

Volume 15 No. 1

Spring 1990

Focus on Silver Lake, Waushara County

by Vic and Barbara Bartel

What does 400 acres of water, 4 miles of shoreline, 3 public boat landings, and 270 cottages mean? It would have meant trouble for Big Silver Lake property owners, if we hadn't been committed to taking action on managing our lake.

Through the years, the main function of the Silver Lake Property Owners Association and the sanitary district was to monitor failing septic systems. In 1985 the sanitary district, the local zoning office, and the town board worked together to establish a municipal sewer system. At a property owners meeting, 75% of the owners voted to proceed with the project. An engineering firm was hired to assess the need and in a short time we received a positive recommendation. The second step was the design phase of the system. When we started this part of the project, several adjoining areas asked to be annexed to the district. The district grew to a 24 mile sewer system servicing 5 lakes in 4 townships at an estimated cost of \$5 million. By finishing this part of the plan in 1977, we were able to receive 60% cost-sharing from the State of Wisconsin.

We were approved for a \$5.3 million grant and let bids in 1988. Construction began that summer and the sewage treatment plant went into operation in October, 1989.

The size of the lake, coupled with the proximity to large population centers, made it a perfect place for anyone with a new water toy to come play--and come they did. Every weekend they came in droves with high speed jet boats. Most of these boats ran open pipes without mufflers and threw water spouts 50 feet into the air and 200 feet in back of their engines. With such a dangerous and unaesthetic use of the lake, a majority of our property owners stayed off the lake on weekends.

Rather than be forced off our own lake, in 1983 the property owners association circulated a petition and gathered in mass at a town board meeting, requesting new ordinances to control this nuisance. Thanks to the help of the our town board, the Rooster Tail Ordinance #10 was passed. Included in the ordinance are the designation of no wake areas, the limitation of weekend water skiing hours, and the restriction against any boat operating in such a manner that produces a rooster tail taller than 4 feet or longer than 20 feet. To control the noise, we also bought a decibel meter in order to enforce the state statute prohibiting water craft noises above 86 decibels on Wisconsin lakes. Thanks to the help of these ordinances, the jet boat problem ended.

With the advent of new technological toys, the peace on our lake has again been broken. The jet boat has now been replaced by the jet ski. We are determined to keep control of our lake. To do this we are using our decibel meter to control the noisy ones, and video taping reckless behaviors of others.

The future of Silver Lake looks good thanks to the care and concern of the lake association's 250 members. We hope fishermen will again be able to enjoy the quiet times of the morning and evening hours. We have worked hard to maintain the control of our lake in order to preserve its qualities for generations to come. Who knows what our next challenge will be, but we are ready and organized to meet that challenge.

Vic is president and Barbara Bartel is secretary of Silver Lake Property Owners Association.

Boating Instructors Needed

Boating is one of Wisconsin's most popular summer recreation activities. Each year thousands of people take to the water with the expectation of having an enjoyable and safe outing. This expectation is not always met as there can be a million boaters using Wisconsin waters on any given day. Wisconsin has an excellent safety record, but there is always room for improvement. The Department of Natural Resources would like more volunteer instructors to help teach the Wisconsin Safe Boating course. If you are interested in teaching safe boating techniques and habits, call the DNR safety specialist in your area for more information.

> Spooner - 715/635-4112 Eau Claire - 715/839-3713 Rhinelander - 715/362-7616 Madison - 608/265-3253 Green Bay - 414/497-4026 Milwaukee - 414/562-9610

Convention Call

It's your last chance to register for the Wisconsin Lakes Convention at the Stevens Point Holiday Inn on March 30-31. Registration begins at 9:00 a.m. on Friday. Don't miss these highlights:

- Lake Stewardship Awards
- Public Access Policy
- Lake Planning Grants
- Lakeshore Aesthetics
- Ten Saturday Workshops

New this year--the pre-convention seminar at 10:00 at Sentry World Headquarters.

The Wisconsin Lakes Convention is open to anybody interested in inland lakes. In 1989, over 400 people like you attended. Don't be left out. Fill out the registration form and send it in right away!

PLEASE PREREGISTER BY MARCH 20

Name _____ Address

Lake____ County

Registration fee is \$25. Couples \$42--one packet. Fee includes instructional materials, refreshment breaks, and Saturday lunch.

Send form and check payable to <u>UW-Ex-</u> tension to: Diane Lueck, College of Natural Resources, Univ. of Wisconsin, Stevens Point WI 54481. (715/346-3783)

Lodging: A block of rooms is being held at Holiday Inn until March 9. Call 715/341-1340 and ask for the Wis. Lakes Convention Block.





Winterkill and Aeration

by Stanley W. Szczytko

Because lakes are isolated from the air/water interface during winter periods of ice cover, oxygen cannot diffuse from the atmosphere into the lake. Winterkills of fish and other lake animals can result during this time. Lake aeration has become a popular technique in small lakes to overcome winterkill problems by increasing dissolved oxygen and maintaining an aerobic cap on the sediments. In larger lakes, aeration systems are mostly used in bays or isolated areas of the lake where fish are concentrated.

Light transmission through clear ice is similar to water; however, it is greatly reduced through old ice which contains air bubbles, debris, and snow cover. It is not uncommon for northern temperate lakes to have essentially no light penetration below three feet during winter. With extended periods of ice and snow cover, oxygen replenishment through photosynthesis is greatly reduced since little light is reaching the plants. Aquatic plants organically enrich the sediments when they die: decomposition increases oxygen consumption. Plant and animal respiration and decomposition can easily exceed production of oxygen by photosynthesis leading to depletion of oxygen or anoxia. Anoxic conditions are lethal to many fish species, and most fish cannot survive very long in water that has less than 2 ppm (parts per million) dissolved oxygen. Small, shallow lakes have greater oxygen depletion problems and winterkill than larger or deeper lakes.

Complete lake mixing during the autumn overturn period is important to the recharge of oxygen. Once ice cover occurs, access to atmospheric oxygen is prevented. If ample autumn mixing does not occur, the stagnant lower lake waters that result from summer stratification remain low in dissolved oxygen. If the circulation period is short, only a partial rejuvenation of oxygen to lower levels may occur.

When the overlying water is anoxic, sediments become anaerobic (without oxygen) and basic chemical reactions change. These reactions can liberate toxic substances which are normally bound in the sediments. Methane, hydrogen sulfide, metals, acids, nutrients (especially phosphorus), and organic toxicants can be released under these anaerobic winterkill conditions. These substances are usually harmful to aquatic life, although they may not be immediately lethal. In some cases these substances can be built up in the food chain and may cause changes in the ecology of the entire lake.

Aeration, when properly performed, may lessen the impact of these conditions. Aeration of the water takes place from rising air bubbles created by injecting air into the water and from the surface boil which remains open to the atmosphere due to circulation. Four types of aeration systems are frequently used, including piped compressed air systems, mechanical surface spray systems, water pumped to baffled chute systems, and mechanical surface impeller air aspirator systems.

Two variables which appear to be most important to successful aeration are the percent of surface area of the lake that is kept ice-free and the amount of compressed air injected compared to the lake volume and surface area. Placement of the aeration system is critical; if the system is located too close to the lake bottom, currents generated by the compressed air may be sufficient to suspend organically-enriched bottom sediments. This may create more biological oxygen demand than the amount of oxygen being injected by the system and actually lower the dissolved oxygen. If the location of the system is too near the surface, oxygen may not be circulated near the bottom, where it is critically needed. If a large percentage of the

volume of a small, shallow pond is circulated to the surface, the water may be super-cooled by exposure to air. When air temperature may reach -5 to -20°F, the entire pond may freeze surface to bottom. To avoid this, length of time and frequency of aeration are important. For example, in small, shallow lakes, aeration may be required for only several hours during the evening on an infrequent basis. Larger lakes, however, may require constant aeration. For additional information on lake aeration review "Lake Aeration in Wisconsin Lakes", by Thomas Wirth, 1988, WI DNR Publ-Wr-196, 76pp.

Stanley Szczytko is Professor of Water Resources at the University of Wisconsin Stevens Point.

Structures in Waterways

In 1988, the state legislature formally authorized swimming rafts and boat shelters in waterways and directed the DNR to adopt rules for their placement. The DNR, with assistance from lake property owners, business and environmental groups, and local government, is proposing an administrative rule (NR 326) to clarify the rights of waterfront property owners to place these structures in our waterways. Recommendations have been reviewed by DNR staff and will be presented to the Natural Resources Board in March or April for approval to proceed to public hearings and formal rule making. Hearings will be held in late April or early May.

The focus of this rule is to balance two competing interests of the public vs. landowners, and resolve conflicts between landowners. It will also describe riparian rights that can be exercised without formal DNR intervention. Regulations are necessary so that structures do not detract from natural esthetics, impede navigation, or harm water quality and habitat. The proposed rule will establish a riparian structure zone to define areas for piers, shelters, and moored craft adjacent to each waterfront lot. This zone is defined as a 30-foot corridor extending from shore to navigable depths (~3 feet of water) for the first 100' of frontage and 10% of frontage over 100'. The following is an overview of the proposed regulation:

<u>Piers and wharfs</u> may not extend beyond the riparian structure zone, may not exceed 6' in width, may not have more than one bench, and must have a color inconspicuous as viewed against the shoreline. Permits are required for solid concrete piers and piers on cribs.

Swimming rafts are allowed between April 1 and November 1 if they are colored and marked for safety, are not larger than 10 feet square, and are within 200' of the shore.

<u>Boat shelters</u> may not extend beyond the riparian structure zone, must be connected to the uplands by a pier, may have a roof but no sides, must be of an inconspicuous color, and may not be larger than 12'x24'. Permanent shelters require a permit, whereas temporary structures removed between November 1 and April 1 do not.

<u>Marinas and access lots</u> (keyhole development) require a permit beyond the riparian structure zone, must demonstrate public

Mini Tides

benefit, must comply with local land plans, must make 20% of facilities available for general public at reasonable cost, and must reapply every 5 years.

These regulations will go into effect January 1 of the year following passage. A 5-year grace period is proposed for existing structures to comply.

Delavan Restoration Underway

Wisconsin has its share of polluted lakes, but few of them compare to Delavan Lake at its worst. At times, people standing in six inches of water in this lake have been unable to see their feet due to the unchecked growths of algae. Moreover, anglers have long complained about the abundance of carp and other rough fish, and lack of gamefish in this 2,000-acre Walworth County lake. Rather than live with this unpleasant situation, lakeshore residents at Delavan have undertaken the most ambitious lake restoration project in Wisconsin history. Earlier efforts included a complete sewering project.

Local citizens formed a committee to investigate the condition of the lake and come up with a plan to rid the lake of its nuisance conditions. Since they knew that any plan would cost money, they instituted a room tax on hotels within the township.

The lake committee, working with the U.S. Geological Survey, concluded that erosion from the rich agricultural lands upstream of the lake, development of the lakeshore, and discharge of poorly-treated sewage effluent into the lake had led to a massive accumulation of phosphorus on the lake bottom. Algae thrive when phosphorus is readily available. With the help of the DNR and the University of Wisconsin, the committee adopted a plan to improve both the water quality and the fishery of the lake.

They hired an engineer to design a wetland that would filter out some of the phosphorus entering the lake from upstream. The engineer also designed a new dam and a long earthen peninsula in the lake to prevent the relatively dirty streamflow from mixing with the lake. To keep the phosphorus at the bottom of the lake from feeding the algae, they planned to treat the lake with alum, a substance that precipitates and immobilizes phosphorus. To turn around the fishery, the committee worked with the DNR to plan a complete fish kill on the lake, so that a clean-water fishery could be built up from scratch.

In September, the first stage of the restoration finally began when huge pumps drained the top ten feet of water from the lake. Lowering the lake level reduced the amount of fish poison that was needed and made it easier to enlarge the dam and build the peninsula. In November, DNR fisheries specialists applied rotenone, a naturally-derived fish poison. The operation left no rough fish to plague the lake. DNR will begin restocking the lake with panfish, minnows, walleye, and other game fish this spring.

When all the work at Delavan is done, residents hope to have a lake free from the pea soup appearance of the past, and free from the carp that prevented walleye and northern pike from becoming established in the lake. Will they be successful? No one will know for sure until all the pieces are in place and the lake stabilizes.



Fisheries specialists apply rotenone to rid Delavan of rough fish.



Capitol Report

Lake Planning Grants

by Richard Wedepohl

In the last biennial budget, Wisconsin's Legislature recognized that management of Wisconsin's 15,000 lakes is often limited by a lack of basic information and local management capability. The legislature approved, and the Governor signed, a lake management grants program that was introduced by Representative Jim Holperin. The legislation established a state-local partnership by making cost-share grants available to local lake organizations for the collection of water qualityrelated information. The funds, \$650,000 for the first two years, will be raised from boating gas taxes.

Who may apply? All counties, cities, towns, villages, qualified lake associations (see box) and public inland lake protection and rehabilitation districts are eligible to receive lake planning project grants.

What projects are eligible? The following projects are proposed to be eligible for fund-ing:

- Acquisition of new or updated, physical, chemical and biological information within a lake or surface water or groundwater which may be tributary to a lake.
- 2. Definition of a lake's watershed boundaries and sub-boundaries.
- Descriptions and mapping of existing and potential land conditions, activities and uses within a lake watershed that may affect the water quality of the lake.
- Definition of existing governmental boundaries and zoning ordinances related to the control of pollution sources and evaluation of the effectiveness of land use and pollution control ordinances.

- Acquisition of sociological information (census data, lake use information) for developing a long-term lake use plan.
- The analysis, evaluation, reporting, and dissemination of information obtained as part of the planning project.

A qualified lake association is presently defined as a group that is incorporated under Chapter 181, Wisconsin Statutes and that meets all of the following conditions:

 Specifies in its articles of incorporation or bylaws that a substantial purpose of incorporation is to support the protection or improvement of one or more inland lakes for the benefit of the general public.

 Demonstrates that a substantial purpose of its past actions was to support the protection or improvement of one or more inland lakes for the benefit of the general public.

 Offers membership to any individual who for at least one month each year resides on or within one mile of an inland lake for which the association was incorporated.

 Offers membership to any individual who owns real estate on or within one mile of an inland lake for which the association was incorporated.

 Does not limit or deny the right of any member or any class of members to vote as provided under 181.16 (1), Wisconsin Statutes.

- . Has been in existence for at least one year.
- Has at least 25 members.

 Requires payment of an annual membership fee of not less than \$5 nor more than \$25.

 Is an organization able to accept tax deductible contributions under Section 501 (c) (3) of the Internal Revenue Code (see box next page) and is exempt from federal income tax under section 501 (a) of that code.

How much money will be available to each lake? The state may offer up to \$10,000 per lake per biennial budget period for a lake planning project. All state funds must be

matched by a 25% local contribution. Up to \$30,000 can be provided over multiple state budget periods if the projects are consistent with the results of earlier projects and with statewide planning needs.

How will the program work? As presently proposed, applications for financial assistance must be submitted by February 1 or August 1 of each year. A project priority list will be prepared by the DNR each year. The proposed factors to be considered in the prioritization are the degree to which a project will:

- Enhance knowledge of a lake's water quality.
- Enhance knowledge of a lake's watershed conditions that affect or have potential to affect a lake's water quality.
- Enhance local understanding of the lake's water quality, potential uses, and factors affecting a lake's water quality.
- Complement other lake management efforts; and
- 5. The degree of public access to, and public use of, the lake.
- 6. The level of support for the planning project from other affected management units.
- The importance to the state of the information obtained from a planning project.

Cost-share grants will be awarded by April 1 and October 1 of each year. For each project a final report suitable for distribution to the general public will be required.

When will the program begin? The legislation which authorized the DNR to offer these grants also required that administrative rules be developed before grants can be issued. The steps of the rule making process (presently underway) include: DNR Board approval, holding of public hearings, reviewing and revising as necessary, approval by the DNR Board, assigning to legislative committee for review, and to the Revisor of Statutes. If public hearings are approved by the Natural Resources Board in February, they will be held after March 15. A suggested time and place is Thursday, March 29, 1990 at Stevens Point. This would be the day prior to the Wisconsin Lakes Convention, also held in Stevens Point. The earliest the bill could become effective is September 1, 1990.

If I'm interested in applying for a grant what can I do now? Although the earliest time grants could be offered is sometime after September, 1990, you can begin taking some steps to develop a project proposal.

The first step is to get organized, make sure your existing organization is eligible if you are a lake association. Solicit support from others within your community, since higher priority for funding will be given to those requests having strong local support. You may wish to contact your local County University Extension Resource Agent for help in this area. You'll also need to begin identifying the data needs your lake may have. Your DNR District lake management coordinator can help on this. A good way to keep up to date on the rule making process is by attending the Wisconsin Lakes Convention on March 30 and 31.

Richard Wedepohl is an environmental engineer in DNR's Lake Management Program.

Assembly Bill 715, recently introduced by Representative Jim Holperin, would eliminate the IRS classification requirement for lake associations wishing to apply for planning grants. This legislation, scheduled to be considered early this year, would also modify the membership fee requirement, so fees could range between \$10 and \$100.

A Reader Writes

Lake Tides appreciates your comments on articles and our new format. We would like to share one of these letters, and look forward to hearing from you.

After reading your last issue, I thought it was time to speak out. I really envy the people who live on Green Bass Lake.

The concerns on our lake are the size, speed, number, noise, and excess wake of motorboats and jet water skis; plus litter on lake and shore, and late party noises. As you know, we cannot control the size, horsepower, or speed of motorboats on the lake. Can you imagine 150 to 200 HP boats racing 50-60 MPH up and down a 90 acre lake? We just stay on the shore. DNR states it's legal.

I have served on various committees for our lake association. We have tried to do some things, but have been unsuccessful because of existing laws that cannot be changed. We have at our own expense a water patrol that operates on our lake and two connecting ones. This has reduced reckless operation of boats and helped to enforce some safety laws.

Another point is the litter, trash, and excrement from ice fishers, plus the pollution, oil, soot, etc. from the cars that come onto the



DNR Coordinator: Jana Suchy Assistant Editors: **Robert Korth Sterling Strathe** Published quarterly by season. Subscription rate: No charge. Articles and news items are welcomed and should be sent by Jan. 10, Apr. 10, Jul. 10, or Oct. 10 to: **Diane Lueck College of Natural Resources** University of Wisconsin Stevens Point, WI 54481 715/346-3783

lake. Our game warden and DNR people do an outstanding job of enforcing fishing laws, but that's it. Anything else seems to fall through the cracks.

I believe in the natural shoreline concept and when excess wake was destroying the shoreline, I had the DNR review the problem and did as they told me: \$1,000 for trap rock and rip-rapping so that the boats could continue to race up and down the lake--something wrong here!

Yes, I'm unhappy. I've owned property on this lake for 20 years and have now retired here. Watching a nice quiet, good fishing, small lake turn into a very noisy, dangerous, littered lake because of a few people is very discouraging. If we are unable to make any changes through local or state government or the DNR, who do we turn to? Perhaps your organization can be of some help. Hopefully you have heard of similar complaints from other small lake property owners.

IN THE WORKS

Assembly Bill 705 proposes that a city, village or town may authorize the lake district to enact ordinances to regulate surface water use.

Under the bill, lake districts and sanitary districts would be given clear authority to inspect sanitary systems, using state plumbing code qualifications.

The bill also clarifies procedures for:

- 1. holding special meetings
- 2. filling vacancies on the board of commissioners
- 3. considering the dissolution of a district.



Cooperative Extension Service... Putting Knowledge to Work for You Community, Natural Resource, and Economic Development Programs



Wisconsin Department of Natural Resources