

Lake Lawrence - It's a Dam Site Better

by Evelyn Wandry Wachala

Lake Lawrence is situated in Marquette County three miles west of the village of Westfield on County Trunk Highways E and A. It has 234 surface acres nestled among pines and oaks. Like many Wisconsin lakes, Lake Lawrence has changed over the years. In 1940, there were three farms, two cottages, and a boat rental business along the lake. Today, there are over 125 homes and cottages, a resort, and a trailer court.

Before Duck Creek became a lake, it was a trout stream. A small dam formed a small mill pond to run a water wheel which operated a grist mill.

In the early 1930s, Pioneer Power and Light Company constructed a larger hydroelectric dam. This caused flooding of marsh and cropland bordering the creek, thus creating Lake Lawrence. The lake was stocked with northern pike, largemouth bass, panfish, and walleye.

In 1952, lake property owners formed an association, Lake Lawrence Property Owners Club, Inc., to protest the lowering of water levels by the Wisconsin Conservation Department. The Department and the Trout League were concerned that the upper part of the stream was being flooded, affecting the trout fishery. Two culverts were removed on the upstream end of Duck Creek, satisfying most of those involved.

In September 1986, disaster struck after eleven days of heavy rain. Officials, not sure of the strength of the dam, feared it would collapse and flood the village of Westfield. The Department of Natural Resources ordered the flood gates removed. The released water destroyed the spillway and portions of the county highway. The lake drained down until less than onethird of it remained. Fortunately, no one was injured; but the future looked bleak for property owners as well as the community. Losing such an asset was not taken lightly. Those with lakefront property for sale were resigned to removing it from the market.



Dam construction began in fall '87 and continued through winter.

After much searching, the association secured the help of Westfield Township, who agreed to buy the dam from Pioneer Power and Light. The company had not used the hydroelectric plant for over ten years, and were considering abandoning it. In return, the township requested that Lake Lawrence Property Owners Club, Inc. form a lake district. When all restoration was complete and the lake was back to normal, the district would buy the dam from the township and assume the responsibility of maintaining the lake.

Westfield Township, after buying the dam, received a grant of \$194,000 from the Emergency Wisconsin Development Fund. In addition, \$25,000 came from Pioneer Power and Light Company. Both awards were to be used for dam reconstruction. Marquette County provided additional funds needed to rebuild County Highways E and A. Lake Lawrence Protection and Rehabilitation District was formed in early 1987. It will purchase the dam for about \$7,000, to be paid in two payments over two years.

Donohue and Associates engineered the rebuilding of the dam and highways. Speedway Sand and Gravel were hired as general contractors, and work began in the fall of '87 and continued through winter. The dam construction included a new overflow and box culvert. The spillway was reshaped, and curbs and gutters were added to the highways. A dry fire hydrant was also installed to obtain emergency water from the lake. A safety fence was erected on top of the dam,

Lake Lawrence continued

and gate operations were enclosed and locked to protect against vandalism. Lake Lawrence Property Owners Club Inc. presented a check for \$5,000 to help defray the cost of the safety fence. A sign recognizing this donation will be erected on the fence.

On April 19, 1988, the gates were closed, and water in the lake rose at an average of four inches a day. In less than a month, Lake Lawrence was again normal. During the low-level period, many property owners took the opportunity to do some shoreline repairs, such as rip-rapping and light dredging.



It's a dam site better at Lake Lawrence.

Fortunately, the fishery had not been severely affected. Even though many fish had gone down the stream with the water, fishing was good all through the low-level period. Since the water has been raised, fish populations seem to be normalizing. In addition, largemouth bass have been stocked, and northern pike will be planted this fall.

On June 16, 1988, "A Dam Site Better" celebration was held to dedicate the new dam and spillway and to officially open highways E and A. A large crowd gathered, and the local media were on hand to cover the event.

Evelyn Wandry Wachala is president of Lake Lawrence Property Owners Club Inc. and was the club's secretary-treasurer for 22 years.

Jargon Busters

Decomposition: Transformation of organic molecules (e.g. sugar) to inorganic molecules (e.g. carbon dioxide and water) through biological and non-biological processes.

Delphi: Technique that solicits potential solutions to a problem situation from a group of experts and then asks the experts to rank the full list of alternatives.

Density flows: A flow of water of one density (determined by temperature or salinity) over or under water of another density (e.g. flow of cold river water under warm reservoir surface water.

Detritus: Nonliving dissolved and particulate organic material from the metabolic activities and deaths of terrestrial and aquatic organisms.

Drainage lakes: Lakes having a defined surface inlet and outlet.

Drainage basin: Land area from which water flows into a stream or lake.

Annual Meeting Wisconsin Federation of Lakes, Inc.

Wisconsin Federation of Lakes, Inc. holds its 29th annual meeting in Green Bay at the Midway Motor Hotel on Saturday, October 1, 1988. In addition to a business meeting, the preliminary schedule indicates the following presentations will be given:

- Progress Boating Safety (Noise Limits, DWI, etc.) Dale Morey, DNR Bureau of Enforcement
- Wisconsin Wetland/Shoreland Zoning Laws Michael Dresen, DNR Bur. of Water Reg. and Zoning
- New DNR Budget Initiative—Boating Motor Fuel Tax

Richard Wedepohl, DNR Lake Management Coordinator

All current U.S. Senate candidates have been sent invitations to present their views on national environmental policy.

The entire program is open to the public. All known Wisconsin lake organizations are being sent registration information. Interested persons who have not received that information should contact Marion Urich, WFL Executive Secretary, 25 Ironwood Circle, Madison WI 53716, 608/222-8514.



FRANKOWIAK

Aquatic Plant Management Meetings

by Ed Jepsen and Brad Wolbert

About 120 individuals attended three public meetings held in July in Balsam Lake, Madison, and Waukesha to comment on the DNR's aquatic plant management assessment and proposed permit rule changes. People asked questions and expressed viewpoints about the value of lake plants and the DNR's program allowing chemical treatments.

Several lake property owners voiced support for plants and strict limits on chemical treatments. Others supported treatments of nuisance plants and pointed out the loss of property values and recreational opportunities that can be caused by an overabundance of "weeds." A few jokingly offered to sell their weed-choked frontages to those who spoke against chemical controls.

Most supported the goals of protecting the ecological health of lakes. However, they had concerns about fee increases and the lack of provisions for refunds, illegal herbicide use, and increased permit requirements. Some were concerned that the fee increases and application requirement would drive up the cost of authorized treatments, thus increasing illegal treatments.

Many were pleased with the DNR's planned increases in information and education about plant management, and supported sensitive area designations (identifying plant beds critical for fish and waterfowl habitat and water quality protection). However, riparians expressed the desire to comment on these designations for their lakes, because of the potential impact on lake use. Most agreed that clear guidance from the DNR, coupled with vigorous local action, offers the best hope for managing lake plants and protecting Wisconsin's lake resources.

DNR staff explained that comments taken at the meetings, received in writing, and given at the public hearing would be used to revise the proposed permit rule. The rule will then be presented to the Natural Resources Board at their meeting in Ashland on September 28-29 where additional public comments will be taken. If the rule is approved by the Natural Resources Board, it will go to the legislature in October for ratification. If ratified, the rule will go into effect beginning February 1, 1989.

Ed Jepsen is an environmental specialist with DNR's Bureau of Env. Analysis and Review, and Brad Wolbert is environ. specialist with DNR's Bureau of Water Resource Management.



LARGE-LEAF PONDWEED Potamogeton amplifolius

Stewardship Award Nominations Requested

Hundreds of citizens across Wisconsin spend their evenings and weekends keeping our state's lakes clean. In recognition of these efforts, the Wisconsin Federation of Lakes, Wisconsin Association of Lake Districts, Department of Natural Resources, and UW-Extension will again be sponsoring two stewardship awards recognizing outstanding individual and group contributions.

If you would like to nominate an individual or a local organization, please submit a typed description (no more than 100 words) of efforts and accomplishments during the past two years. The nominations should include innovation, statewide value, and long-term impact. The nominations may be accompanied by supporting documents such as letters from cooperators, flyers, newspaper articles, etc.

The 1989 award winners will be presented at the Wisconsin Lakes Convention, April 7-8, 1989. Although the nomination period is open until February 1989, now is a good time to write up your nominations. Nominations made last year will continue to be considered, and need not be resubmitted.

Nominations should be sent to Susan McComb, Wis. Federation of Lakes, 22 Chippewa Ct., Madison, 53711, (608/233-5566).

Eco-Note: Trophic Status and Phosphorus Enrichment in Lakes

by Eric Macbeth

What is a lake's trophic status?

Lakes can be characterized by their trophic status—the rate at which they accumulate organic matter. With sufficient nutrients, higher levels of photosynthesis by plants results in high biological productivity. The productivity in a lake is the amount of living material that is growing within its waters. Oligotrophic lakes have slight productivity; mesotrophic lakes have intermediate productivity; highly productive lakes are eutrophic; and extremely productive or "choked" lakes are hypereutrophic.

Where do the nutrients come from?

Nutrient enrichment in lakes comes from two types of sources. A point source is a direct input at a certain location in a concentrated form, such as from an effluent pipe. Examples may include sewage plants, certain industries, or agricultural feedlot operations. Nonpoint source inputs are diffuse in nature and therefore difficult to identify and treat. They may originate from many areas, such as agricultural runoff, lakeshore lawns, or groundwater contaminated by agriculture or septic systems.

Was nutrient loading always a problem?

Before settlement and industrialization, many of our lakes were pristine. Some fertilizers in the form of decomposing material from forested lands contributed small amounts of phosphorus in runoff. Small amounts also came from the atmosphere. Other lakes were naturally eutrophic because of their shallowness and rich soils.

But things have changed. Nutrients and organic materials entering lakes have increased from urban and agricultural influences. The most severely impacted areas correspond to those with the highest population density.

How does phosphorus fit in?

Phosphorus is one of the primary plant macronutrients, the others being nitrogen and potassium. A very important component in biological metabolism, it is needed as a major cellular constituent. It is also the least abundant macronutrient, comprising about one percent of the dry weight of typical aquatic plant matter. Phosphorus is usually called the limiting element because its levels limit or control biological productivity.

When phosphorus is added to lakes, rapid increases of algal production—called algal blooms—usually occur. Excessive loading of phosphorus accelerates plant production until other nutrients or available light act as limiting factors.

Where does phosphorus come from?

Phosphorus enters lakes mostly from atmospheric precipitation, groundwater, and surface runoff. In precipitation, its concentrations are highly variable. Usually low in non-populated areas, they can be quite high in urban or industrial regions. However, in some agricultural areas wind-eroded dust can add significant amounts of phosphorus to rainfall. In groundwater, its levels are usually low because of the insolubility of minerals that contain it. There is also a high uptake of phosphorus at the surface by biota and soil particles, effectively removing it from rainfall perculating to the groundwater. Most often the major contributor of phosphorus to lakes and streams is surface runoff.

Amounts in runoff vary with the quantity in soils, the topography, vegetative cover, runoff flow, land use, and pollution. Application of fertilizers and land management practices affect phosphorus amounts considerably. Seepage of wastewater from inadequate or



When phoshorus enters lakes, algal blooms usually occur

failing septic systems can be a major input as well. Once in the lake, phosphorus tends to accumulate in the sediment. It can be redissolved if the bottom waters become low in oxygen. This process is called internal loading. It increases algal and weed growth potential by increasing the overall storage within the lake.

What are the best solutions to phosphorus enrichment?

The best solutions to lake problems are to prevent them in the first place. Dealing with them after they occur is less satisfactory. Restoring lakes that have been enriched is time consuming and costly.

Eric Macbeth is a graduate student in Natural Resources at UW-Stevens Point.

Capitol Report:



by William P. O'Connor

A key legislative initiative to restore fair treatment of state waterways was vetoed by Governor Thompson. The proposal was developed by a group of legislators led by Rep. Holperin and Senators Davis and Chvala. The program would have made comprehensive modifications to the distribution of "Water Resources Account" funds, composed of approximately \$5 million in boat gas tax receipts.

Under the plan, lake districts, other local governments, and some nonprofit groups would have been eligible for grants for waterways assistance. The projects could include measures directed at waterway protection, improvement, or recreational development.

The program would have increased the minimum share of boat gas tax revenues for inland waters communities from 30 to 50 percent (including 10 percent for rivers). Grant funds distributed for Great Lakes projects would have received 40 percent. The remaining 10 percent could be distributed without regard to location.

Since 1985, 68 percent of boat gas tax revenues have been allocated for Great Lakes boating projects. Five million dollars have been given to Milwaukee County waterfront parks. Despite DNR research showing that 82 percent of the revenue is generated by inland lake boaters, no lake or sanitary district or lake association has received funds. Only public access projects were—and are—fundable.

Because of personnel changes and a bottleneck in the legislative bill drafting bureau, a numbered bill could not be considered before the close of the legislative session. Instead, the language was attached to the budget bill. The proposed program amendments were widely discussed and unanimously endorsed by the Joint Committee on Finance.

In his veto message, Governor Thompson noted that the bill made significant changes in grant eligibility and fund distribution. He concluded that the revisions should receive full consideration by standing committees and formal public hearings. The Governor has indicated support for eligibility changes to ensure fairer treatment of inland lakes.

The Governor's budget staff, DNR, and interested legislators have all initiated efforts to pursue revisions in the distribution of boat gas tax funds. Three main points that these changes should address are as follows:

1. The majority of all Water Resources Account funds should be allocated as competitive local matching grants aimed at water resources protection, improvement, and recreational development.

2. Inland lake communities should receive a fair share of grant funds.

3. Necessary statewide program elements should focus on assisting local communities and should be adequately funded.

William P. O'Connor is Legislative Counsel for the Wisconsin Association of Lake Districts.

LEGISLATION SIGNED

Lake Research Checkoff: AB33 allows fishing license and boat registration applicants to make voluntary one-dollar contributions for lake research.

DNR Nonpoint Orders: SB434 authorizes the DNR to order abatement of extreme nonpoint source water pollution sources.

Chapter 30 Rewrite: AB788 makes a series of changes to improve efficiency of the permit process for riparian permits under Chapter 30.

Boat Titling: AB195 creates a boat titling program in the DNR. Under the program, boats will be titled in the same way as automobiles and titles will be required for transfer.

Chippewa Flowage: At Governor Thompson's initiative, the legislature appropriated \$6.9 million to buy lands owned by the Northern States Power Company on the Chippewa Flowage.

SOME BILLS THAT FAILED

Yahara Watershed: AB499 would have created a Yahara Watershed Management District for the management of the Madison area lakes. The bill passed both houses of the legislature by wide margins, but was vetoed by the Governor.

Dam Inspection Fees: Bills were introduced in both houses to eliminate the fee for dam inspections. Both bills died without action.

Lake Use Planning: Rx for Ailing Lakes

by Sandy Engel

Plants and people compete for water spaces. Boaters and swimmers need open water where fishes and their prey need vegetation. The greening of the lakeshore signals a struggle fought with sprays, harvesters, and rakes. How can plants and people coexist?

The solution is not in the doing, but in the planning. To plan the use of a lake is to hold a vision of its future. Some areas of a lake are suited for angling, others for boating. A lake use plan can avoid conflicts without sacrificing needed habitat. Like a financial budget, it may seem restrictive but can help realize new opportunities.

Forging a Lake Use Plan

Lake use planning begins with cooperation. A lake district or association can establish a lake use committee. Representing diverse interests, citizens work with lake managers to develop a plan, integrate appropriate management strategies, and evaluate results.

A lake use plan starts with a lake map of summer vegetation. Houses, parks, boat launches, and other developments are added. Areas commonly used for angling, swimming, boating, and other uses are next diagrammed. Conflicts appear as the map develops.

Armed with a blueprint of lake use, the next task is to design a more desirable balance of habitat and use. Space is allocated for swimming, canoeing and kayaking, power boating, and sailing. Quiet zones are reserved for waterfowl and fish nurseries. Open areas are designated as lake commons for anyone to use. Speed and time of day limits may be necessary in busy areas. Channels are shown through plant beds for boat and fishing access.

Implementing the Plan

A management strategy is tailored for each use area and bay on the lake. Treatment objectives are defined for each area. Intensive plant control is practiced in swimming and boating areas; selective controls are exercised in angling areas.

Integrating multiple techniques can overcome limitations of each method and reduce overall expense. Shoreline weed attack teams (S.W.A.T.) are organized for shoreline cleanup. Removable bottom screens are used where chemicals are not desired. A harvesting plan is developed to include areas of clearcut interspersed with channelized plant beds. Coordinating harvester use with inshore treatment and clean-up avoids wasted effort and expense. Underwater gardening in fish and wildlife areas can replace nuisance plants with more desirable native species.



Different use areas are designated on a lake use map.

Revising the Plan

Lake use planning continues after the sprayers and harvesters are retired for the season. The plan must be evaluated. Was it successful? Were treatment objectives realistic? Where can costs be reduced? A lake use report, incorporating community feedback, is then written. It becomes a basis for improving next year's program.

Great strides come from small beginnings. A lake use plan can be the start of a cost-effective, integrated program of lake management. It can provide an orderly way of solving user conflicts. New ideas emerge and find a mechanism for being implemented. *Edited from 1987 Lake Property Owners Reference Manual, Land and Lakes Ltd., Madison, Wis. Sandy Engel is a limnologist with WDNR in the Water Resources Research Section, Bureau of Research.*

Calendar



September 23-25

Wisconsin Federation of Lakes Annual Meeting. Midway Motel, Green Bay, Wisconsin. October 1

American Water Resources Association Conference and Symposium. Milwaukee, Wisconsin. November 6-11

Applied Lake and Watershed Management: Managing Non-point Sources for Lake and Reservoir Quality. Symposium and North American Lake Management Society (NALMS) meetings, St. Louis, Missouri. November 15-19

1989 Wisconsin Lakes Convention. Holiday Inn, Stevens Point, Wisconsin. Rooms are available at convention rates: \$48 single, \$55 double, \$59 triple, \$63 quad. Call 715/341-1340 and ask for the Wis. Lakes Convention Block. MARK YOUR CALENDARS and RESERVE YOUR ROOM — April 7-8, 1989

Revising Our Statutes

Lake associations are incorporated under Chapter 181 and lake districts operate under Chapter 33, *Wisconsin Statutes*. Periodically, refinements are proposed to these statutes. A set of refinements for Chapter 33 is being compiled and will be introduced by Rep. Cal Potter. If you have concerns or suggestions for modification of either Chapter 33 or Chapter 181, please send them to Lowell Klessig, College of Natural Resources, Univ. of Wisconsin, Stevens Point WI 54481.

Publications

Baybook: A Guide to Reducing Water Pollution at Home. Order free from Chesapeake Bay Trust, 60 West St. Suite 200A, Annapolis MD 21401.

Clean Lakes Program: 1987 Annual Report. U.S. Environmental Protection Agency, Washington DC.

For Your Lake's Sake. Maine Dept. of Environ. Protection, Attn: Mary Ellen Dennis, State House 17, Augusta ME 04333.



Reflections

I remembered a flash of red I had seen two weeks before on the south shore of the lake. It had not impressed me then, for the time was mid-August and it could not possibly be a warning. Perhaps, I reasoned, a beaver had gnawed the bark cutting the flow of sap, or exploring roots had found a dry crevice in the rocks and the tip, being starved for food and moisture, had gone into early flame. Surely it could be nothing else, for the days were still balmy and the nights as well, and the water had barely warmed to the point where swimming was no longer an ordeal. But now I knew that the crimson flag against the solid green of the hillside had responded exactly as the leaf of the aspen had done; that, whatever the combination of circumstances, waning sunlight had hastened the change.

by Sigurd F. Olson in Listening Point, Alfred A. Knopf, Inc. 1982

Sigurd F. Olson was born in Chicago in 1899 and moved to northern Wisconsin in 1905. He graduated from the Univ. of Wisconsin and furthered graduate studies at the Univ. of Illinois. He was nationally known and served as a consultant to the Federal government on wilderness preservation and ecological problems. He died in northern Minnesota in 1982.



ADDRESS CORRECTION REQUESTED

- Lake Country Sports Expo CANCELLED

- Community Focus: Little Elkhart Lake

- Phosphorus and Trophic Status

- Lake Use Planning

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