outlet structure from Long Lake.

T. M. Burton of the Departments of Zoology and Fisheries and Wildlife at Michigan State University was contacted in early 1986 by the Shakey Lakes Association about the possibility of conducting a study on the effects of a drawdown on aquatic weed control in Shakey Lakes. Burton and M. J. O'Malley agreed to conduct such a study with 1986 being a season of data collection before the drawdown, tentatively planned for the winter of 1986-87, and with data collection on the effects of the drawdown to be conducted in 1987 and beyond. The total membership of the Shakey Lakes Association failed to support a vote for the drawdown because of its controversial nature. Thus, the original purpose of the study could not be fulfilled.

The results from these studies were presented orally in 1986 and 1987 to the annual meeting of the Shakey Lakes Association and were also presented in 1987 to the Menominee County Board of Commissioners (they had provided partial support for the project). Aquatic weeds continued to be a problem in Shakey Lakes and, in November 1991, the Shakey Lakes Association requested the formation of a working committee to review the aquatic weed problem and prepare a recommendation for action for the Association. Besides members of the Shakey Lakes Association, various county and state agency representatives were present at this working committee meeting. The results of the 1986-87 Michigan State University studies were presented to the committee by R. E. Kinnunen at the November meeting and a list of recommendations were developed to address the aquatic weed problem. This paper includes a synopsis of the findings and recommendations presented to the committee.

Results — Chemical Indications of Lake Stress

In most lakes in temperate regions such as in Michigan, the lake stratifies in the summer because of density differences between the cold, heavy bottom water and the warmer, lighter top water into a circulating warm top layer in contact with the air above the lake and into a relatively stagnant colder bottom layer that has no contact with air. In the deeper part of Shakey Lakes in Resort Lake, this thermal stratification had already taken place by the start of the study on May 16, 1986 *(Figure 2)*. Thermal stratification took place some time between March 6 and May 5 in 1987. This thermal stratification eliminated reoxygenation of the bottom water below the top 4-5m

(Continued on Page 8)

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Shakey Lakes Association Strives for Weed Solution

(Continued from Page 7)

circulating layer resulting in oxygen in the bottom water being depleted over the spring and summer by respiration of animals and microbial populations in this layer. This deoxygenation was essentially complete below 7m by mid-June in 1986 and continued this way through mid-August *(Figure 2)*. Deoxygenation of bottom water took place by May 20, 1987, and continued through the final sampling date on August 28, 1987. From mid-August until early October, 1986, the upper layer cooled enough to allow reoxygenation of the water deeper and deeper into the water column *(Figure 2)*. By October 20, temperature and dissolved oxygen was essentially the same throughout the water column.

If oxygen is totally depleted in the bottom water during the summer as occurred in Shakey Lakes in both 1986 and 1987, the lake is usually classified as eutrophic meaning that too much plant growth has occurred in the circulating, top well-lighted layer. This plant material settling into the bottom layer decays and depletes oxygen as it is respired by microbial and animal consumers. This oxygen depletion resulted in numerous negative changes including release of phosphorus from bottom sediments (soluble reactive phosphorus increased in the bottom water from values of 10-15 µg P/L that were characteristic of the top layer to 20-30 µg P/L after oxygen values approached zero) and inability of fish and many insects to use

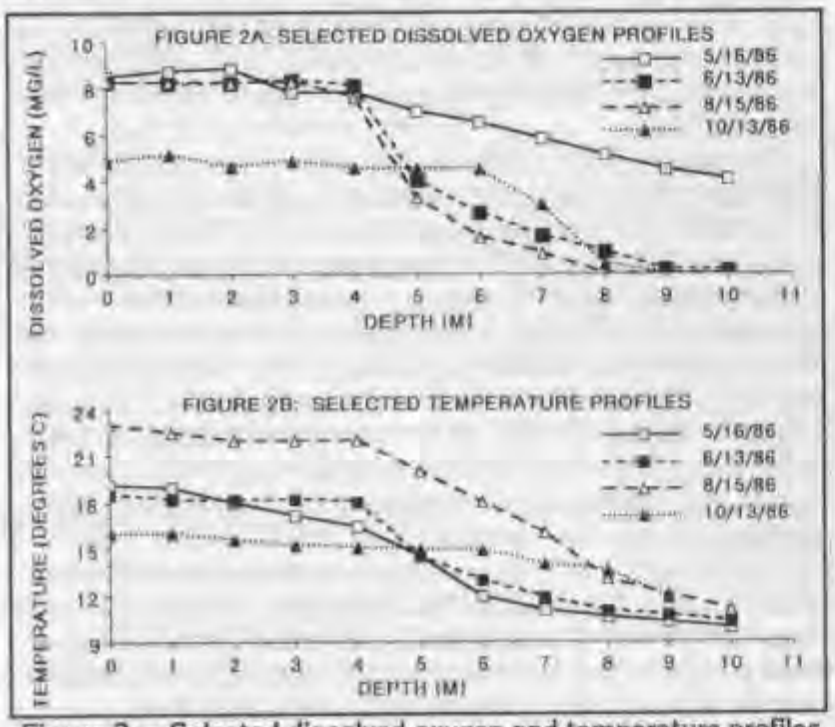

***Figure 2* — Selected dissolved oxygen and temperature profiles for Resort Lake in 1986.**

this deoxygenated bottom layer. Soluble reactive phosphorus (the form of phosphorus that is available to plants for growth) values in the upper circulating layer of Shakey Lakes suggested that the lake could be classified as either eutrophic or in advanced stages of mesotrophy and corroborate the classification based on dissolved oxygen loss in the bottom water. Other chemical changes including decreases in pH and changes in alkalinity also accompanied loss of oxygen from the bottom water just as they are often described in limnology texts.

A substantial drop in dissolved oxygen in Shakey Lakes occurred between September 10 and October 3, 1986, from normal summer readings of 8-9 mg/L in the top 4m of the lake to values of 4-5 mg/L in the top 6m of the lake on October 3 *(Figure 2)*. The most likely explanation is that respiration and decay of aquatic weeds during autumn cooling and plant die-back was responsible for this drop. Alternate explanations include blooms of algae in the water column or substantial loading of organic matter from the watershed. Dissolved oxygen levels below 5 mg/L are known to be stressful to many species of fish. The lake recovered to near saturation of the entire water column with dissolved oxygen (10-11 mg/L) by mid-November.

After the lakes became ice covered, dissolved oxygen declined gradually throughout the winter from the 10-11 mg/L in November to 2-3 mg/L below 2m in March, probably as a result of decay of the aquatic weeds over the winter. Dissolved oxygen values of 4-5 mg/L from the ice surface to 1m occurred, probably as a result of plant production just under the ice surface. The winter of 1986-87 was relatively mild. A thicker or more opaque layer of surface ice and/or increased production of aquatic weeds could lead to winter kill of fish in Shakey Lakes. Local anglers report that such fish kills have occurred in Bass Lake in recent years. This loss of oxygen over the winter also means that a winter drawdown of the lakes would be risky. A drawdown would mean that plant decay would be concentrated in less water and could increase the likelihood of a fish kill.

Soluble reactive phosphorus values as discussed above were above the 10 µg P/L needed to support excessive plant growth, as were values for inorganic nitrogen (mean of 57 µg N/L in 1987) in the surface water. Concentrations of these nutrients from the Shakey River inlet water rarely exceeded the concentrations in the lake or in the outlet water indicating that the lake may have been receiving substantial inputs of nutrients from other sources. No attempt was made to conduct a complete nutrient budget for the lake. However, likely additional sources of nutrients include septic systems of the substantial number of homes and cottages around the lake; inputs from the campground and county fair activities that take place in Shakey Lakes Park; groundwater inputs and internal recycling of nutrients from the sediments. Present and past agricultural practices in the Shakey Lakes drainage could have contributed to the nutrient loading of the lake system. Currently, there are 10 active farms in the Shakey Lakes drainage basin with farm practices including dairy, beef, row crops, hay, and Christmas trees. An additional 8 farms were active in the past with farm practices including dairy, row crops and hay. Even the reasonably low concentrations of nutrients now being received in the inlet waters coupled with other likely sources mean that more than enough nutrients are stored in the sediments to support high levels of aquatic weed growth in the shallow areas of the lake. This is especially true in the shallow inlet area of the lake system known as Becker Lake *(Figure 1)*.

Aquatic Plants

Four plant transects (one in Becker Lake, two in shallow areas of Resort Lake, and one in a shallow bay of Long Lake) were sampled with 10 samples being taken at random points along each transect. The greatest plant biomass was recorded from Becker Lake and the least from Resort Lake. Biomass varied from 124g dry weight/m^2 in Becker Lake to 35 g/m^2 for

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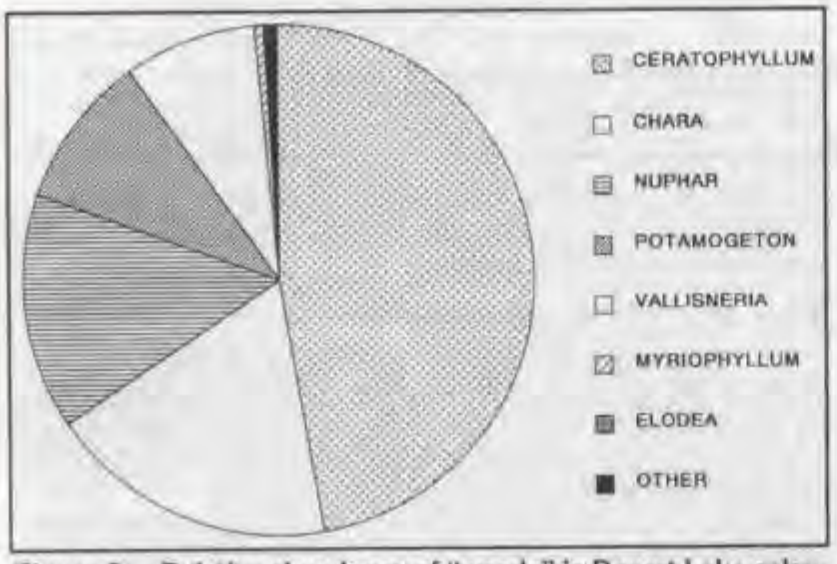

Figure 3 — **Relative abundance of "weeds" in Resort Lake calculated from an average of two transects across the northern arm of the lake (see *Figure 1*). Note the dominance of coontail *(Ceratophyllum)* and the presence of asian pond weed *(Myriophyllum).***

one of the Resort Lake transects. This biomass is moderate to high. The good news is that these values could be much worse; values as high as 600g dry weight/m^2 are reported in the literature.

Species composition was quite diverse with most plants that grow in lakes in Michigan being found. However, plant biomass was dominated by coontail *(Ceratophyllum)*, muskgrass *(Chara)*, the "water lily" *(Nuphar)*, and several species of pondweed *(Potamogeton) (Figure 3)*. Coontail is a floating submerged species. Reports from Wisconsin suggest that it simply floats with the receding water during drawdowns and comes back even stronger after drawdown. Apparently, reduction in competing species during drawdown can lead to increases in this species after drawdown. Thus, a drawdown might even make the situation worse. Eurasian pondweed, *Myriophyllum*, was also present in Shakey Lakes but was not a major factor in species composition. Another management technique to be considered for Shakey Lakes is harvesting and removal of the aquatic weeds. There are reports that harvesting can lead to increases in *Myriophyllum*, since it can regenerate from all the small fragments produced and left in the water during harvesting.

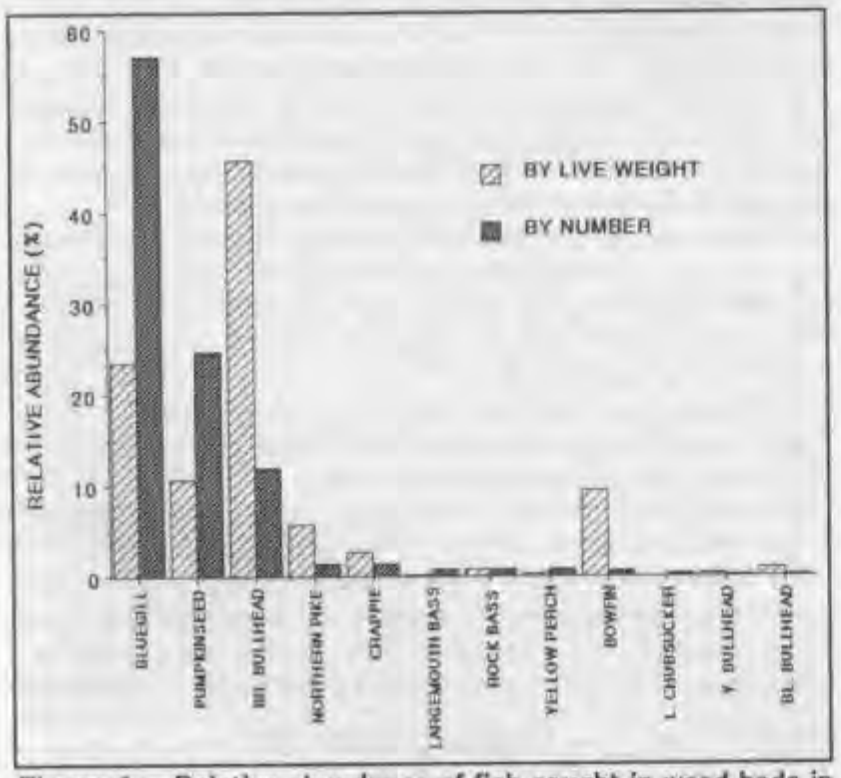

Figure 4 — **Relative abundance of fish caught in weed beds in Shakey Lakes in 1986 with fyke (hoop) nets.**

Fish

A large variety of fishes use the weedy margins of the lake either as a habitat for adults (bluegill) or as a nursery area for juvenile fish (large mouth bass). Fyke (hoop) nets were borrowed from the Michigan DNR offices at Crystal Falls and set in weedy margins of the lakes in 1986 and 1987. More than 1100 fish were caught and released back into the lake in 1986 *(Figure 4)* and more than 1200 were caught in 1987. Bluegill sunfishes dominated the catch by numbers in 1986 *(Figure 4)* and 1987, while brown bullhead were more important in terms of the total weight of fish caught *(Figure 4)*. Average weights and lengths of fish caught indicated that stunting was not a major problem in the lake.

Conclusions

The conclusions of this study are as follows:

(1) The main lake is eutrophic and has little oxygen below 6m (19.5 feet) during most of the summer.

(2) Nutrients in the water column are adequate for plant growth especially when combined with internal recycling of nutrients from the sediments by rooted plants. Adequate nutrients and large areas of the lake system with depths less than 5-6 feet result in an inevitable weed problem. This weed problem cannot be eliminated, only managed.

(3) Aquatic weed beds include a high diversity of plant species. The most common species are coontail and water lilies.

(4) Nutrients in inlet water were not consistently higher than nutrients in lake water indicating that it may not be the only source of nutrients for the lake. Likely, but unsampled sources, include septic systems of the many homes and cottages around the lake, inputs from the heavily used campground and other activities associated with Shakey Lakes Park, leaf fall and rainfall into the lake and groundwater inputs. The septic systems and runoff from the Park are likely to be the most serious problem other than agricultural runoff into the Shakey River inlet. There are 10 active and 8 retired farms in the drainage basin with farm practices including row crops, dairy farming and hay production. Row crops and dairy farming are sources of substantial nutrient inputs to streams according to the literature. The fact that concentrations of phosphorus and nitrogen in inlet water was not very high indicated that present farming practices are reasonably successful in controlling runoff to the Shakey River. Past practices may not have been as successful. Phosphorus release from the bottom sediments into the overlying water was indicated, as expected, during periods of deoxygenation of bottom water in the summer.

(5) The weedy areas of the lake contain a high diversity of fish species. The most common species caught were bluegill and pumpkinseed sunfishes and brown bullhead. Juveniles of the potentially larger fish (large mouth bass, bowfin, northern pike) were caught in the weedy areas of the lake indicating the importance of these areas for smaller fish as a nursery area and/or as a refuge from predation by larger fish.

(Continued on Page 22)

MLSA Annual Meeting
"When is it Appropriate to Use Aquatic Herbicides?"

By Dr. Charles P. Cubbage, Agriculture Environmental Coordinator, Michigan Department of Agriculture, 10/3/92.

Introduction

It is a distinct pleasure to be invited to participate in Michigan Lake and Stream Associations' annual meeting. MLSA has provided its members strong leadership for many years, focusing on a variety of issues and critically examining all aspects of those issues, in part because of the diverse interests represented by the associations. Your credibility also stems from the involvement of people like Leighton Leighty, Cliff Humphrys, and Wally Fusilier, as well as many other experts. Last, but certainly not least is the unselfish leadership, dedication, and knowledge provided by Don Winne, without whom MLSA would not be what it is today.

I had prepared my notes for the meeting shortly before Director Schuette received a letter asking for our comments on a presentation by Dr. Hargett of Sandoz, Ltd. There were so many similarities, that I felt compelled to include his perspectives as a representative of the chemical industry. At the June, 1992, Joint U.S. Environmental Protection Agency (EPA) and U.S. Department of Agriculture's (USDA) National Integrated Pest Management (IPM) Forum in Arlington, Virginia, Dr. Hargett emphasized the need to increase the use of integrated pest management. Extensive use of a single management tool because it is easy or convenient has produced counter productive results.

This over reliance on pesticides has resulted in resistance among insect, "weed" and other pest populations. From the manufacturers' perspective, resistance limits the usefulness of a product that took millions of dollars and years of research and testing before it could become registered for use. Users will switch to other products as resistance develops and hence cut profits if they shift to a competitor's product. Aquatic weeds are part of this pest control issue.

Setting the stage

Dr. Hargett noted that if pest management is to be successful, we need to take into account the biology of, not only the pest but, the biological system in which the pest creates the problem. The "management" includes cultural, mechanical, biological, and chemical techniques and the concept of tolerable but controllable levels of the pest. Chemical management involves the use of pesticides and fertilizers. As an aside, I am using the legal definition of the term pesticide. In "legalese" the term pesticide includes herbicides, fungicides, insecticides, and redenticides. Mechanical control refers to practices such as aquatic weed harvesters and dredging. Examples of biological control would be the use of the bacteria, *Bacillus thuringensis*, or Bt which is used to control gypsy moth or the white amure, a fish reputed to be a voracious eater of aquatic weeds. The remaining category, cultural controls, refer to making changes in our practices, behavior, or regulations that impact the problem, such as the use of non-phosphate fertilizers, green belts, prohibition of motors on lakes, or sewer construction.

Not all the options that can be developed under each of these categories are equally useful, but "useful" is a relative term depending on who benefits, who pays and a host of other considerations. Before making choices, you must ask a wide range of questions and evaluate the responses. For example:

When is the pest most susceptible to each of the control options? How do the economics of each compare? What are the environmental risks? Is there a potential for resistance development? Are the solutions socially acceptable? What are the relative trade-offs, etc.?

The People Problem

Dr. Hargett recognized the need to move away from the confrontational approach we so often see when affected interest groups are at odds. Our present local and state political infrastructure does not necessarily lend itself to conflict resolution. In fact, it may contribute to the conflict.

However, you should realize that the governmental framework is only a formal process, and not the only way by which problems can be resolved. A great deal is known about more effective techniques. And that was one of the points he made, i.e., we must develop and use communication methods that involve all who have a stake or responsibility in the issue. For lake issues, the stakeholders could include the township and county officials, environmentalists, lake management firms, lake boards, and state agencies (DNR & MDA).

There are techniques that ensure faster, more reasonable, and less costly solutions. "Getting to Yes" by Fisher & Urey, two professors at Harvard, is an excellent reference. These two gentlemen developed the protocol that was used for the Camp David Peace Accord and also were involved in securing the release of our Iranian hostages. The other item is "Improving Dialogue with Communities", put out by the New Jersey Department of Environmental Protection. I will provide a copy of the New Jersey material to MLSA for inclusion in your newsletter or publication if you find it useful.

Options

Although some may be surprised by Dr. Hargett's comments because he is employed by the chemical industry, I find that his points represent enlightened self-interest on the part of the industry and are consistent with their long term success. He emphasized the need to evaluate cultural and biological options and that the best approach is often to select the methods which increase the "clout" of your effort. I would strongly warn you against being pressured into the "either/or" mentality often presented. Think in terms of combinations of solution options that will best solve your concern.

The concept of Integrated Pest Management (IPM) is nothing more than having you look at the control options and using them alone or in combinations. Your task should be to:

(1) identify the users and use(s) of your lake or stream,

(2) define the problem,

(3) identify the causes, the biology of the aquatic pest or "weed", the ecology of the system in which the pest lives, your (and other affected persons') priorities,

(4) select the times and tool(s) to address the problem,

(5) and of course, cost (but over what time frame?).

Solutions may include cultural (limiting nutrients via lawn care, run-off management), mechanical (drawdown, harvesting), biological controls (white amure, duck and geese removal), and chemical options used alone or in combination.

Pesticides — Department of Agriculture: Role and Policy

The Michigan Department of Agriculture (MDA) regulates the use of pesticides under the authority of the Michigan Pes-

ticide Control Act of 1976 P.A. 171, as amended in 1988, and from the Federal Insecticide Fungicide and Rodenticide Act (FIFRA) that U.S. Environmental Protection Agency (EPA) is responsible for at the federal level.

The MDA director is charged with ensuring that a pesticide's use "will not cause unreasonable, serious, chronic hazard to human health or long-term environmental damage". If there is sufficient data to suggest that a product has potential to cause problems, the director has the responsibility to not register it or to revoke an existing product registration. Michigan has been responsive, having been the first state to ban DDT, chlordane, and tributyl tin. Through Michigan's leadership, the use of mercury in latex paint was halted.

Inherently, pesticide use has the potential for release beyond the environment for which it was intended. And although modern pesticides are generally shorter lived and more pest specific, non-target species damage and other impacts are of concern. Thus, MDA encourages the reduction of pesticide use whenever possible, a policy echoed by Dr. Hargett in his presentation at the IPM Forum this summer.

Both federal and state law spells out what is needed to ensure proper pesticide product use. Over the last 4 years, MDA has worked closely with the agricultural community, industry, environmental groups, and other interested persons to develop regulations that protect the public, applicators, and the environment. The newly adopted state regulations (636 & 637) include better training for pesticide applicators by requiring that they understand the pesticide label, mixing and loading directions, safety precautions, use and calibration of equipment, target organisms, environmental fate, etc.

In addition to working with industry to insure qualified applicators, MDA also investigates all complaints of pesticide misuse or exposures. We are one of the few state departments of agriculture that has its own toxicology unit, and hence the ability to review, respond, and participate directly in pesticide related health incidents or issues.

The amount and type of information EPA now requires for the registration of new products or re-registration of current pesticides is more comprehensive than earlier requirements, in part due to the increased public concern for safety. The cost of animal testing to estimate human risk or doing epidemiological studies is prohibitive. Needless to say society frowns on human testing, although we unfortunately find accidental exposure data valuable. Without human information, the process of risk assessment attempts estimate what could happen to humans based on extrapolations from animal test results. Not an easy task for the public to understand.

Relative to herbicide applications and pesticide safety in general, let me provide you with my opinion (as a biologist and environmental scientist with a background in environmental epidemiology). I believe that better testing is needed particularly on old products. Properly used, I believe very few people are at risk of acute illness. There are valid questions about more subtle, long term health and ecological impacts, which are very costly to determine. MDA will continue to be alert to health and environmental information that might indicate a need to re-examine a products registration status.

MDA investigations clearly show that the people most at risk are those who handle, mix and load, and make pesticide applications. Perhaps even more at risk is the homeowner who obtains herbicides and applies it by him or herself. They have none of the training or access to the personal protective equipment available to certified applicators.

With respect to the aquatic herbicide application industry, MDA shares joint but separate responsibilities with the Michigan Department of Natural Resources (DNR). Application permits are secured from the DNR, while pesticide manufacturers must annually register their products with not only EPA, but with MDA. Also, to operate in Michigan, commercial firms must be licensed and have properly certified or registered applicators. To insure compliance, MDA conducts Planned Use Investigations that involve observing applications, and checking equipment and noting credentials and records. The department also prides itself in initiating investigations of complaints within 24 hours.

Points to Consider regarding Aquatic Pesticide Uses

What are your management objectives? Wht might other's objectives be? Are they compatible objectives? Fishers, sailors, powerboaters, skiing are only a few. Far and away, the most common activity is just viewing.

There are implications for non-riparians. Agricultural activities in a lake or stream drainage basin may have an impact. If you expect to have success in eliminating or reducing such an impact you need to be ready to protect the farmer's livelihood also.

Putting an herbicide in water releases it into an invisible environment, one in which drift is likely. The direction and extent of drift is seldom given any real consideration. Rain, irrigation, release of water from a dam, lake inlet direction and flow rate, lake-bottom river channels, wind speed and direction, and other factors make drift impact on areas outside the treatment zone an uncertainty. Because their use is invisible, we run into the "out of sight, out of mind" phenomenon. Personally, I believe there should be an assessment of these factors before using aquatic herbicides. The use of dye tracers would seem useful either as a pre-application evaluation or of actual drift if used concurrently with the application.

The interaction of chemicals in water is dependent on a number of factors, any given dose of Sonar, for example, is likely to have a much greater impact in Michigan than in the south where its use was piloted. There, the higher water temperatures cause it to break down much faster than here, and hence its effects are more pronounced in our colder waters. Other properties of water such as alkalinity, dissolved oxygen (DO) level, pH, iron content and others may affect the efficacy of a given product.

With respect to the use of any of the IPM tools, I would suggest you should seek answers to the following questions:

(1) Are there any implications for other property owners or water users?

(2) What are the seasonal and long-term after effects and results? With some chemicals, there might be sediment build-up, bioaccumulation, return to the water column, changes in the types of species present in the food web, e.g., trading algal blooms for rooted plants, etc.

(3) Would drift constitute trespass if damage occurred to property others?

(4) Does the person or firm offering a service have a bias or vested interest in any particular solution? That is not necessarily wrong, you just need to be aware of it in your evaluation of options.

(5) Given the affected parties in your situation, have you set clear priorities? Are they IPM based? Are the options realistic? Do they fit in with a 5 or 10 year plan?

(6) Does the management strategy include the assessment of the impact on the ecology?

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New ML&SA Members

Forest Lake Association, Arenac County
Ralph Kelly, President - 1720 Members

Goshorn Lake Property Owners Association, Allegan County
David Howells, President - 44 Members

Nevins Lake Improvement Association, Montcalm County
Jack Bosch, President - 65 Members

Beretha Lake Property Owners Association, Clare County
Vern Osgood, President - 64 Members

Selkirk Lake Improvement Association, Allegan County
Frank DeVos, President - 40 Members

Hunter Lake Heights Association, Alcona County
Martin Stuck, President - 30 Members

Shawnee Shores Civic Improvement Association, Lenawee County
Harvey Hawkins, President - 97 Members

Middleboro Lake Association, Kent County
Dennis Williams, President - 97 Members

Lone Pine Association, Oakland County
Marilyn Maker, President - 300 Members

Diamond Lake Association, Mecosta County
Craig Turnbull, President - 40 Members

Union Lake Shore Association, Oakland County
Ron Sesvald, President - 75-100 Members

Richard L.S. Brown, elected President of Michigan Lake & Stream Associations for 1992-93. More information about Dick on the next page.

Thank You

A special thanks to the following businesses and individuals for their contributions to the ***"Silent Auction"*** *held at the 31st Annual ML&SA Conference:*

Boyne Highlands Resort, Harbor Springs
Mr. & Mrs. Joe Landis, East Lansing
Mr. & Mrs. Richard Brown, Fenton
Aerial Graphics, Grand Rapids
Clarion Hotel, Big Rapids
Lake Weed-Away, Ada
Shanty Creek Resort, Bellaire
Sixty Lakes Marina, Long Lake
Stoney Creek Trout Farms, Grant
Water Quality Investigators, Dexter

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Water Quality Specialist — Dr. Wallace Fusilier
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313-426-8972

Hydrogeologist — Richmond Brown
Rte. #1 Box 304, Central Lake, MI 49622
616-544-6680

Biologist — Richard Wolinski
2450 Baker Road, Dexter, MI 48130
313-426-3323

Michigan Lake & Stream Association's 31st Annual Conference Lauded

We are very pleased with the attendance of 190 persons representing 65 lakes at our Annual Conference.

We have had calls and letters from some of the 14 companies that set up exhibits, saying that it was one of the best facilities they had seen.

Comments about the rooms and food were very positive, and we could not have asked for better weather.

Michigan Lake & Stream Associations has moved forward this year. We now have 225 lake association members, which is 24 better than last year, and last year with 201 had set a record.

We have expanded our Secchi Disk water clarity measuring program which now includes 98 lakes.

We have begun a water quality testing program and 27 lakes have joined this program. The water quality testing includes six parameters. They are: Alkalinity, Chlorophyll-a, Conductivity, Nitrates, Phosphates and pH. We expect to carry out a spring phosphorous study with participating lakes next spring. Individuals on lakes are to collect the water samples, freeze them and deliver them to the nearest DNR office. If you want to get in on this program, we need to hear from you or your lake association. You will need to participate in the Secchi Program to be eligible to participate in the phosphorous program. The cost for the Secchi program is $35.00 and the phosphorous program is an additional $15.00 for a total of $50.00.

ML&SA Awards Presented

1992 Outstanding Regional Director Award

JACK VANDENBERG - REGION 4

1992 Outstanding Vice-Presidential Award

DENNIS ZIMMERMAN

Clifford Humphrys Honorary Award

BARBARA AND CHARLES DOTTERRER

Richard L.S. Brown

The President of Lake Fenton Property Owner's Association becomes President of Michigan Lake & Stream Associations Inc.

Dick was elected President of Michigan Lake & Stream Associations by the Board of Directors at their Annual Meeting held on Sunday, October 4, 1992, at Boyne Highlands Inn at Harbor Springs, Michigan.

Dick is the thirteenth person to serve the office of President during the thirty-one years that ML&SA has existed.

We believe that Dick's experience in supervisory and administrative responsibilities in his 29 years with General Motors will mean that ML&SA will move forward in its efforts to help lake associations protect and preserve the water resources of Michigan.

Dick, and his wife Sharon, live at 13355 Lakeshore Drive, Fenton, Michigan. Sharon is very active in the Lake Fenton Association, and believes strongly in the objectives and projects of ML&SA.

Merrill "Pete" Petoskey Sworn In As A Public Member Of The Michigan Oil & Gas Advisory Board On September 22, 1992

"As a Board, it is our responsibility to keep the Supervisor of Wells (Roland Harmes, Director, DNR) informed and advised on oil and gas activities in Michigan, as permitted by Public Act No. 61, 1939, as amended.

My wife and I reside near Lewiston in southwest Montmorency County. As such, we are quite familiar with activities in Oscoda, Crawford and Otsego counties, as well as our own.

I ask that any person who wishes to express a feeling or opinion on oil and gas activities in Michigan should write down your ideas and send them to me. Of particular interest will be your comments on Antrim Gas development in Northern Michigan. Your comments will be transmitted to members of the Advisory Board, and to the supervisor of wells.

Merrill L. Petoskey, 2829 Cobb Road, Lewiston, MI 49756

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ML&SA Member News

BARRON LAKE ASSOCIATION — Cass County
Bruno Eidietis, President

Sewers for Barron Lake Being Studied

At our July meeting, our members posed numerous questions to the candidates for Howard Township Supervisor about the possibility of extending sewer lines into our Township. Opinions varied, both among our members and the candidates. What became very clear was that no one present had a good idea of just what was involved in the process of bringing in sewers.

With the help of Fred Leet, our current supervisor, we have arranged to bring Tom DeNeau of Wightman & Associates to our September meeting. Wightman & Associates has been involved in designing a number of sewer systems in our County. He will address both the process of requesting sewers and the typical cost of such a project.

DEWEY LAKE ASSOCIATION — Cass County
James Wardlaw, President

Lake Management

Dr. Ervin of Freshwater Physicians, Inc., has done some testing and the data collected in the lake indicates that the lake is a very soft water lake, which may explain the freshwater jellyfish and bryozoans. There is also substantial oxygen deficit in the bottom waters. Soft water lakes are *sensitive* to nutrient enrichment, so more effort will be needed to keep the lake from really showing further signs of eutrophication. *This is a preliminary report* and more testing is to be done by Dr. Ervin before a final report is completed in late winter, 1993. The cost for this study will be $1,900.

A Special Request for Fishermen from Dr. Ervin:

"I'd like to get the fishermen organized ASAP. Have them scrape some scales from the left "shoulder" area of the fish, measure it and release it if they want. If they are going to eat the fish, tell them to cut out and freeze the stomach and intestines. Put the scales and stomach in an envelope, put the fish species and length on the outside. Date and bait would be useful, too. We can use anything they catch." Please contact Bruce Nevins at Shady Shores Resort with your findings.

Our new board and officers agreed at our last meeting to facilitate the extension of the No Wake Law to 8:30 p.m. Michigan time on Friday and Saturday nights. These types of grievances must be addressed so we can all work together on permanent solutions to water quality of Dewey Lake.

ELK-SKEGEMOG ASSOCIATION — Antrim, Grand Traverse and Kalkaska Counties
Ed Krigbaum, Vice President

ESLA continued its water quality monitoring program in several ways last year. Watson Hogarth and his helpers continued the secchi disk readings work in each lake. Their weekly readings were compiled for the DNR and add to data going back over some twenty years.

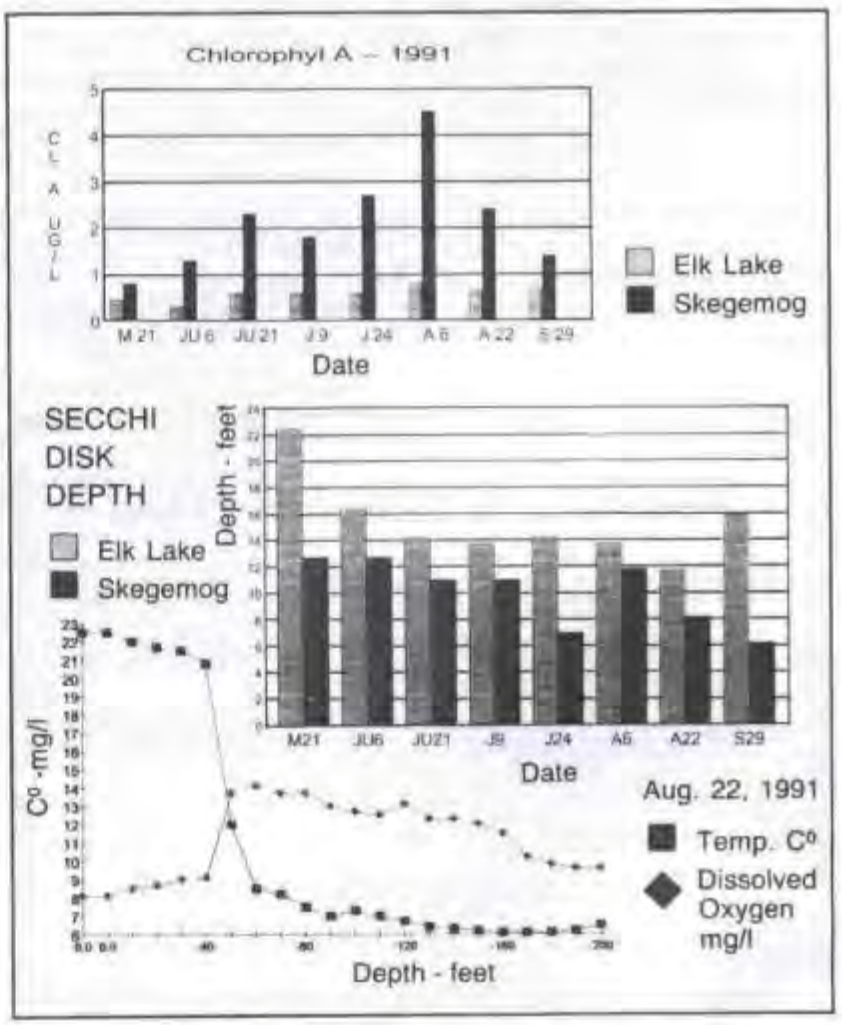
Resource Director Bill Weiss resumed the sampling program begun last year. Approximately every two weeks data was collected at a 'station' in the middle of Elk and Skegemog. Readings of date, time, air temperature, weather conditions, wave height, and wind direction, and secchi disk depth were recorded.

A "chlorophyll A" sample was collected by dropping the "integrated depth sampler" (a bottle with a small hole in the top) to a depth twice that of the secchi reading. This approximates collection of plankton in the upper part of the lake where the sunlight penetrates integrated over that distance. This sample was transferred to a covered bottle (to keep sunlight out) and stored in a cooler.

Next a profile of the temperature and dissolved oxygen was taken using the Three Lakes meter and the 200 feet of cable purchased last year by ESLA. A reading was taken each ten feet of depth and recorded.

The Association authorized three phosphorus samples taken on the first sampling run of spring. The results were North Elk - 1.8 ug/l, Mid-Elk - 4.7 ug/l, and Skegemog - 2.3 ug/l. In a lake system where the growth of plankton is "limited" by the amount of phosphorus, these are extremely low levels and reflect the good water quality of the system. By contrast, a tertiary wastewater treatment (the best) might discharge water with a concentration 100 times this level. A secondary wastewater plant might discharge water 1,000 times higher in phosphorus.

The graph of chlorophyll-a illustrates the difference between a deep cold lake like Elk and a shallow warm lake such as Skegemog. Both start out in May below 1 ug/l. By the first week in August, plankton have reached their peak growth. Chlorophyll A has almost doubled in Elk but remains below 1 ug/l. Skegemog's warm sunlit waters have grown a lot more plankton and produced a high of 4.5 ug/l. As hours of sunlight begin to recede, chlorophyll A in Skegemog declines.



Secchi disk depths show reductions through the summer as pollen and suspended sediments stirred up by boats add to the plankton concentrations to cloud the water. Skegemog loses about one-half and Elk one-third of their original values.

A profile from August 22, 1991 for Elk Lake illustrates several typical seasonal changes in the lake. Between 40 and 60 feet, the temperature drops 13 degrees C. This is the sum-

mer thermocline formed by a layer of warm surface water over the cold deep water. The thermocline acts as a barrier for the passage of dissolved oxygen as well. Because plankton at that depth are using their chlorophyll to produce oxygen, the data shows an increase (or supersaturation) of dissolved oxygen below thermocline.

Because Elk has a low productivity, there is less fish or bottom life to reduce this oxygen through respiration. In a productive lake like Bellaire with a shallow secchi reading, respiration would remove the existing oxygen as well as some produced after formation of the thermocline. Lake Bellaire usually shows a declining oxygen pattern at depth to values often below 2 mg/1 (off the page of this graph). Skegemog is too shallow for this and remains well mixed all summer.

If you have any questions about the water quality program, please feel free to contact Water Quality Chairman, Dick Volk (264-8288) or Resource Director, Bill Weiss (322-2187).

GLEN LAKE ASSOCIATION — Leelanau County
Barney Glettler, President

Waterfowl/Swimmers' Itch

Committee chairpersons: Barbara Siepker 334-4395; Bill Peppler 334-3435.

A very active Spring program was completed with the assistance of about 12 volunteers, who chased Mergansers, manned shore boomers, and did bird surveys. We especially thank Ken Bryce, Clarence Hartman, Tom Dean, Jerry Giffen, Sis Miller, Bill Peppler, Bill Post, Shanna and Bob Senk, Bob Seward, and all those who chased the Mergansers from their shores. Sixteen-year-old Mike Freeman spent his Spring vacation earning an Eagle Scout Service Project Award.

Although largely successful, we anticipate a couple of Merganser broods on the lake. Please call 334-3722 or 256-7039 if broods or adult Mergansers are spotted. We are hopeful that the cool Spring and lighter than normal number of Mergansers will foretell fewer cases of itch this Summer. We want to hear from you should you contact the itch, so call Barbara Siepker at 334-3722.

Zebra Mussels

Committee chairpersons: John DePuy 334-4443; Scott and Ellen Gravelie 1-676-0359.

The Association is coordinating with Dr. Ladd Johnson at the Great Lakes Environmental Research Laboratory, Ann Arbor, relative to a program for Glen Lake. There are three main goals for this program:

Education — Keep riparians aware of the latest information of Zebra Mussels, and how they could impact Glen Lake. Also, take reasonable efforts to educate boaters at the DNR launch site on Little Glen and the boat ramp in Glen Arbor.

Monitoring — Inspect boats and fishing equipment for the presence of mussels. Install substrates for sampling Glen Lake for mussels. Review monitoring findings, and change methods as required.

Intervention — If mussels are found, make arrangements for high pressure wash stations conveniently located for the public use.

Implementation of this program this summer depends on volunteer help and funds for materials and labor to supplement the volunteers on specific tasks. Persons volunteering locations for the substrate study should contact John DePuy.

Additional information will be distributed as it is developed. In the meantime, we urge all boat owners who transfer their boats between lakes to thoroughly inspect their hulls, engines and fishing gear before the boat enters Glen Lake waters.

LAKES PRESERVATION LEAGUE — Lenawee County
Ron Wyman, President

Lakeview Development Mobile Homes Park

At Woodstock Township's June 1 meeting, further plans were revealed of this development which lies west of Devils Lake Highway near Walnut Hill. This development will have an evaluation of approximately $2,000,000. It will consist of homes 16'x80', each to be hooked through a main line with a pumping station and paying hook-up charges and monthly fees at the same rate as other new housing in the township. The wooded area and wetlands will not be disturbed.

New Directors In Action

Several of our Directors have already delivered over 50 packets to the residents of their area. Margaret Brighton reports that she has received several new memberships which reflect their work.

One of the ancillary benefits of their work is its potential for direct contact with our membership. Although Linda Fritz has full time employment she still finds time to distribute her packets on her walk regimen. As she contacts residents she takes time to listen to their questions. She also takes note of what may be happening on her circuits. Then she contacts one of the Board Members if she needs answers. Although we have only 7 of our 10 districts covered by a Director, each of you have access to a Director or Board Member.

Sea Wall Permits

Some of the residents seem unaware that the Department of Natural Resources controls our inland lakes.

No one may alter the lake by filling, dredging or building a sea wall without a permit from the Department of Natural Resources.

The Lakes Preservation League receives copies of these permits and reviews them. If a violation is apparent or suspected the DNR will be contacted.

The two townships have zoning regulations. Anyone who wishes to alter their buildings must apply for approval of many alterations. The two townships have very similar controls, but what is legal in one may be illegal in the other. It can be very costly to ignore these laws.

PJC LAKES ASSOCIATION — Cass County
Bob Blake, President

Lake Resident Concerns:
- Fallen trees are impeding travel on horseshoe channel
- Access Site abuse (over-utilized, mess from refuse)
- Unlawful parking

Bob Blake stated that he has some printed warnings and asked for help in monitoring the access site. In the past, he has been able to deter some people from parking wrongfully.

The meeting was turned over to Mike Wenkel, Soil and Water Conservation District Technician. Mike gave an excellent definition of non-point source pollution. It means simply; we can't find the exact source. In addition to the work with the farmers, Mike told us that there are many things that lake residents can do. He gave us handouts that listed some of these things.

Area Representatives serving on the Executive Board are:
Jack Durben, 70462 Sunrise Dr. - 699-5478
Ronald King, Painter Lake Marina - 699-7555
Pat Marshman, 68345 Eagle Lake Road - 699-5558
Dutch Storm, 68270 Channel Pkwy. - 699-7209

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ML&SA Member News

(Continued from Page 15)

Ruth Trotsky, 68333 George Smith Ct. - 699-7348
Marilyn Wooden, 68938 Twilight Dr. - 699-7312

LAKE ORION LAKE ASSOCIATION — Oakland County
Richard Hennessy, President

General Membership Meeting

We had a pretty good turnout for last month's general membership meeting. Those who didn't make it missed an excellent presentation by Ron Spitler of the DNR on the installation of the bottomdraw tube and a summary of the effects that the DNR has been able to document to date.

Bottomdraw Tube

The tube seems to be doing what it is supposed to do (mix cold water from the bottom of the lake with warmer water going over the top of the dam to provide a cool enough temperature in Paint Creek to satisfy the trout) without any observed negative side effects at this time. It was able to maintain a mixed water temperature in Paint Creek last year of below 70°, even during the higher than average water flows while the lake was being lowered for the drawdown. The water temperature from the tube, which draws from a depth of 62 feet, is a constant 55°.

Testing that was done last fall determined that the tube has an adjustable flow range of from zero to 14 cubic feet per second (about 105 gallons per second or 6250 gallons per minute). The DNR has also installed a stream flow gauge at the Broadway Street bridge and a lake level gauge near the dam bypass tube just south of the dam.

At this time the DNR is very happy with the results of the tube and plan on using it to point up the advantages of such a project. Time will tell if there are any long term effects not currently observable.

Directors: Mark Basso, Lynn Boyd, Jim Clark, Larry Marlin, Ralph Reseigh, Gerry Richards.

President: Richard Hennessy. President Elect: Mike Basso. Past President: Joanne Dowell. Treasurer: Lisa Demian. Secretary: Tom Klingler.

MORTON TOWNSHIP TRI-LAKES ASSOCIATION — Mecosta County
Russ Klumpp, President

Banner Year for District 9 Walleye Plants

1991 Proved to be an exception year for Walleye plants in West Michigan's 9th district. According to John Trimberger, the eight-county 9th district benefited from a "bumper crop" of walleye fingerlings, reared in the many walleye ponds throughout the district. John says that much of the credit for the increased production of the ponds is in part due to a change in fertilization methods and constant supervision by new fisheries supervisor Cary Gustafson.

Trimberger estimates that 80% of the 1½ to 2 inch spring fingerlings will survive the three to four years it will take them to reach the 15 inch minimum length requirements for harvesting by West Michigan sportsmen.

Most of these walleyes being planted are the product of the egg harvesting program on the Muskegon River. However, according to Trimberger, many of our inland lakes are now being stocked with Lake Erie walleyes in an effort to establish a lake spawning variety of walleye that are more inclined to reproduce naturally in our inland lakes.

Hats off to the district 9 fisheries crew for a job well done. Keep up the good work!

PLEASANT LAKE ASSOCIATION — St. Joseph County
Judy Johnson, President

Water Clarity — Our lake is in good shape and the weed growth is about average. Thanks to Hank Null for taking time each week to check the lake for clarity. Thanks to all lake residents who are using phosphate free fertilizers for keeping septic systems in good working order!

A Guide to Safe Boating in Michigan — Booklets are available from your area reps, the association secretary, and at the breakfast. Michigan boating rules and regulations are important for each of us to know. Ignorance of the law does not get you out of a citation.

Marine Complaint Procedure — According to our guest speaker, Marine Patrol Officer Bill Dobrowski, if you have a concern about a particular boat: 1) get the numbers from the boat, 2) alert sheriff's department (467-9045), 3) they will follow up.

Just a Reminder — On Pleasant Lake it is a law that skiing may take place from 11:00 a.m.-7:30 p.m. each day. We have a gentleman's agreement of no high speed boating between 7:30 p.m. and 11:00 a.m. Be sure to remind any guests of this information. *Thanks!*

Lake Association Constitution to be Reviewed — A motion was approved for the officers to appoint a committee to review and bring our constitution up to date.

Wamplers Lake Property Owners Association — Lenawee & Jackson Counties
Emery Jonas, President

Public Sewer Feasibility Study

We are concerned regarding the long-term impact septic systems may have on the water quality of Wamplers Lake. Studies have shown that septic systems can be a major source of nutrients and pollution to lakes in Michigan. As our existing systems age and more cottages are converted to year-round use, the potential for lake pollution will continue to increase. The septic systems also discharge to our groundwater. As the flows continue to grow and accumulate, there is potential that the groundwater quality could be adversely impacted. The groundwater is the sole source for our water well supplies. To protect the lake and property values, we feel it wise to consider a public sewer for Wamplers Lake.

In order to get information to allow lake residents to make an informed decision on this issue, the Wamplers Lake Association has retained an engineering consultant experienced in the construction of new sewer systems to prepare a sewer feasibility study for Wamplers Lake. The study evaluates alternative collecting sewer and sewage treatment facility systems and provide a detailed cost estimate for the project. The study has been completed and a public informational meeting has been scheduled to present the findings of the study, answer questions, and seek input on whether there is interest in proceeding with a sewer project.

The information meeting will be held on Saturday, August 29, 1992, at 10:00 a.m. at St. Joseph's Hall.

WALLOON LAKE ASSOCIATION — Charlevoix & Emmet Counties
Bill Fairhurst, President

Water Quality is Job #1

The purpose of the Walloon Lake Association is, simply stated, "to preserve and improve the environment of Walloon Lake for its members and the general public." The Water Quality Committee, through its annual Lake Monitoring Pro-

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gram, and in conjunction with the Tip-of-the-Mitt Watershed Council, has been carrying out this charge and, in the summer of '92, will undertake two new monitoring programs and restart yet another. Here is a brief description of the programs your Association has in place for 1992:

Lake Monitoring: Weekly Secchi Disc depth readings are taken to record the water clarity, plus bi-weekly chlorophyll-a samples are gathered to measure algae concentrations. The two results are used to classify our water, which in the past has been "good to excellent" (see May *Wallooner* for graphic '91 results).

Dissolved Oxygen Study: Dissolved oxygen depletions can have an adverse impact on the fisheries and other aquatic organisms in the lake. We have purchased a sophisticated Dissolved Oxygen Meter to scientifically measure the dissolved oxygen concentrations. This work will be done with our own monitors and readings will be compiled and interpreted by the Watershed Council.

Cladophora Survey: A water resources consultant has been hired to conduct a shoreline survey of Walloon Lake for cladophora. The presence of this green, rootless plant normally indicates septic system problems and the need for remedial action. Results obtained this year will be compared with similar surveys done in prior years.

Swimmer's Itch Data Collection: This is a new program designed to produce weekly updates to inform both residents and Lake users about the current status of the swimmer's itch problem. The results will be shared with Dr. Harvey Blankespoor, who has developed a swimmer's itch treatment. It should be noted that Blankespoor's method is still in the experimental stage, and it is not known exactly when it will become available for widespread use. Association members will be kept advised of all the findings relating to these projects.

THREE LAKES ASSOCIATION — Antrim County
Ed Oshaben, President

Al Priebe Steps Down — Ed Oshaben Elected President

An era in Three Lakes history ended at this year's Annual Meeting when Al Priebe relinquished the gavel to new President Ed Oshaben. On the Board of Directors since 1974, Al had served as President for eight years — longer than any predecessor. He was presented an engraved desk set commemorating his years of service.

Al became President at a turbulent time when the Association could hardly pay its bills. His direction has provided Three Lakes with a firm financial foundation. During his tenure, TLA instituted a continuing water quality baseline sampling program, hired a part-time Executive Director, provided officers liability insurance, established relations with the Tip-of-the-Mitt Watershed Council, and began our popular pot-luck Annual Meetings. Al spent countless hours attending zoning meetings and led the Association's efforts to limit large scale development at Kathy's Kampground, Rosemary's Dockage and numerous others. There is no way to adequately thank him for his years of dedication. The Board of Directors looks forward to his continued participation and counsel as immediate Past-President. Thanks again Al!

News Notes

Eight Three Lakers attended the Forest Home Planning Commission meeting on September 23 to support approval of their new wetland ordinance. It was adopted.

Three Lakes donated two "No Wake" buoys to the Kalkaska County Sheriff Marine Patrol which set them in Torch Lake at the entrance to Torch River.

OBJECTIVES OF MICHIGAN LAKE & STREAM ASSOCIATIONS

1. To inform riparian property owners and the public at large of **Riparian rights in Michigan.**
2. **To disseminate information about pending legislation** which will have an impact on riparian rights.
3. **To inform Riparians of applications to dredge, fill or change the shoreline** of lakes and streams in Michigan.
4. Sponsor **conferences and workshops** for riparians and the public to provide information regarding the **protection of lakes or streams.**
5. **To assist Riparians to establish an Association** to deal with problems which call for unity in action to prevent the degradation of the water quality of lakes or streams and to prevent their misuse.
6. **To assist Associations in the presentation** of their respective positions regarding riparian rights and water resource management before **courts, municipalities and government agencies.**
7. **To review and submit proposals to administrative and legislative bodies** considering bills, ordinances and regulations impacting riparian property owners and water resources.
8. **To develop a library of information** including books, pamphlets, documents, research studies of Michigan's water resources and make the same available to riparians and the public at large.
9. **To sponsor studies and research** designed to expand the fund of knowledge about Michigan's water resources.
10. **To instruct Lake & Stream Association members** how to monitor land and water development within the watershed.
11. **To assist local associations in obtaining help** from local and state governing units in their efforts to protect their water resource.
12. **To support all efforts of state and federal governments to maintain water quality standards** established by state and federal law.

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What Are The Most Urgent Needs Of Michigan's Inland Lakes?

Michigan Lake and Stream Association's Board of Directors would like to know what shoreline property owners feel are the most urgent needs of Michigan's inland lakes. We have listed 17 different items that have been mentioned by waterfront property owners, and have left space for listing others at the bottom. We will be grateful to you if you would take the time to identify the most serious problems you think exist on your lake, and mail the form to the ML&SA Office at 124½ North Main Street, Three Rivers, MI 49093. We will use this information to guide us in selecting speakers for the Regional meetings and the Annual Meeting for 1993.

Number the ten most needed activities you feel are needed on your lake. Write the numbers 1-10 in the blank spaces to the left of the item. Write number 1 in front of the item you feel most needed, number 2 in front of the second most needed item, and continue until you have identified the ten most needed. This information will help ML&SA in organizing topics for next year's Regional and Annual meetings. If you know of speakers that are knowledgeable about any of these topics, write their name to the right of the topic and under speaker.

Number 1-10	Activity	Speaker
_____	STOCKING OF FISH	_____
_____	ENFORCING BUILDING CODES	_____
_____	ENFORCING ZONING ORDINANCES	_____
_____	INSPECTING SEPTIC SYSTEMS	_____
_____	REGULATING SKIING AND BOATING	_____
_____	STOPPING SHORELINE EROSION	_____
_____	CONTROLLING AQUATIC WEEDS	_____
_____	COLLECTING GARBAGE AND TRASH	_____
_____	DREDGING	_____
_____	PATROLLING FOR VANDALISM	_____
_____	MONITORING FOR SOURCES OF POLLUTION	_____
_____	REGULATING SNOWMOBILES & ORVs	_____
_____	STABILIZING WATER LEVELS	_____
_____	IMPROVING WATER QUALITY	_____
_____	EQUALIZING PROPERTY TAX ASSESSMENTS	_____
_____	PATROLLING FOR WATER SAFETY	_____
_____	PREVENTING WETLAND DESTRUCTION	_____

OTHERS NOT LISTED:

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The Michigan Riparian Magazine — A Short History

The following quote is from the second issue of The Michigan Riparian, *Spring 1966, Volume 2, Number 1:*

"The Michigan Riparian is the official publication of the Association of Michigan Lakes and Streams Associations. It is edited by riparian owners to inform other riparian owners of trends in the management of lakes and streams and of legislation either existing or proposed that affects the rights of waterfront owners. Particular emphasis is placed on accomplishments and methods used by local organizations and individuals. The editors, publishers and reporters are not experienced and our efforts will at times seem amateurish...but our intent is to give the benefit of all possible information. Material submitted for publication will be protected by copyright." The editorial Board included: E.W. Pattison, Managing Editor and Editorial Director: S.B. Henry, Editor and General Manager; S.B. Severance, Editorial Consultant; and Forrest B. Smith, Editorial Consultant.

The following article appeared in the first issue of The Michigan Riparian, *which was the Winter 1965-66 issue:*

About *The Michigan Riparian*

This is our first issue of *The Michigan Riparian*. It has taken a long time to give birth to a publication which is suited to the needs of waterfront organizations and individual riparian owners, alike. We think we have taken a giant first step toward our goal.

Much time has been spent in the development of a basic format and in the selection of balanced news items of interest to the many riparian interests around the state.

We feel that there is great need to inform riparian owners of trends in the management of lakes and streams, and of legislation either existing or proposed that affects the rights of waterfront owners. We know that the interest exists and want to furnish a news media that will reach as many owners as possible.

Without experienced reporters and editors, and in the absence of paid help, our efforts will at times seem amateurish — but our intent is to give you the benefit of all possible information.

News items from local associations or individuals are needed, and we will print them if at all possible. We also need local reporters and salesmen, and we offer them the same wage that we receive as publishers — the satisfaction of getting the job done!

Little effort has been made to solicit advertising for this first issue. Most of our effort has been directed toward development of the basic format. Since advertising provides a service to our subscribers, we want to expand this portion of the publication.

The Michigan Riparian will reach a broad spectrum of waterfront organizations and individuals. Many of these people are seasonal and are at somewhat of a loss to know where various products and services may be obtained. This publication will reach many such persons during all periods of the year and your advertisement will distinguish you as wanting to do business with them.

General Offices

The General Offices of *The Michigan Riparian* have been located at the following addresses during the 27 years that the magazine has been published:

1965-66 — 11269 Hi-Land Court, Pinckney, Michigan 48169
1967-76 — 9610 East Shore Drive, Portage, Michigan 49081 (at the home of Henry Westerville)
1976-80 — 9620 East Shore Drive, Portage, Michigan 49081 (at the home of Cecile Harbour)
1980-92 — 11262 Oak Avenue, Three Rivers, Michigan 49093 (at the home of Don Winne)

Editors and Publishers

The following persons have been editor and/or publisher of the magazine during the 27 years that the magazine has been published:

1965-66 — S. B. Henry
1966-67 — Herschel B. Rochelle
1967-77 — Henry Westerville
1977-79 — Robert Charles
1979-92 — Don Winne

Information about the Editors and Publishers

Henry Westerville (1967-77)

We have reviewed former issues of *The Riparian* magazine to find information about Henry. The following information is lifted from an editorial that Henry wrote for the January 1972 issue of the magazine.

"The year 1972 will have special significance to the Editor. In July — God willing — he will have completed six years as Managing Editor and nearly seven consecutive years as President of Michigan Lake & Stream Associations, Inc., and 35 years as a general insurance agent. Life has not been dull.

Half of his waking hours are spent earning a living, and the other half serving as President and Managing Editor. During the above-mentioned years we have had the pleasure of seeing the Association grow from less than 40 to more than 100 lake and stream association members. *The Michigan Riparian* magazine circulation from 500 to 6,500 and with paid subscribers in 34 states..."

Henry decided to retire from Michigan Lake & Stream Associations and as Managing Editor of *The Michigan Riparian* in October, 1976. The October issue carried the following note of appreciation for the many years that Henry had devoted to ML&SA and to *The Riparian* magazine.

"In regretfully accepting Mr. Westerville's resignation, the Directors of *The Michigan Riparian*, Inc., feel a definite loss. No words can express the deep appreciation we have for Henry's efforts of the past years. During his tenure as Managing Editor he has given unstintingly of his time and talents. He has almost singlehandedly managed the affairs of *The Riparian*. His efforts have been responsible for the increase in the circulation and the success of the publication. Our heartfelt thanks go to Henry and his good wife, Jodie, for their faithful work. We hope that his talents, knowledge and wisdom will continue to have impact on future issues of *The Riparian*. We are sure that his efforts to secure sound legislation in the environmental field will continue."

Robert Charles (1977-79)

The April, 1977, issue of *The Michigan Riparian* magazine carried the following information about Robert Charles, the new publisher.

"Robert Charles, 57, President of Eagle Printing Co., Inc.,

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A Short History

(Continued from Page 19)

Coldwater, is a past President of the Greater Coldwater Chamber of Commerce; founder of Adapt, Inc., the Branch County sheltered workshop; a member of the Coldwater Zoning Review Board; a founder of the Branch County 4-H Foundation and currently its Vice-President; a member of the Coldwater Exchange Club, and Publicity Chairman of the Michigan District Exchange Clubs. Prior to moving to Coldwater, he was Family Home Editor of Parent's Magazine based in New York City for 10 years. As a spokesman for the magazine, he appeared on NBC Today Show and dozens of other TV and radio programs; received numerous national editorial awards for his stories about the housing industry. Prior to joining Parents Magazine in 1960, he was Vice President of Fulton, Morrissey Advertising Agency in Chicago for seven years. He is a graduate of Medill School of Journalism, Northwestern University; was a combat marine in the South Pacific during World War II, surviving the sinking of the U.S.S. Houston, then 3 1/2 years in Japanese prison camps.

Don Winne (1979-92)

The following statement appeared in Robert Charles' Editorial that appeared in the October, 1977, issue of the magazine:

"Don Winne, a long-time educator and Vice President of Region IV of Michigan Lake and Stream Associations, and who helped Corey Lake establish a natural lake level and helped build a dam to maintain that level, will add to the voice of ML&SA serving as editor of *The Michigan Riparian* beginning with the January (1978) issue. His column will appear in this space in future issues; many of the stories in the future will be under his editorial supervision. We are pleased to add an active ML&SA member of his stature to the masthead. To become further acquainted with Don, see the story on page 10 of the April, 1977, issue."

Don has held the position of editor continuously since 1978 and in 1979 became Publisher of the magazine by Board action. Robert Charles introduced the idea of the front cover being in color when he was Publisher, and that practice has been continued under Don Winne. Don's experience in photography goes back to his early teaching days at Elkhart Public Schools, Elkhart, Indiana. He was the supervisor of audio-visual aids at Elkhart High School, and assisted in the taking of pictures for Elkhart High School Annuals. Many of the pictures which have appeared on the front of the magazine since 1979 have been pictures which he has taken.

Don encourages members of ML&SA member associations to submit pictures which they think should be considered for printing on the front of the magazine. Two by two color slides are preferred. If you have a slide you would like to submit, you may call the office number (616) 273-8200 and discuss it with him.

— IN APPRECIATION —

Words cannot express our heartfelt thanks to Joseph H. Hollander, who has given unselfishly of his time to serve on the Board of Directors of the Michigan Riparian for the past 16 years.

Hayes Township Resurrecting Waterfront Zoning Law

By Lisa Babcock, Petoskey News Review, July 22, 1992

Township planning commission members might have felt a sense of deja vu as they read the waterfront zoning law they easily approved Tuesday night.

They approved exactly the same wording that was in the township ordinance before — before developer William Fox took the township to court and before a state appeals court ruled the law was illegal.

Since then, the state Supreme Court has ruled on a similar law from West Bloomfield Township in Oakland County — and called the restrictions legal.

In the wake of that case, Hayes Township officials started putting waterfront zoning back on the books.

"We took it out because we were ordered to take it out," township clerk Ethel Knepp told the planners, recalling the court decision against the township.

The controversial zoning, created in the mid 1980s, limits boat docks to one mooring, slip or dock per 100 feet of lake frontage. Power boats fall under the ordinance, but rowboats, dinghies, rubber boats, canoes and small sailboats do not.

The second part limited housing to one home, cottage, condominium or apartment for every 100 feet on the lake.

The waterfront zoning does not apply to public access sites. It is intended to prevent "funnel" developments, where many people are deeded access to a small portion of lakefront.

A handful of township board members and six township residents attended a public hearing Tuesday night. Their comments favored reinstating the waterfront zoning.

"I think it's a good idea to put it back in," township treasurer Robin Kraft said.

Planning commission member Mary Lee Huber agreed.

"I'd like to see both (portions) reinstated," she said.

Planning commission chairman Tim Boyko warned fellow planners that the zoning is "large lot zoning," although it prevents funneling.

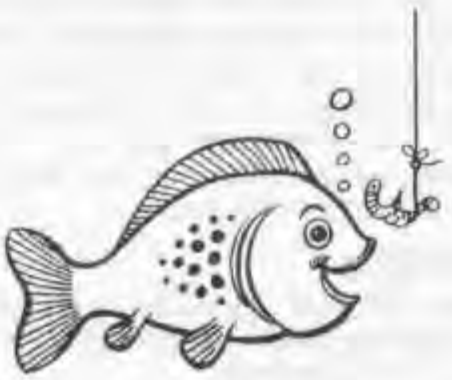
"It's working in the sense that it keeps people from being on top of each other," he said.

The public hearing Tuesday night was the first of three steps the township will have to take to reinstate the ordinance.

The township planning commission recommended the township board reapprove the law.

The issue is now handed to the county planning commission, which also will review the law and make a recommendation to the township board.

The third and last step is the township board, which will decide whether to make waterfront zoning the law of the land again.



Michigan Cooperative Extension Service Reaches Out To Lake Residents

George Byelich, Cooperative Extension Director for Alcona County, held two meetings for lakefront property owners in Alcona County on August 12, 1992. The meetings, one at Glennie and another at Hubbard Lake, were designed to inform and assist waterfront property owners of the 236 bodies of water in the county in understanding the value of their water resource and things they need to consider in protecting that resource.

What is the Cooperative Extension Service?

The Cooperative Extension Service is an educational outreach arm of Michigan State University. It is part of a national network of Extension Services in every state in the United States. Each one is based at the state's land-grant university.

The job of Extension is to get practical, university-tested information into the hands of people who need it. It's really like having a little bit of MSU in your home county.

It's "cooperative" because it is jointly funded by federal, state and county governments. "Extension" means extending the educational resources of MSU beyond the East Lansing campus. "Service" means Extension is in the business of helping people.

At Michigan State University, Extension is part of the College of Agriculture and Natural Resources. Extension draws support from every department in the college, from crop and soil sciences to animal science. It also uses resources available in other MSU colleges, including Human Ecology and Veterinary Medicine.

The Cooperative Extension Service gets much of the information and knowledge it brings to you from the MSU Agricultural Experiment Station. Researchers from the Experiment Station help generate up-to-date solutions to today's problems.

In all, 29 academic departments and eight colleges at MSU back up the cooperative Extension Service.

Where is the Cooperative Extension Service?

Extension offices and staff people are located in every county in Michigan. Also, Extension subject-matter specialists at MSU translate research results into educational programs and act as resource people for Extension staff members in the counties. Together, the campus staff and the field staff make sure the Cooperative Extension Service is accessible to everyone.

What does the Cooperative Extension Service do?

Extension provides information and offers educational programs in four main subject areas:

- Agriculture and Marketing
- Home Economics
- 4-H Youth Programs
- Natural Resources and Public Policy

All of these programs have similar goals — they're designed to help people better understand the world around them, use their resources more effectively and make wise decisions. This is helping people help themselves.

These programs come to you from the MSU campus through your local Extension office and the agents who work there. These agents schedule programs to talk about current problems, meet with groups and individuals and plan educational programs. Information based on MSU research is also available through printed bulletins, which you can get through your county Extension office. Extension also works extensively with the news media to get information to the public.

How can I find out more about the Cooperative Extension Service?

The best place to start is in your own county. Your Cooperative Extension Service office is listed in the white pages of your telephone book under "County Government." Drop in at your local Extension office, look around and meet the agents. They're glad to be of help.

The administrative headquarters of the Cooperative Extension Service is located at Michigan State University. Our address is:

Cooperative Extension Service
Office of the Director
106 Agriculture Hall
Michigan State University
East Lansing, MI 48824-1039

Local input is important to Extension; advisory committees at state and county levels help us direct our efforts toward the areas of the greatest need.

If you have suggestions or comments, tell us!

To Learn More...

For a catalog listing the Extension publications available from your Cooperative Extension Service, just write to us:

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Shakey Lakes Association Strives for Weed Solution

(Continued from Page 9)

Recommendations and Management Options

Many of the problems observed in Shakey Lakes are common to most lakes in Michigan having problems with aquatic weeds. The following recommendations and problems to be discussed during formulation of management options will apply to many other lakes. These recommendations and problems include:

(1) Once a lake has excessive nutrients in its sediments, it is very difficult to return it to a less nutrient rich status without dredging. Dredging is usually not a management option, because it is prohibitively expensive and creates problems associated with disposal of dredge spoils. Control of nutrient inputs into the lake will prevent the problem from getting worse and is a desirable goal. Complete elimination of excessive nutrient inputs is usually not feasible. Thus, management primarily becomes one of minimizing the problem by reducing nutrient inputs to the lowest practical level and managing the weed problem in the lake.

(2) Options for management of the weed problems include (a) drawdowns of lake level every few years; (b) harvesting and removal of the weeds from the lake; (c) herbicide control of weeds; and (d) living with the problem as it exists. Options b and c are expensive; Option a costs some money for the permits and monitoring often required by DNR; while Option d is usually not acceptable to most citizens. Thus, a source of funds must be identified such as assessments of each lakefront owner, user fees, county taxes, etc.

(3) Potential problems accompany each management option. Reports in the literature show that drawdowns, when feasible, have caused a decrease in the aquatic weed problem for some lakes. However, there are also several reports that drawdowns made little impact on the weed problem. There are also some reports that suggest that the weed problem can become even worse after drawdowns, especially if floating, submerged species of weeds such as coontail are common, as is the case in Shakey Lakes. The drawdown may also cause fish kills during the winter since decay of aquatic weeds takes place in a concentrated volume of water. Shakey Lakes are already near the verge of winter kill, and the drawdown could induce this to happen. There is no way for residents of Shakey Lakes to know whether a drawdown will be a positive or negative without trying one.

(4) The other two options are the two that most lake associations ultimately end up choosing between. These are (a) mechanical harvesting and weed removal or (b) treatment of the lake with herbicides. Costs are about equivalent for these two options and vary from $200 to $300/acre per treatment. Both options often have to be repeated annually or more often as both are cosmetic and do not solve the problem of excessive nutrient inputs and excessive nutrients in the sediments. An advantage of harvesting and weed removal is that it eliminates the decaying plants which could deplete the water's dissolved oxygen and kill fish. Some nutrients are also removed from the system with weed removal, but this is normally small in relation to annual inputs to the lake and the amount stored in sediments and cannot be expected to result in weed control. Disadvantages of harvesting include the possibility that it may cause an increase in Eurasian pond weed. Fragmentation of this weed during harvest can lead to regeneration of a new plant from each fragment and to greater amounts of the weed being present. Another disadvantage of harvesting is that it may lead to nuisance algal blooms as more nutrients become available due to less nutrient uptake and shading by the aquatic weeds. Harvesting has worked for most situations where it has been tried for keeping the lake open for recreation without most of these problems showing up. Unless a commercial mechanical harvester operator is located nearby and can be hired on a contract basis, the Lake Association will also have to come up with a sizeable initial investment for purchasing the harvester. Herbicide treatment does not require the initial capital outlay that harvesting sometimes requires. However, it has all the disadvantages of harvesting except for the fragmentation of Eurasian milfoil. In addition, the poisoned weeds sink to the bottom and deplete oxygen. These decaying weeds also contribute to the buildup of layers of undesirable organic ooze on the bottom. The potential for a nuisance algal bloom is greater for herbicide treatment than for harvesting since all nutrients in the dead weeds are ultimately released back into the lake water.

In conclusion, there is no magic solution for solving weed problems in lakes. A drawdown is a somewhat risky but relatively cheap option and could be implemented to see if it would work. If winter kill occurred, the lake would have to be restocked. If coontail growth were enhanced, the harvesting or herbicide options could be tried. Rather than risk a drawdown, residents might prefer to initiate a harvest program or treat the lakes with herbicide. The best preference would be to go to a harvesting treatment. It is the most environmentally neutral option but is expensive. For example, if fifty acres of Shakey Lakes with excessive weeds were harvested, the Lake Association would have to raise $10-15,000 per treatment. Herbicide treatment is an equally expensive but less environmentally friendly option. Herbicide treatment might not require as much initial capital outlay as harvesting. Any of the three potential management options would have to be repeated periodically to be successful. Harvesting and herbicide treatment are often required annually or more often (costs = $10-15,000+/year), while drawdowns, when they work, have to be repeated every 3-5 years to be effective and are much less expensive.

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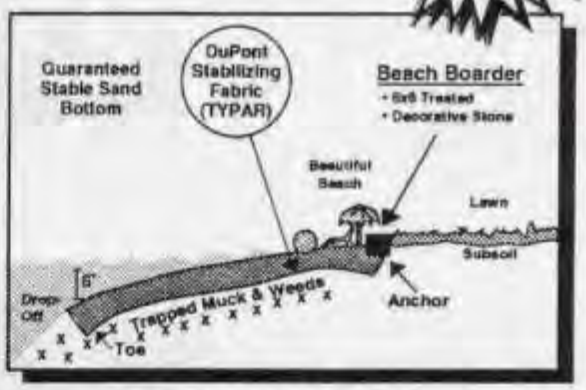

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