Lake Tides
The newsletter for people interested in Wisconsin lakes

Getting It Right

Whole-Lake Herbicide Debate Deserves a Dose of Science

If you have read the papers lately, you may have noticed that lakes are in the news! Headlines from the Wisconsin State Journal this summer read:

"Why not try magic potion on our lakes?" (7/17)
"We won't save lakes by playing it safe" (7/19)
"DNR wary of fluridone to clear lakes of weeds" (7/22)
"Lake problems defy simple solutions" (7/31)
"Board member pushes for study of lake weed herbicide" (8/11)
"Herbicide can kill lake weeds safely" (8/14)
"For lakes cleanup, think big" (8/19)

Lake Tides *asked the DNR Research Team to explain the "ins and outs" of whole-lake treatments.*

People have long been interested in managing aquatic plants in their lakes, and few plants have attracted as much concern as the invasive Eurasian watermilfoil. Recently, a new management technique is sparking intense debate.

The subject of the debate is, as you may have guessed, whole-lake herbicide treatments for Eurasian watermilfoil (EWM). The pesky plant is now present in over 400 Wisconsin lakes. Given the rising concern over its presence and distribution, debating proper control methods is important. Unfortunately, misinformation seems to abound, making the discussion less productive than it could be. Fluridone is the chemical proposed to apply to entire waterbodies to treat EWM. The active ingredient is 1-methyl-3-phenyl-5-[3-(trifluoromethyl)phenyl]-4(1H)-pyridinone, and is marketed under the trade names Sonar® and Avast!® As part of the DNR's Lake Research Team, we have reviewed the effects of whole-lake fluridone treatments in Wisconsin and throughout the country. To help foster a discussion that balances sound science with ecological, social, and economic value, we'd like to clarify six common assumptions:

Assumption #1. Eurasian watermilfoil has taken over our lake!

First, you should "know your plant," particularly where and how much EWM is present. The first step in choosing an appropriate aquatic plant management plan is to conduct a good quantitative aquatic plant survey. You can check out DNR's

(Continued on Page 2)

Photo provided by Wisconsin Department of Natural Resources

Fluridone is typically applied through subsurface injection with hoses that drag in the water.

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(Whole-Lake Herbicide Debate, continued)

Not a single lake in the country has ever received a whole lake treatment that has truly eradicated EWM.

plant sampling protocol at: http://www.uwsp.edu/cnr/uwexlakes/ecology/APM/APM%20Appendix.pdf. Accurate quantitative plant surveys are important because perception and memory can be inaccurate. Since EWM is often the only plant visible at the surface, it may only appear to have "taken over." EWM tends to become dominant in disturbed eutrophic lakes, but in other lakes it may be present for decades and never reach nuisance

levels. Surveys will let you know: 1) how much EWM is really there; 2) where it is present; and 3) what other species are there as well. This information will allow you to choose a tool that is appropriate for the scope of the EWM infestation while minimizing the impact on native plants. You can also track the success of any plant management actions by following the same survey protocol for multiple years.

Assumption #2. Fluridone is just another herbicide – it's "proven" to be safe for people and the environment.

There is a key difference between how fluridone and other aquatic herbicides (e.g., diquat, endothall, 2,4-D) are used – namely, the size of the area they are used to treat. Unlike conventional treatments used to deal with portions of lakes ("spot treatments," usually 10 acres or less), the liquid formulation of fluridone must be applied at the whole-lake scale. Active concentrations of fluridone (greater than four parts per billion) must be maintained for approximately 60+ days throughout the entire surface layer of the lake for it to be effective on EWM. Because of the long contact time required, it may be impractical to treat some flowages and drainages because the chemical is lost through the outlets.

So what is the problem with treating whole lakes?

Prior to issuing a permit for a chemical application, the Wisconsin DNR is required in its aquatic plant rules (NR 107) to be reasonably certain that the application will avoid: 1) a hazard to humans, animals or other non-target organisms; 2) a significant adverse effect on the body of water; 3) significant injury to fish, fish eggs, fish larvae, essential fish food organisms or wildlife, either directly or indirectly through habitat destruction; 4) areas containing threatened or endangered species; and 5) significant negative effects on native vegetation in sensitive areas. To the best of our knowledge, there are no toxic effects of fluridone to humans or animals when applied according to label instructions. [As is the case with any herbicide, it is impossible to test every life stage of every potential organism, every potential mode of exposure (consumption, skin, aerosol), and every by-product along the process of degradation, over both the short and long term. Careful consideration should include evaluating the known beneficial and negative impacts of chemicals applied to surface waters, in addition to recognizing potential undocumented effects.]

Both positive and negative ecological effects accompany an herbicide treatment of any size. Positive effects include temporary control of exotic species. Negative effects may include die-offs of native vegetation, increases in green algae and/or cyanobacteria (blue-green algae), and effects on invertebrates and fish through loss of habitat and potential changes to oxygen profiles (possibly resulting in fish kills).

With small-scale treatments, negative effects are limited to the treatment zone, allowing susceptible species to survive elsewhere in the lake. With a whole-lake treatment, however, the entire lake ecosystem is exposed to the herbicide. Because of this, it is crucial to systematically evaluate the benefits and risks associated with treatment.

Assumption #3. Fluridone is widely used and well-studied.

A scientist's best source for reliable, unbiased information is an article in a peer-reviewed scientific journal. We started there to understand the efficacy and risks associated with whole-lake fluridone treatments. Unfortunately, we found only three peer-reviewed articles that dealt with effects on EWM and plants, zero that dealt with effects on water clarity, and three that focused on select aspects of fish biology - very few, considering these treatments occur on whole lakes! There also were no long-term studies (greater than five years). Because of the limited published information, we also contacted 30 states for unpublished monitoring data.

How widespread is the use of fluridone for whole-lake treatments? Ten states confirmed using fluridone for whole-lake chemical treatments for EWM or hydrilla (another invasive aquatic plant in the southern U.S.) within the past 10 years. In two states, whole-lake treatments are relatively common; Florida allows approximately 80 per year, and Michigan allows approximately 20 per year. Most other states have allowed experimental treatments on only a limited number of lakes (e.g., Wisconsin - 4 total, Minnesota - 8, Iowa - 6, Vermont - 4, Indiana - 4, Oregon - 2, Maine - 1). Due to research that demonstrates negative effects of whole-lake treatments on native vegetation and water clarity, the Minnesota DNR generally prohibits whole-lake treatments, especially on eutrophic lakes.

Assumption #4. Whole-lake herbicide treatments eradicate EWM.

Not the case! Not a single lake in the country has ever received a whole-lake treatment that has truly eradicated EWM. Successful treatments do significantly reduce EWM for 1-3 growing seasons, often crashing to near zero the year of treatment. However, it always returns. In years following initial treatment, manual methods or small-scale chemical treatments are employed to manage EWM as it recovers. Without repeated whole-lake treatments, EWM eventually returns to pretreatment levels, often expanding rapidly during a single season. Return of EWM in treated Midwestern lakes appears to be from roots or seeds remaining in lake sediments after treatment, not from new introductions at obvious entry points like boat launches.

With a whole-lake treatment, the entire lake ecosystem is exposed to the herbicide.

Assumption #5. Whole-lake herbicide treatments are "selective" and do not affect native plants.

How fortunate we would be if that statement were true! However, many native plants are killed by fluridone. Susceptible native plants include: coontail, elodea, naiads, northern watermilfoil, certain water lilies, some duckweeds, bladderwort, seven of the *Potamogeton* pondweeds, and water stargrass. If together these species comprise a large proportion of the local plant community, fluridone's effect on native lake vegetation will be drastic. If present, fluridone-tolerant plants like chara or wild celery may increase as long as competition from EWM is absent. However, it is only a matter of time before EWM returns to again outcompete these tolerant plants. In the meantime, some susceptible species return, while others may not.

Assumption #6. Whole-lake herbicide treatments never cause algae problems.

Herbicides are intended to kill plants. By killing plants, we can open the door to other lake problems. To understand the ecological relationships that will help us predict the effects of fluridone, let's review a little lake biology. Primary production in lakes (the conversion of carbon dioxide and energy from the sun to organic carbon and oxygen) is carried out by three interacting (and competing) communities of a lake's ecosystem – plants, algae, and certain types of bacteria.

Aquatic Plants, or "weeds," are macroscopic, and usually rooted in

(Continued on Page 4)

In our review of whole lake treatments, we found significant decreases in water clarity following 80% of the treatments.

sediments. Plants provide valuable ecological services. By competing for nutrients, they limit the growth of algae and cyanobacteria and improve water clarity. They also stabilize sediments, preventing shoreline erosion, and provide critical habitat to many organisms (including fish).

Algae are highly variable. They can be either microscopic or macroscopic, made up of single or multiple cells, and may grow free-floating or attached to a substrate. Along with plants, algae serve as the base of the food web in lakes. Growth of algae increases with increasing nutrients. High abundance of algae makes the water appear greener and become less clear.

Bacteria are microscopic. We are often concerned with certain groups of bacteria called cyanobacteria (blue-green algae). Like other algae, cyanobacteria increase under favorable environmental conditions such as increased levels of phosphorus, reducing water clarity. Increases in some species result in significant odors. Certain species of cyanobacteria may also be toxic.

Photo provided by William Jones

Preparing for chemical application

Because each of these primary producers uses nutrients, it is important to understand that a management action aimed at decreasing plants (like whole-lake herbicide treatments) leads to increased nutrients available for algae and bacteria. Decaying plant material also releases additional nutrients (like compost) that algae and bacteria may use for growth. Large-scale die-offs of vegetation may result in "blooms" of algae and cyanobacteria (potentially causing fish kills, odors, and toxins). Large-scale decreases in plants also result in a significant alteration in habitat for invertebrates and fish. A lack of nearshore aquatic plants may facilitate faster erosion from wave action along susceptible shorelines.

So what about clear water?

In our review of whole-lake treatments, we found significant decreases in water clarity following 80% of the treatments. In most, water clarity was deacreased by 50%. The water quality response can be predicted based on three factors unique to each lake: 1) the amount of susceptible vegetation killed; 2) external and internal nutrient loads; and 3) physical characteristics of the lake (primarily the percentage of the lake area that is occupied by plants). It is most likely that extreme reductions in water clarity will occur in shallow, eutrophic lakes that are dominated by EWM and other susceptible plants. A deep, oligotrophic lake, with high abundance of fluridone-tolerant natives is less likely to be impacted by algae after treatment.

A magic potion?

Are whole-lake herbicide treatments a quick-fix to our long-term EWM problem? Like anything that sounds too good to be true, we have yet to discover a "magical potion." However, using science and informed discussion, we can systematically evaluate the benefits and costs associated with various management techniques including reasonable expectations of EWM nuisance relief, and anticipated effects on other aspects of a lake ecosystem. If you are considering a whole-lake treatment on a lake you care about, ask questions and demand answers of the treatment advocate. As a smart consumer, seek answers from multiple sources, not just from parties with an economic interest in your decision. In many cases, the honest answer may be a humble, "There are no answers yet." For example, as tempting as it is to assume no harm, the long-term effects of fluridone on fisheries are entirely unknown. It is no easy task to balance the ecological risks and benefits with the economic costs of different management options within the array of social values represented by the public trust. But without good science, a whole-lake treatment may turn into a whole-lake mistake.

by Jennifer Hauxwell, Kelly Wagner, and Alison Mikulyuk
Wisconsin Department of Natural Resources

Hands Across the Waters
28th Annual Wisconsin Lakes Convention

Have you ever felt that your personal views and opinions are not heard? Do you feel frustrated and disappointed with what is happening on and around your lake? If you want to learn about getting your voice heard, attending the Wisconsin Lakes Convention next April is a must.

The Wisconsin Lakes Partnership will host the 28th Annual Wisconsin Lakes Convention on April 20-22, 2006 at the KI Convention Center/ Regency Suites in Green Bay. The convention theme, "Hands Across the Waters," will focus on civic engagement. Keynote speakers will address that theme, and you'll get hands-on details on how to be effective in public policy decisions in many concurrent sessions. Learn how you can work with others to solve issues in your community. Discover ways to effectively reach and influence legislators and other decision-makers.

As always, other concurrent sessions will cover a wealth of information on lakes and lake issues such as management and science, lake organization management, wildlife and fisheries, and aquatic invasives.

Many exhibitors will be on hand with lake products and services. On Thursday of the convention, workshops and field trips will be offered. Workshops will include topics such as Limnology 101, Lake District training, local ordinance development, aquatic plant identification, and conflict resolution. Tentative field trips include a trip to Door County lakes, as well as to a Kewaunee County dairy farm to discuss agricultural impacts on watersheds. Friday and Saturday will feature concurrent sessions, special meetings, and entertainment.

Watch for more information on the convention agenda and how to register in the next issue of *Lake Tides* and online at www.uwsp.edu/cnr/uwexlakes/conventions. For your lake's sake, plan on attending the convention!

www.uwsp.edu/cnr/uwexlakes/conventions

Before the Swim *- John Kuntz*
1st Place - People Enjoying Lakes
2005 Wisconsin Lakes Convention
Photo Contest

Photo Contest

Show the state why you love your lakes as well as display your skill with a camera. Enter the 4th Annual Photography Contest at the 2006 Wisconsin Lakes Convention. For details visit www.uwsp.edu/cnr/uwexlakes/conventions.

Livin' on the Edge *- Dale Cox*
1st Place - Natural Features
Around and In Lakes
2005 Wisconsin Lakes Convention
Photo Contest

Milfoil Control
Let Nature Take its Course?

The Phillips Chain of Lakes, made up of Duroy, Elk, Long, and Wilson Lakes, is located adjacent to the city of Phillips in central Price County. The invasive and problematic Eurasian watermilfoil (EWM) was first found in Duroy Lake in the fall of 2000. By 2002, all four lakes contained EWM. Duroy contained extensive beds, Wilson contained smaller scattered beds, and Elk and Long contained very small, scattered beds.

There had been no introduction of weevils made on the Phillips chain, so the native weevils present simply adapted to feeding on EWM.

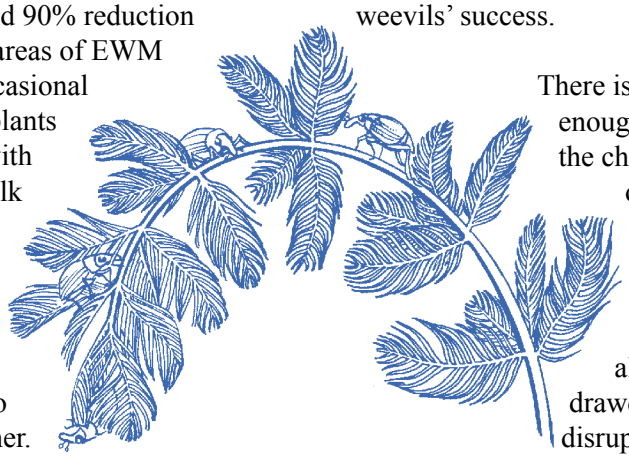
In 2005, concerned about the amount of EWM in the lakes, the Phillips Chain Lake Association requested an over-winter drawdown to reduce the invasive plant in the chain. In response, Craig Roesler and Dan Kephart of the DNR performed an assessment with assistance from lake association volunteers.

Surprisingly, the assessment revealed the EWM population had declined substantially since 2002. Duroy Lake showed a major decline, with an estimated 90% reduction in visible plants. Large areas of EWM beds were reduced to occasional plants. Most surviving plants were heavily damaged with few remaining leaves. Elk and Long Lakes had hardly any EWM. In Wilson Lake, the declines ranged from almost total destruction of plants in one bed to no obvious impacts in another.

What was happening in the lakes to reduce the EWM populations? Upon examination of the damaged plants, evidence showed that the milfoil weevil, *Euhrychiopsis lecontei*, was hard at work. Numerous adult weevils were found and many of the damaged EWM stems showed the blackened stem segments caused by larval feeding.

Milfoil weevils are about 3 mm or 1/8 inch long. They are naturally present in most Wisconsin lakes that contain native milfoils. There had been no introduction of weevils made on the Phillips chain, so the native weevils present simply adapted to feeding on EWM. Up to now, milfoil weevils had shown significant impacts to EWM in a very small percentage of lakes. The reasons they are unsuccessful in most lakes are uncertain, although predation by abundant bluegills has been shown to be one factor. The extent of the weevil impact to EWM in the Phillips chain appears to be greater than that reported in any other lakes where impacts have been observed.

The lakes of the Phillips chain have dark waters, heavily stained from wetland drainage. They also are eutrophic and experience significant summer algae blooms. EWM is only present in water depths ranging from 2.5 to 5 feet. It is unknown whether these conditions may have contributed to the weevils' success.



There is probably not enough EWM left in the chain to justify a drawdown and consequently, the technique has been put on hold. There was also concern that a drawdown could disrupt the booming weevil population and have other negative consequences. What's next in this weevil vs. EWM saga? More observation will take place over the next few summers to see if the weevils' effectiveness continues in the fight against EWM.

by Craig Roesler
Wisconsin Department of Natural Resources

NR115 Update
Shoreland Zoning Rules

Recently more than 1,200 citizens attended public hearings vital to preserving the Wisconsin they grew up knowing and loving. Thanks to everyone who took the time to become involved in the revision of the shoreland zoning rules through the 11 public hearings held around the state and the public comment period.

It was very clear from the comments heard that Wisconsin's 15,000 lakes and thousands of streams are the heart and soul of the Badger state. People described these waters as a foundation of Wisconsin's economic future: a powerful reason to keep people and businesses here, important amenities we can offer prospective businesses and residents, and an anchor of the state's $12 billion tourism industry.

DNR shoreland protection staff launched the revision process in 2002 by convening a citizens' advisory committee to look at the current rules, which set statewide minimum standards (in largely unincorporated areas) for lot sizes, building setbacks and limits on removing shoreland vegetation. The goal of the changes is to strike the proper balance between providing property owners more flexibility in what they can do on their land in exchange for measures to offset the resulting impacts on lakes and rivers.

Over 12,000 comments have been received on the proposed revision to NR 115. After reviewing and compiling the comments, the DNR will make changes to the rule proposal based on the comments heard during the comment period and public hearings. The final draft of the rule will then be taken to the Natural Resources Board for final consideration.

by Toni Herkert
Wisconsin Department of Natural Resources

Q&A
Lake Districts

We often get phone calls and emails from Lake Tides *readers with a variety of questions about lake districts. Do you have a question about lake districts that you would like to see answered in* Lake Tides*? Send it to uwexlakes@uwsp.edu so we can include it in a future issue.*

Q: Can a lake district use absentee or proxy voting?

A: No.

In 2004, the WI legislature passed Act 274, making some legislative changes to Chapter 33 of the Statutes, the chapter that specifically pertains to lake districts. Chapter 33 was updated to say that no absentee ballots or proxies are permitted at an annual meeting or a special meeting of the district. Wis. Stat. §§ 33.30(2)(b) and 33.305(4).

Some people claim that absentee or proxy voting gives members who may not be able to attend the annual or special meeting an important voice in district matters. Others maintain that absentee and proxy voting doesn't provide the non-present member the benefit of hearing discussion during the meeting on an issue.

If an issue to be voted upon at a lake district meeting changes during the course of the meeting or if new information is brought forward, an absentee vote could be rendered useless. In the case of proxy voting, some people contend that the designated proxy may not know how to cast the vote for the non-present member if changes occur at the meeting.

Although other governmental bodies allow absentee voting (but not proxies) for election purposes (i.e. local, state, federal elections), lake districts are unique in that elections do not happen in a polling booth. Voting takes place at an annual meeting, where nominations can be taken from the floor of the meeting. Absentee voting in these cases does not provide the non-present member the benefit of considering those new nominations.

For these and other legal reasons, absentee or proxy voting are not permitted for lake districts.

Can You Risk It?
Insurance for Lake Organizations

"We only need insurance if something bad happens." The topic of insurance coverage can be a tough one for lake organizations to deal with - it requires weighing the cost of a policy against exposure to risk and shopping around for the best service and a fair price.

A search of *The Lake List*, Wisconsin's online directory of lake organizations, reveals that of the approximately 700 lake organizations in Wisconsin, about 149 indicate that they carry some type of insurance (78 of those are lake districts and 55 are associations). The cost of insurance varies greatly, depending upon the size and complexity of the organization. It ranges from Delavan Lake Sanitary District in Walworth County with a $43,000 insurance bill (out of a $2.2 million dollar budget) to the 92-member Butternut Franklin Lakes Improvement Association, which pays $192 a year (for a million dollar blanket liability policy.)

The need for some types of insurance coverage may be fairly obvious. It is the responsibility of everyone and particularly lake officials and leaders to consider the insurance question carefully and to develop and follow a reasonable plan that will be of benefit to the lake organization, its officers and employees, and the lake. In very general terms, the more activities and properties that an organization has, the greater its risk.

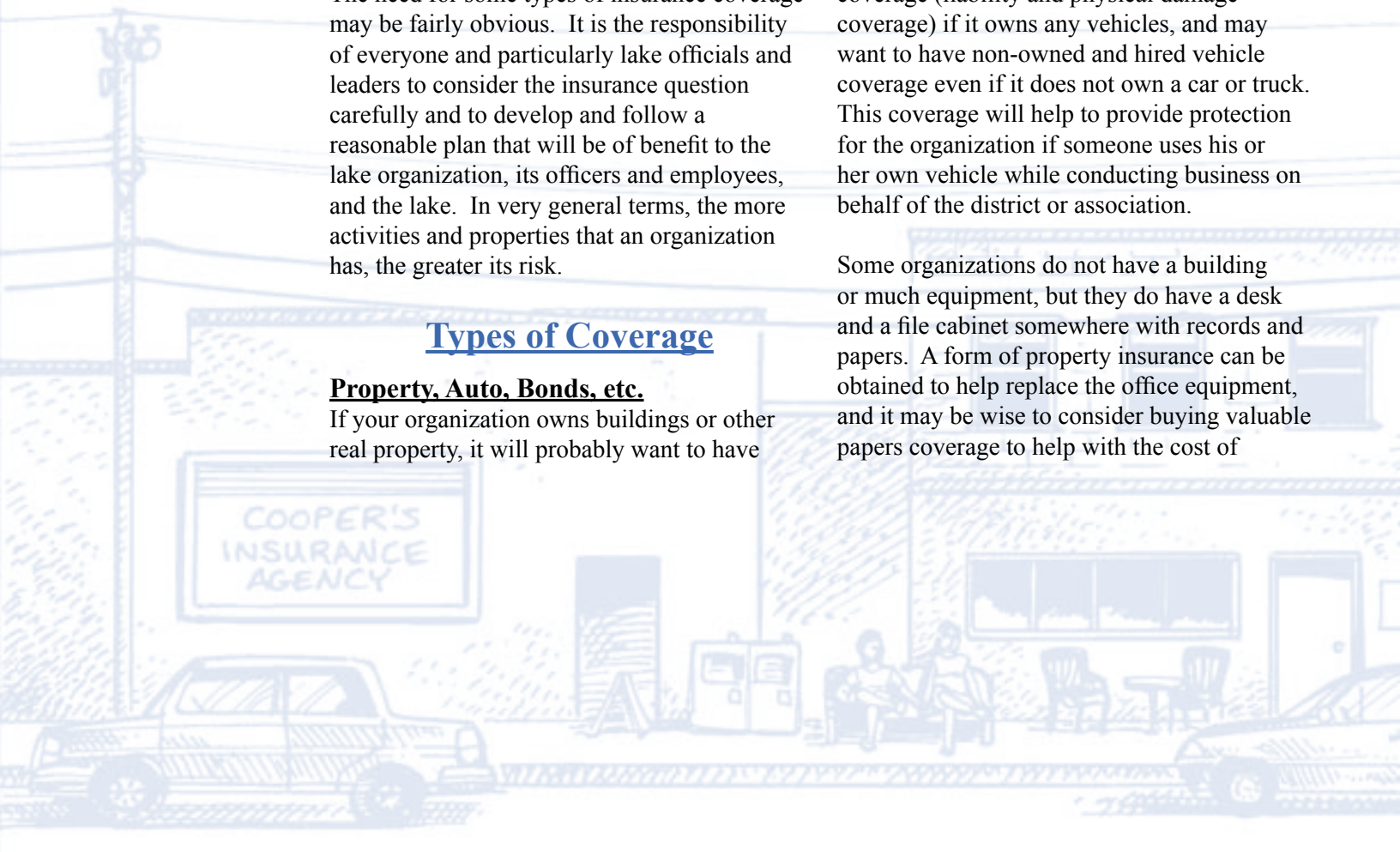
Types of Coverage

Property, Auto, Bonds, etc.

If your organization owns buildings or other real property, it will probably want to have property insurance coverage (fire, windstorm, etc.). If it owns moveable equipment such as an aquatic plant harvester or boat, it can cover its investment in those items by purchasing inland marine coverage. Both property and inland marine coverage are designed to pay for damage to the property itself, not for damage or injury that might be done to others. Costs can vary greatly for organizations with harvesting operations. As an example, costs range from $3,900 for the 428-acre Red Lake District in Shawano County to $1,377 for 418-acre Lake Ripley in Jefferson County. The insurance policy of these organizations covers trucks, harvesters and conveyor equipment for the months of operation. A number of organizations have noted that the insurance costs for chemical applications can be very high, and it is probably best to let a professional applicator with insurance do such work.

The organization should have auto insurance coverage (liability and physical damage coverage) if it owns any vehicles, and may want to have non-owned and hired vehicle coverage even if it does not own a car or truck. This coverage will help to provide protection for the organization if someone uses his or her own vehicle while conducting business on behalf of the district or association.

Some organizations do not have a building or much equipment, but they do have a desk and a file cabinet somewhere with records and papers. A form of property insurance can be obtained to help replace the office equipment, and it may be wise to consider buying valuable papers coverage to help with the cost of



reconstructing papers and records should they be destroyed.

Even if the organization does not have employees, it should consider the protection of a worker's compensation policy. If, for example, a lake association hires a contractor who does not properly follow the worker's compensation laws, the responsibility for injuries to the contractor's employees could lie with the association. Always obtain proof of insurance and Workman's Comp from any contractor prior to hiring them. The Wisconsin Department of Workforce Development (DWD) in Madison can answer questions regarding worker's compensation for individual organizations (www.dwd.state.wi.us/wc).

General Liability, Errors and Omissions

General liability insurance is an important form of coverage. It is significant not only for payment of tort liability judgments against the organization, its officials and employees, and the costs of defense, but also for the expertise and resources of the insurer in managing and helping to defend lawsuits.

At a minimum, liability coverage should be written so that all board members, officials and employees are insured under the policy. It may be desirable to insure volunteers in some circumstances. Some lake organizations select policies with limits of liability of $1,000,000 or more, depending on assets exposed.

The liability insurance program can include what is commonly known as Public Officials Errors and Omissions (E & O) coverage for the board and employees. E & O coverage helps to protect and defend the individual board members and others against suits alleging negligence-caused financial or other nonphysical injury. Many E & O suits claim officials or employees have made mistakes in carrying out their official duties or that they are operating the organization in an improper way. E & O coverage can be written as a separate policy or provided as part of the General Liability policy.

Although no policy covers every form of liability, some insurance policies are more broadly written than others. While broader policies may cost more in initial premiums, they may cost less in the long run because of fewer uninsured claims. Good quality insurance coverage may have its costs, but the expense of not having proper coverage needs to be weighed against those costs.

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What could happen if a liability lawsuit is filed against an organization, its officers or employees without insurance protection? In the case of a lake association, a lack of insurance may result in insolvency if a large, uninsured liability judgment is entered. This means, among other things, that the assets of the association could be lost.

A lake district with taxing powers presents a somewhat different situation. If a suit against a lake district results in an uninsured judgment that is greater than the district's available assets, it could be required to levy additional taxes to pay the judgment.

Selecting an Insurance Company

What is the best way to select an insurance carrier? Although there are no absolute rules, there are some guidelines that may help the process. Most lake organizations prefer to deal with a local insurance broker with whom they are familiar and have confidence in. If that local broker is an independent

(Continued on page 10)

Some companies specialize in insurance for lake organizations and have more experience dealing with the unique needs of lake organizations.

agent, they may contact several insurance companies to determine the best company for the organization. Look for a financially-sound insurance carrier. Check for strength in the liability areas and special areas of coverage such as Errors & Omissions. Some lake organizations have expressed interest in forming a statewide cooperative to try and purchase insurance at a less expensive group rate.

Find a company that has experience working with lake organizations. Some companies specialize in insurance for lake organizations and have more experience dealing with the unique needs of lake organizations. They may offer package programs that cut insurance costs. When you're talking with an insurance broker ask them how many Wisconsin lake organizations they insure. Request the names of other insured organizations and contact them concerning their experiences with the company. Use *The Lake List* online directory (see additional information on page 13) to identify other organizations that carry insurance and talk with them.

This information is excerpted in part from a new supplement on insurance which is a section of the 11th edition of the Lake Organization Guide. It was written by Robert Korth with the help of Rob Mentzer, Paul Bondar of The Horton Group and Steve Weston of Weston Insurance in Minocqua. For more information on insurance for lake organizations look for the new 11th edition of People of the Lakes: Wisconsin Lake Organization Series *coming soon or visit http://www.uwsp.edu./cnr/uwexlakes.*

For a list of firms dealing with insurance for lake organizations or to identify other organizations with insurance, see the Lake List Directory at http://www.uwsp.edu/cnr/uwexlakes.

Laura Herman Coordinates Citizen Lake Monitoring Network

Laura Herman has spent the last few decades with the DNR, serving as an aquatic entomologist and non-point source coordinator in the Green Bay area, and more recently as the Aquatic Plant Management and Protection Coordinator and the Self-Help Volunteer Lake Monitoring Coordinator in Rhinelander. In these roles with DNR she has worked with many citizens across Northeast and Northern Wisconsin to conserve and improve their lakes.

Laura has jumped to another arm of the Wisconsin Lakes Partnership with her move to the UW-Extension Lakes Program at UW-Stevens Point, where she will be the Citizen Lake Monitoring Network Educator. This position was created to coordinate and improve the citizen lake monitoring effort, formerly called Self-Help. Laura will be working on updating the monitoring manuals, adding new monitoring options, and developing a network of volunteer support.

For more information on volunteering or monitoring, contact Laura at 715/346-3989 or lherman@uwsp.edu.

NR326 Pier Survey Shows Most Piers Meet Size Limits

The vast majority of Wisconsin's nearly half-million piers can continue to be placed along Wisconsin lakes and rivers without a state permit, based on the results of recent lake surveys by the Department of Natural Resources.

By state law, piers do not need a permit if they are up to 6 feet wide, extend into the water only to the length necessary to adequately moor their boat or a depth of three feet, whichever is greater, and if they have a maximum of two boats for the first 50 feet of frontage and one for every 50 feet thereafter. These size limits were established by lawmakers in the Jobs Creation Act of 2004, and are the same as guidelines recommended by DNR in the "Pier Planner" brochure since the early 1990s.

DNR surveyed piers on twenty-four lakes which were selected from the Wisconsin Lakes Book, a long-standing reference book listing 15,081 documented lakes. Lakes were selected using random selection software to produce a list with approximately two-thirds greater than 100 acres in size, one-third less than 100 acres.

More than 82% of all piers on the 24 surveyed lakes met the size limits in state law. This means the piers are exempt from permitting. Piers that did not meet the size limits were found to exceed the current requirements for several reasons. The two most common reasons were multiple boat-slip facilities like marinas, and piers with very large platforms or decks on them. Many existing marina facilities already have DNR permits, and more than half the lakes surveyed had less than 10% of piers that would require any permit.

The survey showed other interesting trends, including that the level of lakeshore development does not necessarily correlate to the size of piers or density of boats. For example, 49% of existing piers on Lake Monona in the City of Madison meet the statutory size limits to be exempt from permitting. Staff conducting the Lake Monona survey observed many piers with larger platforms, and the larger piers tended to be clustered at neighboring properties along specific areas of the shoreline. By contrast, more than 92% of the existing piers on Lake Minocqua in Oneida County, another highly developed lake, are exempt and do not require a DNR permit.

Reasonable size limits for piers are important to ensure that the natural resources of our public waterways are protected. Research in Wisconsin and elsewhere shows that piers can shade out important aquatic plants that provide critical habitat where fish spawn, grow, find food and seek shelter from predators. Very large piers can also impact public recreation and neighboring waterfront owners.

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For a report on the pier survey, go to DNR's website at www.dnr.state.wi.us/org/water/fhp/waterway/piers.shtml

For more information about research on piers and sensitive shallow water habitat, go to www.dnr.wi.gov/org/es/science/fish/habitat.htm

by Mary Ellen Vollbrecht and Liesa Lehmann, Wisconsin Department of Natural Resources

Winter is Coming…

What's a Fish to Do?

Have you ever wondered what life is like for the fish in our lakes when ice covers the surface and cold sets in? Ice anglers bring some of them up to the surface, but others remain in the darkness below.

As temperatures drop and ice encroaches from the shorelines of lakes and rivers, fish have fewer options for retreat than other creatures. Fish are *poikilotherms*, that is, "cold-blooded," meaning their body temperature remains close to that of the surrounding environment. They do not (in general) possess a mechanism for regulating their body temperature like mammals. Body heat is lost directly to the surrounding environment as they respirate. So, as water temperatures approach 38° F and colder, what's a fish to do?

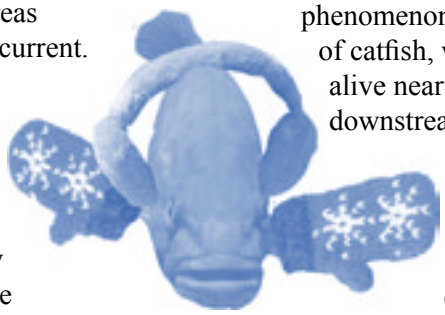
In the cold, fish move very slowly and metabolic processes take place slowly. When weather is warmer, they can move more quickly. In this way, fish do not have to spend much of their energy on keeping a constant temperature. Much of the food mammals eat is burned to maintain body heat (we and other mammals are *homiotherms*). There are tradeoffs in both lifestyles. A handful of fish species, such as some bullheads, partially burrow in mud to stay a little warmer. Other fish, such as bass, become very inactive and live off bodily energy stores developed in summer and fall. Still others, such as pike, are better adapted to cooler water and remain relatively active during winter, taking advantage of dead or slow-moving prey. These species are also more likely to spawn earlier in the spring.

All fish will continue to feed through winter, but at a relatively slow rate, because they are not using much energy to move or maintain body temperature. Fish of all species tend to congregate in areas where food is relatively easily obtained, and where shelter is nearby. For bluegill or perch, food is frequently small, worm-like midge larvae (chironomids), which can be found on muddy lake bottoms. For pike, food is where the bluegill and perch are!

Rivers present additional challenges for wintering fish. Food is less readily available and cold water temperatures make fish less active, but currents do not relent. Slow-water habitat becomes crucial for many species, and others seek the deepest holes they can find. In large rivers such as the Mississippi, channelization for barge traffic and levee construction in the name of flood control has eliminated or isolated a great deal of side-channel or backwater habitat. Side channels and backwaters are slow-water areas on the margins of the main river channel that traditionally provided refuge for many fish in winter. These areas offered greater abundance of food and slow or still water. Today in many parts of large rivers this type of habitat is unavailable, and fish are forced into less desirable alternatives.

For example, in the Mississippi River, the areas just downstream of and just behind

wing-dams provide key areas with deep water and little current. However, these areas are much more exposed to the main channel than traditional backwater sloughs, and do not provide the same diversity and amount of habitat once available. Pressure waves from barges passing in winter are of sufficient force to physically move fish out of their refuges and send them into the main channel, where they are forced to use precious energy to get back to safe haven. Another regularly observed phenomenon in large rivers is "winter drift" of catfish, where catfish of all sizes are seen alive near the surface, but passively drifting downstream. The ultimate fate of these fish is unknown.



Whether home is a lake or a river, a fish faces survival challenges throughout the long winter. A chilling thought, indeed.

by Joe Hennessy
Wisconsin Department of Natural Resources

Making Lake Life Easier

The Wisconsin *Lake List* Directory

Ever wanted to contact another lake organization to find out how they accomplished something? The *Lake List* directory can help provide your answer. For almost 20 years, lake organizations have been using this directory to make their work easier. It is a comprehensive statewide directory of more than 700 lake associations, lake districts, and other organizations involved in lake management in Wisconsin; as well as the businesses that provide lake management services to Wisconsin lake organizations. The directory is maintained by the UW-Extension Lakes Program at UW-Stevens Point. In the 80's and 90's, the directory was printed in book format. Today it is all online, making it easier to search for what you need and keep it updated with the latest information. To access the directory, go to www.uwsp.edu/cnr/uwexlakes and click on "Lake List."

The *Lake List* provides you with quick and easy ways to find information about a lake organization, including officers' names and contact information and a map to the lake (or lakes) the organization is affiliated with. You can search by lake name, organization name, county or type of organization. A new feature will enable you to search by activity. For example, if your organization is contemplating purchasing insurance, you can search the *Lake List* to find all the lake organizations that carry insurance. You can then contact some groups directly to find out how they purchased insurance.

How is the directory updated? This directory is kept accurate by the lake organizations listed in it. It is as up-to-date as the information that you provide to us. We will be mailing out an update form to each lake organization later this year so you can let us know of new officers' names and contact information. Any other time you are looking at the *Lake List* and see information that needs changing, or notice an organization is not listed, let us know and we will make changes.

The *Lake List* is your resource. Use it to share information and experiences and to learn from other lake organizations. If you have changes or suggestions to make the directory even more useful to you, let us know at uwexlakes@uwsp.edu or 715/346-2116.

Lost In the Mail

Getting a PO Box

Does one person in your lake organization receive all the organization's mail at their home address? What happens when that person moves away, steps down from the board, or does not get re-elected? Will important correspondence, information, or even donations get lost in the transition to a new address?

For most organizations, the solution is a post office box for their organization's mailing address. A post office box address provides a consistent, permanent address for the organization, eliminating confusion (and sometimes lost mail) in exchange for a relatively small cost. The rental cost for a small post office box usually ranges between $24 and $40 per year.

Some organizations even have their own websites and email addresses to keep things consistent and to provide members and others with an easy way to contact the organization. Websites can also be good locations to publish information about projects, upcoming meetings, or to post meeting minutes.

So next time you are updating contact information for your lake organization, consider a post office box. It might be one of the best (and easiest) investments your organization can make.

Who's Who in Citizen-Based Monitoring?

A new publication called "Who's Who in Citizen-based Monitoring" lists over 150 citizen monitoring groups that exist in the state and describes their intended uses of data. The UW-Extension Volunteer Monitoring Team surveyed monitoring programs last year, and along with the DNR, created an interactive website that is easily updated as more programs are added across the state. You can access the information at: http://ATRIweb.info/cbm/whoswho

Paying for Plants
First Citation for Plants on Boat

Earlier this fall, the first-ever citation in Wisconsin for not cleaning aquatic plants from a boat trailer was given out by a conservation warden. The story begins in September of 2001, when new legislation was passed that significantly changed Wisconsin's aquatic plant management laws. Wisconsin State Statute sec. 23.24 relates to aquatic plant management and a second law, sec. 30.715 Wis. Stats., prohibits the launching of boats, boating equipment or trailers in navigable water if the person has reason to believe that the boat, boat trailer, or boating equipment has any aquatic plants or zebra mussels attached. It was this second law that was the subject of national news lately.

Until now the DNR's policy has been one of education on the costs of moving invasive plants and critters from lake to lake. The storyline took a turn when volunteers from the *Clean Boats Clean Waters* watercraft inspection program on Pelican Lake near Rhinelander said a man refused to remove plants from a trailer carrying a personal watercraft after a volunteer asked him to do so. The volunteer called a DNR warden who issued a citation that could carry a forfeiture of $250. Even though the citation method was used, the DNR still sees education as their first line of defense against aquatic invasives for folks that clearly are not aware of the law.

The loss of natural shorelines and the increase of invasive species continue to remind us about the important benefits of aquatic plants. As more boaters become aware of the laws and costs of transporting invasives, what will this story bring us next?

To get involved in boater education and watercraft inspection efforts, the *Clean Boats, Clean Waters* program is again scheduling another round of training workshops for 2006. Locations, dates, and times will be announced in January through *Lake Tides*, *Lake Connection*, and the *CBCW* website. For more information or to schedule a workshop in your area, contact Laura Felda-Marquardt, 715-365-2659, laura.felda@dnr.state.wi.us.

www.uwsp.edu/cnr/uwexlakes/CBCW

CALENDAR

November 9-11 - 25th Annual International Symposium of the North American Lake Management Society. Lake Æffects: Exploring the Relationship between People and Water. Monona Terrace, Madison. See www.nalms.org for details and registration.

January 7, 2006 - Stream Ecology Workshops, Waupaca. 8:30 am to 4 pm. Contact Kris Stepenuck at kris.stepenuck@ces.uwex.edu or 608/265-3887 for more information.

February 18, 2006 - Wisconsin Association of Lakes Southeast Region Lakes Workshop. See www.wisconsinlakes.org for information.

April 20-22, 2006 - 28th Annual Wisconsin Lakes Convention. KI Convention Center, Green Bay.

Lake Tides -- *905032*
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Reflections

Anything else you're interested in is not going to happen if you can't breathe the air and drink the water. Don't sit this one out. Do something. You are by accident of fate alive at an absolutely critical moment in the history of our planet.

- Carl Sagan