

# THE MICHIGAN **RIPARIAN**

[www.mi-riparian.org](http://www.mi-riparian.org)

DEVOTED TO THE MANAGEMENT AND WISE USE OF MICHIGAN'S LAKES AND STREAMS

Published Quarterly – February, May, August and November

*RIPARIAN* (r-'per-EE-n) adj. Relating to or living or located on the bank of a natural watercourse, such as a river, or of a lake or a tidewater.



**Lake Isabella in Isabella County, Michigan**  
*Lake Isabella is featured in the stream sampling story on pages 14-15 of this issue.*



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**THE MICHIGAN RIPARIAN**  
**PUBLISHING OFFICE**  
124 1/2 N. Main Street  
Three Rivers, Michigan 49093

**PUBLISHER • DONALD E. WINNE**  
**PHONE 269-273-8200**  
**FAX 269-273-2919**  
**E-MAIL dwinne@mlswa.org**

**EDITOR • JENNIFER CHURCHILL**  
P.O. Box 44, Carson City, MI 48811  
**PHONE 989-506-6716**  
**E-MAIL editor@churchill3c.com**

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## FROM THE PUBLISHER



Don Winne

### Michigan! My Michigan!

I was born on a farm south of Bangor in Van Buren County, about 10 miles from Lake Michigan. When I was 10, my family moved to Saugatuck where my brothers (two) and sisters (two) often crossed the Kalamazoo River by ferry to climb Mt. Baldy and to wade and swim in Lake Michigan. In 1936, when I was 19, we moved to Ganges, about five miles south of Saugatuck and one-half mile from Lake Michigan. I spent more time hunting small game in the area and fishing for perch in Lake Michigan. These early years of my life in the Saugatuck area cemented my love for Lake Michigan and the inland lakes of the area. This same kind of love and compassion is sensed when I read the newsletter from lake associations around the state.

After 35 years of teaching and public school administration in Indiana, I retired and chose in 1974 to volunteer my services to Michigan Lake and Stream Associations, Inc. In 1976, I was appointed to the Michigan Riparian Board and became editor of the magazine in 1978. In 1979, I was appointed publisher of the Riparian and executive director of ML&SA.

To fulfill the responsibilities of these two jobs, I felt it necessary to learn more about the lakes and streams and physical geography of Michigan. To accomplish this, I bought and studied two books that were very helpful: *The Geology of Michigan* by John A. Dorr Jr. and Ronald Eschman (University of Michigan, 1970) and *Geology of the Lake Superior Area* by Gene L. LaBerge (Geoscience Press, 1994). A third book was *Natural Landscapes of the Niagara Escarpment* by Richard Kosydar (Tierson Press, Dundas, Ontario, 1996).

In addition to the above mentioned studies, I found it necessary to make frequent visits to Lansing to keep up with pending bills in the House and Senate, and agency decisions by the Michigan Department of Natural Resources and the Michigan Department of Environmental Quality, as well as the Michigan Department of Agriculture.

All of this has been made possible by lake associations that join ML&SA, and who volunteer their time, money and energy to assist ML&SA in helping their lakes.

YOUR MEMBERSHIP IN ML&SA IS VITAL if we are to continue to serve your association and collect water quality data for your lake. A team effort of lake associations with a state-wide corporation such as ML&SA is necessary if we are to control invasive species of plants and animals and to keep our lakes and streams healthy.

— PUBLISHER DON WINNE

### DON WINNE WINS STATE DNR AWARD



Don Winne of Three Rivers, publisher of The Michigan Riparian, received the Conservation Award of the Year at the Michigan Society Daughters of the American Revolution (DAR) state conference on Sept. 21 in Grand Rapids. Winne, a former educator and principal, has been involved in protecting the environment for more than 30 years. Known as "Mr. Riparian," his work and dedication to riparian issues are known throughout the state.



# Evaluating the effects on nearshore development on selected inland lakes in Wisconsin

by **Tami Jackson**

Director of Development & Communications  
from *The Lake Connection*, the newsletter of  
the Wisconsin Association of Lakes (WAL)

The Wisconsin Department of Natural Resources has estimated that as much as 90% of the private land adjacent to lakes will be developed by the year 2025. How will increasing amounts of near-shore development affect the future water quality of our lakes?

## COMPARING THE LANDSCAPE

Many people appreciate the natural values that make Wisconsin lakes so beautiful; sunsets dancing off clear waters, loons and herons fishing in the shallows, shoreland flowers and plants, and the forested edge that frames the view. These natural values are an important part of the experiences lake enthusiasts associate with their favorite lake – quiet and solitude, scenic boating trips, family time spent swimming and fishing.

A lot of potential property buyers are attracted to lakes because of their natural assets, and decisions about buying waterfront property may be influenced by factors such as water clarity and lake views. The trees and shorelands enjoyed by many lake people also protect the lake by helping to filter out pollutants before they enter the water, as well as reduce runoff.

However, development often replaces the natural landscape of the lakeshore with roads, buildings, driveways, sidewalks and lawns. These hard surfaces prevent rainwater and snowmelt from slowly soaking into the ground (infiltrating), increasing runoff. Property owners may make these shoreline changes more pronounced by clearing more trees, shrubs, taller plants, and shoreline “weeds,” and establishing lawns. Grass clippings, fertilizers and pesticides used on these lakeshore lawns can flow into the lake with runoff.

One nutrient associated with increased runoff is phosphorous, the fuel (food) algae need to transform lakes into a thick, smelly, green soup. Phosphorous is a common ingredient in many lawn and garden fertilizers. Two recent Wisconsin studies were conducted by the U.S. Geological Survey to determine the magnitude of nutrient runoff from nearshore development, and whether nearshore lawn fertilizer application affects phosphorous content of runoff from lawns near lakes.

A 2003 study of four lakes in north-central Wisconsin measured the amount of nutrients loading into lakes from developed (lawns) and undeveloped (woods) areas, as well as the ability of those sites to infiltrate runoff water. The study found that converting undeveloped wooded areas into lawns can significantly increase both the amount of runoff and nutrients into the lake. The volume of runoff from lawns was 10 times greater than the amount of runoff coming off wooded sites. The increase runoff volume from lawns resulted in greater nutrients loads being deposited into lakes from developed sites. The amount of phosphorous in runoff from lawns was 10 to 100 times greater than that from undeveloped wooded sites.

See page 21 of this magazine for a questionnaire to determine pollution in your lake.

## LAUDERDALE LAKES

A 2002 study was conducted on Lauderdale Lakes in Walworth County. The lakes 15 miles of shoreline is about 70% developed and most lakefront homes have sloping lawns maintained to the water's edge. A previous study on the lake found that runoff from the surrounding lake accounted for only 4% of the water flowing into the lake, but represented 60% of the annual total phosphorous entering the lake.

This study measured the concentrations of nutrients (phosphorous and nitrogen) in runoff from nearshore lawns, and whether lawn fertilizer application and the type of fertilizer (regular or phosphorous-free) affects the concentrations of nutrients in lawn runoff.

Lawns fertilized with phosphorous fertilizer had twice the concentration of phosphorous in runoff compared to lawns fertilized with phosphorous-free fertilizer and unfertilized lawns. Phosphorous levels in lawns fertilized with phosphorous-free fertilizer were similar to unfertilized lawns, indicating that using phosphorous-free fertilizer may be an effective, low-cost way to reduce phosphorous in runoff.

## EFFECTS OF DEVELOPMENT

While these studies offer insight into how nearshore land use and management can impact lakes, neither evaluated the cumulative effect that multiple developments or watershed-scale land use changes have on lakes. To understand the relative effects from nearshore development on any individual lake, the many other sources of nutrients entering the lake also need to be known. As additional development occurs and a lake becomes more nutrient-rich (moves towards a eutrophic state), previous studies have shown that a lake's ability to easily return to a less eutrophic state can diminish over time. Past responses to land use changes are not necessarily a predictor for how a lake will react to additional land-use changes.

The fact sheet “Evaluating the Effects of Nearshore Development on Wisconsin Lakes is available on the USGS web site [http://wi.water.usgs.gov/pubs/fact\\_sheets.htm](http://wi.water.usgs.gov/pubs/fact_sheets.htm).

## WHAT LANDOWNERS ARE DOING TO LIMIT THE EFFECTS OF DEVELOPMENT ON LAKES

- Using phosphorous-free fertilizer or choosing not to add fertilizer to lakeshore lawns.
- Not installing lawns on slopes that drain to lakes.
- Maintaining a natural landscape with native plants.
- Leaving woody vegetation in nearshore areas.
- Leaving or maintaining at least 35 feet of buffer strips.
- Limiting the amount of impervious areas – sidewalks, driveways and rooftops – on their property.
- Installing rain gardens to help infiltrate runoff from impervious areas.



# Michigan Lakes & Streams Foundation

## YOUR GIFT LIVES FOREVER.

### WHAT IS THE MICHIGAN LAKES & STREAMS FOUNDATION?

The Michigan Lakes & Streams Foundation is a 501(c)(3) nonprofit, charitable organization established in 2004 by Michigan Lake & Stream Associations, Inc. (MLSA) to provide an endowed fund) for developing a stable and permanent financing source to help support MLSA's many programs and initiatives.

### WHY AN ENDOWED FUND?

An endowed fund ensures the principal from all gifts will always be there to help provide funding to MLSA. Only interest earned will be utilized. The principal will remain untouched.

### WHY SUPPORT MLSA?

MLSA's membership consists of more than 300 Lakes & Streams Associations statewide, representing more than 100,000 members interested in

protecting the future of Michigan's water resources. For 45 years, Michigan Lake & Stream Associations, Inc., has labored on your behalf - most likely without you even knowing about it. On a national, regional and state level, MLSA represents its members through involvement in a variety of programs and issues involving state waters. Some of the key issues MLSA is currently dealing with include:

- Riparian rights • Lake and stream water quality • Controlling invasive species • Lake/stream watershed management • Other MLSA activities - MLSA is actively supporting numerous programs; MLSA is also your voice in Lansing, representing you.

### HOW CAN I CONTRIBUTE?

There are four ways you can make a difference in the future of Michigan's lakes and streams:

FOR 45 YEARS, MLSA HAS PROVIDED ALL OF THESE BENEFITS AND RESOURCES TO ITS MEMBERS AND THE CITIZENS OF MICHIGAN ON A LIMITED BUDGET - RELYING ALMOST ENTIRELY ON VOLUNTEERS. IF WE ARE TO CONTINUE TO BE EFFECTIVE AS THE LEADER IN THE STATE IN PROTECTING OUR WATER RESOURCES FOR FUTURE GENERATIONS AND CONTINUE TO BE YOUR VOICE IN LANSING AND CONTINUE TO DEFEND YOUR RIPARIAN RIGHTS ...

... WE NEED YOUR SUPPORT!

1) You can leave a percentage of your estate through your will to the Foundation. No matter what kind of assets are in your estate, and regardless of the value, the percentage you specify will be given by your personal representative. 2) You may also wish to name a fixed-dollar amount or other specific property as your gift. This ensures a definite gift regardless of other bequests. 3) After bequests are made to other heirs, you can leave whatever is left from your estate to the Foundation. This assures that others are taken care of first, but that something goes to the Foundation that is important to you. 4) Make a cash contribution any time.

Consult with your own attorney or accountant for further ideas on the most appropriate way to make your bequest. FOR MORE INFORMATION, contact Franz Mogdis, President of the Board of Directors of the Foundation, at 989-831-5261; or Pearl Bonnell, Treasurer of the Foundation, at 989-257-3583.

## Let Us Help You Find Out What's Down There...

Bathymetry and 3D models of your lake  
Invasive Aquatic Weed Mapping  
Monitoring Dredging  
Habitat and Structure Detection for Fishing



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PO Box 25023  
Lansing, Michigan 48909  
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[www.aquatechnex.com](http://www.aquatechnex.com)

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# Key components of a comprehensive plan

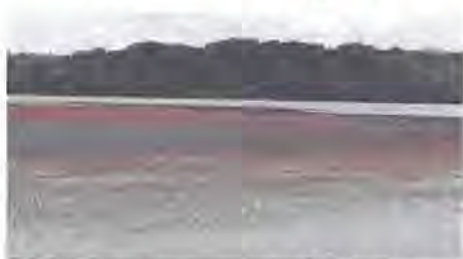


Figure 1. Eurasian watermilfoil infestation in Round Lake, Mason County, Michigan.

The need for comprehensive and practical lake management plans increases as seasonal lakefront cottages are converted to permanent residences and lakefront development continues on inland Michigan lakes. De-

Water-quality data are thus a key component

by Jennifer L. Jermalowicz-Jones, MS  
ASI Environmental Technologies, Inc.

of LMPs since they may be compared over a historical timeline and serve to evaluate the efficacy of management procedures.

## AQUATIC FLORA AND FAUNA

Aquatic flora (algae and plants) are an essential component to the health of an aquatic ecosystem and should be thoroughly studied and mapped in an LMP. Algae may exist in planktonic, benthic, or filamentous forms and may grow to prolific levels due to elevated nutrient loads. Excessive aquatic plant biomass may also be accelerated due to nutrient sources and can cause recreational, navigational, and aesthetic problems in lakes. Aquatic plants can be submersed, floating-leaved, emergent, or a combination of submersed and floating-leaved. A high diversity of aquatic plants allows for greater biodiversity of the aquatic ecosystem by providing various structures for the fishery (forage and spawning habitat) and housing for macroinvertebrates which help to support the aquatic food chain. This ecological balance may be disrupted from the promotion of plant growth from nutrients and/or by the occurrence of exotic aquatic plants such as Eurasian watermilfoil (*Myriophyllum spicatum*) (Figure 1), curly-leaf pondweed (*Potamogeton crispus*), purple loosestrife (*Lythrum salicaria*), or phragmites (*Phragmites australis*). As a result, it is recommended that aquatic plant communities within a lake be sampled for identification and mapped with precision. Detailed maps that indicate the specific locations and densities of problem plants should be included in an LMP. Every effort should be made to preserve the native aquatic plant species and limit their introduction and spread. Such management techniques often require an integrated approach (i.e. more than one method used at a particular time and location). Aquatic fauna are the non-plant, living components of a lake which include fish, invertebrates, and mammals that may live in or near the water. The fauna are often dependent upon the quality and quantity of vegetation and thus should be considered as essential components of an LMP. A comprehensive wildlife assessment may not always be possible, but data on critical wildlife habitat should be collected to assess possible impacts of exotic species on wildlife and to assure that management practices suggested in the LMP do not compromise wildlife biodiversity.

## IMPROVEMENT STRATEGIES AND ASSOCIATED COSTS

It is critical that each proposed lake and watershed improvement strategy in an LMP be thoroughly explained and ecologically and economically feasible. Improvement methods should be applied to problem areas to achieve target-specific results without impacting unaffected areas. Detailed cost estimates of each improvement strategy are needed to inform local riparians and municipalities of the proposed costs and obtain adequate support. Whenever possible, proposed improvement costs should be extrapolated over a few years since some LMP strategies (especially in highly compromised ecosystems) may require years to exhibit strong signs of improvement success. Utilize volunteer groups to reduce costs. Many lakes in Michigan currently utilize LMPs to control exotic invasive species and promote ecological balance in aquatic ecosystems.

developmental pressures and increased lake usage create disturbances (i.e. erosion, introduction of exotic species, and water-quality degradation) in lakes which may be minimized through restorative measures. A Lake Management Plan (LMP) should include both lake and watershed protection guidelines based on data collected from within and around a particular lake. LMPs should be practical and economically feasible to promote a greater degree of cooperation among riparians and other interested individuals. LMPs also should strive for a balance between the needs of riparians and the fragile requirements of aquatic ecosystems.

## LAKE BACKGROUND AND LMP OBJECTIVES

Many inland lakes have had previous studies conducted on them by academic institutions, state environmental departments, lake managers, or curious riparians that can be very useful in evaluating baseline environmental (water quality) conditions and in the construction of recommended improvements when compared to more recent data. Essential lake background information may include historical data, lake location, size, and bathymetric or depth contour maps.

## LAKE AND WATERSHED PHYSICAL AND CHEMICAL CHARACTERISTICS

The watershed surrounding a lake is critical to the protection of lake water quality and should be considered as an imperative component of an LMP. Each watershed is unique in its topography, size, soil types, land uses, and relative contributions of nutrients or water to a lake. Larger and more developed watersheds tend to contribute more pollutants to lakes than watersheds of a smaller area. A careful review of the specific watershed characteristics is needed to appropriately determine the vulnerability of a particular lake to inputs from the surrounding watershed. The size, depth, biological, physical, and chemical characteristics of a lake also need to be assessed in an effort to understand and predict possible watershed influences. Water-quality parameters such as total phosphorus, dissolved oxygen, Secchi transparency, pH, total alkalinity, conductivity, total Kjeldahl nitrogen, chlorophyll-a, total suspended solids, *E. coli* bacteria, turbidity, and water temperature all are useful indicators to assess the health of the lake. Elevated nutrient (phosphorus and nitrogen) levels and chlorophyll-a concentrations may arise from land use activities such as the fertilization of lawns or from septic tank seepage. Furthermore, a decline in Secchi transparency and increases in turbidity and total suspended solids may indicate the presence of particulate substances in the lake through erosion or sediment inputs. Dissolved oxygen is a useful parameter to measure the concentration of oxygen available to fish and other biota at variable water depths. Consequently, nutrients such as phosphorus may be further released in waters with low dissolved oxygen concentrations.



# There's a new threat to Michigan's inland lakes

Like most of Michigan's foreign aquatic invaders, Starry Stonewort (scientific name *Nitellopsis obtusa*) began its uninvited migration from European waters as a hitchhiker within the ballast water tanks of one of the many ocean going cargo vessels that pass through the St. Lawrence Seaway each year.

First observed in Lake St. Clair in the mid-1980s, this aggressive macro-algae has been making a gradual east-to-west migration into the prized waters of Michigan's inland lakes. Left un-mitigated, this rapidly propagating foreign nemesis possesses the ability to drastically alter the aquatic eco-systems of its inland lake hosts.

Discovered in an inland lake near Flint in 2006, this plant-like cousin of chara has now been positively identified in at least six Michigan inland lakes in the past 18 months. Starry Stonewort has most recently been observed in two inland lakes within the Iron Creek sub-basin of the River Raisin Watershed near the Irish Hills of northern Lenawee County.

Not observed in either Wamplers Lake or Round Lake until the spring of 2007, Starry Stonewort has displayed an amazing ability to spread rapidly throughout the shallower areas of these lakes, in

article and photos by **W. Scott Brown**

Deputy Executive Director  
Michigan Lake & Stream Associations, Inc.



Above, Dave Crysler, president of the Wamplers Lake Property Owners Association, examines Starry Stonewort. Left, Starry Stonewort.



particular, the quiet waters of channels and bays. In less than six months from the time of its introduction, Starry Stonewort has claimed relatively large portions of both these inland lakes, manifesting its light-green aquatic meadows of dense structure and often reaching several-feet thick, forcing the retreat of desirable aquatic plants such as yellow pond lily and northern watermilfoil.

Starry Stonewort remains unrecognized by Michigan's Aquatic Nuisance Species Council and has not yet appeared on our state's official Aquatic Invasive Species listing. Nevertheless, Starry Stonewort displays aggressive characteristics that may make it as much of a threat to the health and ecological integrity of our inland lakes as Eurasian watermilfoil or zebra mussels. The Michigan Lake and Stream Associations, Inc., would strongly suggest that our state's natural resource management agencies move quickly to recognize and publicize this ever-so-rude hitchhiker from Europe.





**MICHIGAN LAKE & STREAM ASSOCIATIONS, INC.**  
**P.O. Box 249**

**Three Rivers, Michigan 49093**

**PHONE 269-273-8200**

**Fax 269-273-2919**

**E-MAIL [info@mlswa.org](mailto:info@mlswa.org), [dwinne@mlswa.org](mailto:dwinne@mlswa.org)**

**WEB SITES [www.mlswa.org](http://www.mlswa.org), [www.mi-water.cmp.org](http://www.mi-water.cmp.org)**

**Donald E. Winne, EXECUTIVE DIRECTOR**

## OFFICERS

### **PRESIDENT—SONDRA (SUE) VOMISH**

52513 Twin Lakeshore Drive, Dowagiac, MI 49047

PHONE 269-782-3319 E-MAIL [Sueing3@aol.com](mailto:Sueing3@aol.com)

### **VICE PRESIDENT—ED HIGHFIELD**

16281 Pretty Lake Dr., Mecosta, MI 49332

PHONE 231-972-2190 E-MAIL [edhelenhighfield@centurytel.net](mailto:edhelenhighfield@centurytel.net)

### **SECRETARY—RICHARD MOREY**

50230 E. Lake Shore Dr., Dowagiac, MI 49047

PHONE 269-424-5863 E-MAIL [rdm@localink.net](mailto:rdm@localink.net)

### **TREASURER—PEARL BONNELL**

P.O. Box 303, Long Lake, MI 48743-0281

PHONE 989-257-3583/fax2073 E-MAIL [pbonnell@mlswa.org](mailto:pbonnell@mlswa.org)

## REGIONAL VICE PRESIDENTS

### **REGION 1—FLOYD PHILLIPS**

9535 Crestline Dr., Lakeland, MI 48143-0385

PHONE 810-231-2368

### **REGION 2—WILLIAM SCOTT BROWN**

11250 Riethmiller Rd., Grass Lake, MI 49240

PHONE 517-522-5284

### **REGION 3—SONDRA (SUE) VOMISH**

52513 Twin Lakeshore Drive, Dowagiac, MI 49047

PHONE 269-782-3319 E-MAIL [Sueing3@aol.com](mailto:Sueing3@aol.com)

### **REGION 4—FRANZ MOGDIS**

5525 Vetrans Ave., Stanton, MI 48888

PHONE 989-831-5807 E-MAIL [fmogdis@maisd.com](mailto:fmogdis@maisd.com)

### **REGION 5—VIRGINIA HIMICH**

1125 Sunrise Park Dr., Howell, MI 48843

PHONE 517-548-2194 E-MAIL [himichv@michigan.gov](mailto:himichv@michigan.gov)

### **REGION 6—RON COUSINEAU, 2ND VICE PRESIDENT**

1875 Long Pointe Drive, Bloomfield Hills, MI 48032

PHONE 248-335-8353

### **REGION 7—VACANT**

### **REGION 8—ED HIGHFIELD**

16281 Pretty Lake Dr., Mecosta, MI 49332

PHONE 231-972-2190 E-MAIL [edhelenhighfield@centurytel.net](mailto:edhelenhighfield@centurytel.net)

### **REGION 9—DICK MIKULA, 2ND VICE PRESIDENT**

4207 Knoll Circle, Lansing, MI 48917

PHONE 517-321-8607

### **REGION 10—VACANT**

### **REGION 11—CECILE KORTIER**

18200 Valerie Dr., Hillman, MI 49746

PHONE & FAX 989-742-3104

### **REGION 13—VACANT**

### **REGION 15—ARNY DOMANUS**

N 4176 Kari-Brooke Lane, Watersmeet, MI 49969

PHONE 906-358-9912 E-MAIL [arnyd@portup.com](mailto:arnyd@portup.com)

### **BOARD MEMBER AT-LARGE**

Richard Morey, V.P. Coordinator

50230 E. Lake Shore Dr., Dowagiac, MI 49047

PHONE 269-424-5863 E-MAIL [rdm@localink.net](mailto:rdm@localink.net)

## OBJECTIVES OF THE MICHIGAN LAKE & STREAMS ASSOCIATION, INC.

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

## VACANCIES:

We currently have Vice President vacancies in three regions – Region 7, Region 10 & Region 13. If you would be interested in working with the ML&SA as a regional vice president, please contact ML&SA Executive Director Don Winne at 269-273-8200 or [dwinne@mlswa.org](mailto:dwinne@mlswa.org).

## Docks and rights

By Clifford H. Bloom, Esq.

Law, Weathers & Richardson, P.C.  
800 Bridgewater Pl • 333 Bridge St NW  
Grand Rapids, Michigan 49504-5320



When they put their dock in the water during the spring, most riparians do not think of all the legal implications regarding the dock and its location. Interestingly, there actually are many factors regarding a dock which could land its owner in court, although that rarely happens.

First of all, a dock can normally rest only on the bottomlands of the person who owns the dock. In other words, a person cannot place their dock on the bottomlands of another without permission. In Michigan, a riparian property owner on an inland lake normally owns the bottomlands adjacent to his/her lakefront property. Those bottomlands typically radiate to the center of the lake, although it is often difficult to determine what constitutes the center of the lake with irregularly-shaped lakes.

**Rarely do riparian or bottomlands boundary lines radiate to the center of the lake at the same angle as the side lot lines that exist on dry land.** Determining where riparian/bottomlands boundaries are located under the water for purposes of dock placement can often be a difficult task, particularly where relatively small lakefront properties are involved and property owners try to "crowd" the outer edge of their bottomlands with dockage.

Some municipalities (cities, villages, and townships) have ordinances which regulate docks, although that is not always the case. Some local ordinances govern dock placement, size, length, and width. Some municipal ordinances require that docks be located a certain number of feet away from the side lot line as extended perpendicular out into the lake (even if that is not the true bottomlands boundary). Anti-keyhole or anti-funneling regulations often regulate docks, particularly with regard to common areas, easements, road ends, or private parks. Dock regulations can be found in municipal zoning ordinances or even in standalone police power ordinances. Violation of such an ordinance can constitute either a criminal misdemeanor or a municipal civil infraction offense, depending upon the penalties provision of the ordinance involved.

The use of a dock by more than one family will typically trigger both state and local regulations. At the state level, the Michigan Department of Environmental Quality has taken the position that any dock utilized by more than one family can constitute a "marina" for which a state permit must be obtained from the DEQ. At the local level, use of a dock by more than one family is generally considered a multi-family use which is only allowed in certain zoning districts.

The presence of a dock raises potential issues of liability. People can get hurt diving off of a dock, running into docks with boats, or having some other dock-related calamity occur. Accordingly, it is very important for the riparian property owner to carry adequate liability insurance for the lakefront property which expressly includes coverage for the dock (as well as any other structures such as shorestations and floating rafts, and also boats). Furthermore, given the litigious society we live in today, liability limits of

\$300,000 or even \$500,000 could very well prove inadequate.

Although not common, some lakefront properties have deed restrictions/restrictive covenants which place limits or regulations on dockage.

What if there is no local ordinance in your jurisdiction which limits dock length and the DNR chooses not to act regarding the length of a particular dock? Can a riparian install a dock as far out into the lake as he/she wishes, so long as it is located entirely on that person's bottomlands? Assuming that no state or local enforcement action occurs, an unreasonably long dock could still violate the common law doctrine of riparian rights (also called the doctrine of reasonable use). Pursuant to that doctrine, a neighbor or nearby riparian can sue another lakefront property owner if the offending party does anything on or at the water (including installing a very long dock) which unreasonably interferes with the reasonable lake usage rights of the nearby or neighboring riparian.

Permanent docks cannot be installed without a permit from the DEQ. Furthermore, some local ordinances regulate or even prohibit permanent docks.

Some of the above-mentioned regulations and laws regarding docks involve government enforcement or prosecution where violations occur.

Some of the other matters discussed above are common law property rules, where no governmental unit becomes involved and a riparian property owner who believes that he/she is being wronged must sue civilly in a county circuit court.



# Stream sampling monitors water quality

by **Scott McNaught**  
title goes here

The Michigan Lake and Stream Associations, Inc. (MLSA) has begun a volunteer program to monitor water quality in streams that enter and leave association lakes. Initial participants in the program are Coldwater Lake and Lake Isabella in Isabella County, Hess Lake in Newaygo County, and Muskegon Lake in Montcalm County.

On September 27, volunteers from Coldwater Lake and Lake Isabella collected stream invertebrates at two sites above and below their lakes to assess stream health. Volunteers spent a beautiful late summer morning searching for insects, clams and snails with dip nets in knee-deep water. Volunteers also mapped their stream sites and collected water samples to be analyzed later for phosphorous and suspended sediments.



Photos on this page and following page: Volunteer stream monitoring event on the Chippewa and Coldwater rivers in Isabella County.

Many lake associations are interested in the quality of stream water that enters their lakes. When a stream enters a lake, it deposits sediment, nutrients, and contaminants gathered from the upstream watershed. Sediments accumulate in the lake basin. Nutrients stimulate the growth of algae and aquatic plants. Contaminants such as organic pesticides and pathogenic bacteria endanger lake-side residents. If one is interested in lake health, it is important to understand and quantify the quality and quantity of water entering a lake through inlet streams.

Lake systems, in turn, affect the health of their outlet streams. In many instances, it is the surface water that







exits a lake through the outlet. Surface water typically has low sediment concentrations but may have high nutrient concentrations depending on the trophic status of the lake.

Moreover, the surface water is warm and often above the limit of many stream organisms. Downstream communities may be dramatically different from those upstream of a lake. At greater distances from the lake, downstream communities may become more like upstream communities, depending on the amount of riparian vegetation and stream-side development.

The primary goal of the proposed program is to protect and improve the water quality of streams in the State of Michigan.

## SPECIFIC OBJECTIVES OF THE PROGRAM INCLUDE:

**Objective 1)** quantifying ecosystem health of primary inlet and outlet streams by collecting baseline data on macroinvertebrate communities and water quality,

**Objective 2)** examining the effects of inlet streams on lake ecosystems by estimating the volume of nutrients and sediment deposited by the inlet stream,

**Objective 3)** examining the effects of lake ecosystems on outlet streams by comparing macroinvertebrate communities upstream and downstream of the lake,

**Objective 4)** identifying specific water-quality problems in inlet and outlet streams, and

**Objective 5)** educating citizens about stream health.

Associations interested in participating in the stream monitoring program should be members of MLSA and participants in the Cooperative Lake Monitoring Program (CLMP).

Ideally, CLMP members should have access to a dissolved oxygen/temperature meter. Associations are responsible for selecting volunteers who are able to collect samples during September (fall sampling) and May (spring sampling). MLSA will provide dip nets, sample bottles and staff gauges. MLSA will also train volunteers how to collect samples and identify invertebrates.

FOR MORE INFORMATION ABOUT STREAM SAMPLING IN YOUR LAKE, E-MAIL SCOTT McNAUGHT AT [mcnaught1as@cmich.edu](mailto:mcnaught1as@cmich.edu) OR CONTACT THE MLSA AT [info@mlswa.org](mailto:info@mlswa.org) OR CALL MLSA EXECUTIVE DIRECTOR DON WINNE AT 269-273-8200.



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## Attacking lake sediment build-up

*Editor's Note: This is "part two" of an article that was published in the May 2007 Michigan Riparian. Please see that issue for the first part.*

We knew that the sediment levels in our lake created low oxygen levels in the muck. When low oxygen levels are present the water's condition is anaerobic. This is undesirable. When aerobic conditions exist, tiny aerobic organisms can exist to naturally eat up or decompose the sediment at faster rates. This was desired.

Initially, most people believe that the air introduced into the lake supplies the requisite oxygen to create aerobic activity. This belief is not correct. The aeration units pump air into the membranes that create columns of bubbles that circulate the lake's water from bottom to top. When water is exposed to the atmosphere it is oxygenated from a process called diffusion. The chief operative characteristic of our aeration units is actually water circulation. Our aeration units operate once the lake ice disappears in April and are turned off when the ice reappears in November. The diffuser units and the air hose tubing remain in the water year 'round; nothing is removed. When activated, the units operate continuously day and night. The operating units are housed in protected metal cabinets and contain two 1/3 hp compressors. The units are quiet and trouble-free. In total, the units are connected to 12,000 feet of self-weighted bottom line tubing that remains at the lake's bottom. On only

one known occasion, a low drafting boat pulled the tubing, with no apparent damage to the boat or tubing.

The tubing is connected to 24 diffuser units that each creates four columns of tiny bubbles at the water's surface. The 24 diffuser units are situated in specifically designed locations. The units are not moved. On rare occasions, a unit placed in shallow water surfaces. When this occurs, the unit is weighted and returned to the lake bottom. On average we have replaced one diffuser unit each season that becomes damaged by ice or contact with a boat if surfaced. When operating, the diffusers present no risk or interference with normal water activities. The diffuser system circulates over 200 million gallons of water daily. This water circulation allows the biologic oxygen demand (BOD) to reach levels necessary for aerobic activity to occur in the lake. BOD is widely used in environmental engineering practice to determine the amount of oxygen water requires for the sediment breakdown process. Before the aeration program began, the heavy sediment areas were anaerobic. In other words, the lake was relatively stagnant, holding increasing amounts of suspended muck, with no aquatic organisms existing to eat up the unwanted sediment.

We still have sediment in our lake, but less than before. In our initial project proposal, we forewarned everyone that the aeration approach did not seek quick or dramatic results. We entered this program

**by Gregory Bator**

East Twin Aeration Association, LLC, and  
Twin Lakes Property Owners' Association

with eyes wide open and spirits prepared for long-term results only. We hoped to reduce our sediment levels by 6 inches per year.

We appear to be exceeding our conservative projections. Testing results are demonstrating continual drops in the undesired sediment levels. After 2-1/2 years of operation, tests are revealing approximately 2 feet less of sediment in our lake. These tests are conducted 4 times per year in the same locations. Data retrieved from the tests demonstrates reduced sediment levels. These are encouraging results. Anecdotal reports of lake users have been positive. Increased wildlife has been identified, perhaps attracted by the sediment particles being pushed to the surface. Improved water clarity has also been noted with some west end lake users now being able to see their sandy bottom.

Our initial projections were to continue the project for at least five years. At that point the program will be reevaluated. At the midway point of our aeration program, the results are positive and reassuring. We chose to take action to help our lake in an environmentally benign manner with the support of our lake community. We strongly believe that by working together we are improving the quality of East Twin Lake, our piece of heaven on Earth.



## Bear Lake sturgeon



*photo by Don Fredrickson, Bear Lake, Manistee County*

This sturgeon has been observed in Bear Lake, Manistee County. This photo was taken by the photographer from a dock near his home on the southwest shoreline. Rumor has it that the DNR experimented with planting a three small sturgeon in Bear Lake in the 1940s. How large the fish were when planted is unknown, but the pictured fish is between five and six feet long, with an estimated age of 60 years. Sturgeon live to more than 100 years old and may be double the length of this specimen.

## Regional fall seminar

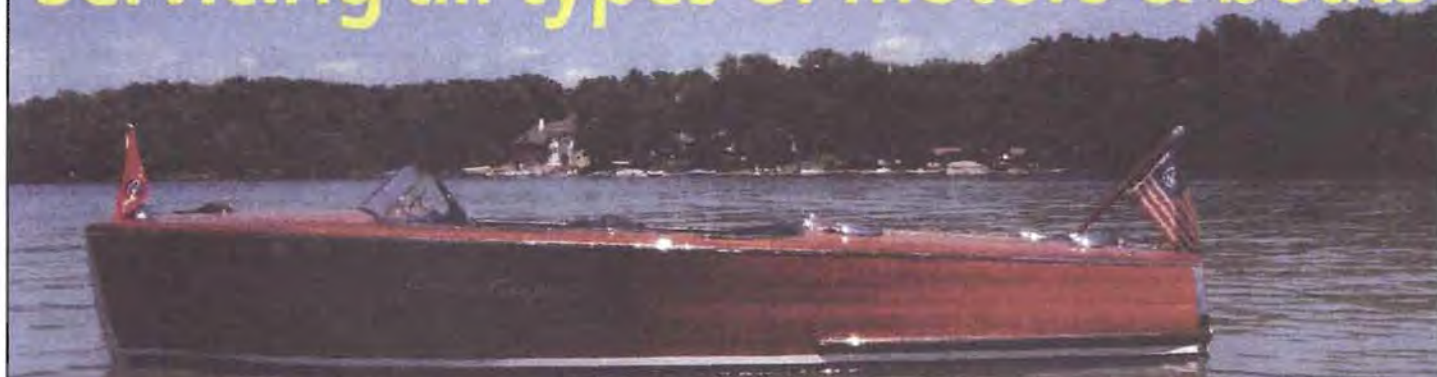


Pictured above are attendees at the Upper Peninsula fall seminar organized for Regions 12 through 15. The seminar was held Sept. 8, 2007, at Hagerman Lake, Covenant Point.

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# LOVE MY LAKE ...

"Love My Lake" is a new feature of The Michigan Riparian. In each issue, we invite subscribers and readers to tell us why they love their lake and to share one or two photographs. If you'd like to feature your lake in a future issue, please follow the format you see below to answer the seven sets of questions and submit them via e-mail to [editor@churchill3c.com](mailto:editor@churchill3c.com) or via "snail mail" to: Love My Lake c/o Jennifer Churchill, P.O. Box 44, Carson City, MI 48811. Please also e-mail a large-format (300 dpi) jpg or tiff photo of your lake, or snail mail a regular photo. Photos will not be returned, so please mail us a copy. We look forward to hearing about your lake!

## Living on

1

**What is your name and MLSA affiliation (association you belong to)?** Answer:

Jennifer Churchill, editor of the Michigan Riparian magazine. Crystal Lake Association.

2

**What is the name of your lake and where is it located (county and general region of Michigan)?**

Answer: I live on Crystal Lake in Montcalm County with my dog Levi, and a cat named Charlie. Montcalm County is in the middle of the lower peninsula.

3

**How long have you lived on lakes? How long have you lived on this particular lake?**

Answer: Last year, I rented a place on Crystal Lake; it was the first time I'd lived on a lake and I loved it. I bought my house in May of this year.

4

**How would you describe your lake? Very rural? Developed? A village or town feeling, or more remote?**

Answer: Crystal Lake isn't developed and is rural by some standards, but the town of Crystal has a historic one-screen movie theatre, a hardware store, two bars, a restaurant, churches, a library, a few gas stations, a grocery store, and a few other "amenities" that make it feel like a village.

5

**What do you love most about living on a lake? What do you love most about this particular lake that you now live on?**

Answer: Living on a lake, in general, is such a great feeling. You get home from work and feel like you're on vacation every day because of the gorgeous view, the possibility of sitting on the shore and reading a book or cruising around on a boat. I love Crystal Lake because it's the perfect size; I walk around it every single day when I get home, which is about 4.5 miles. I see neighbors, stop at the ice-cream shop, and get my exercise in!

6

**What types of activities do you and family members do on your lake? Answer:**

I'm just as happy to sit on my dock as I am to take off on a boat. It's lovely to hear the waves, watch the birds and watch my puppy chase sticks. Tubing is also fun.

**Do you find that family members visit more frequently when you live on a lake than when you don't? Do you have any funny anecdotes to share?**

People definitely want to stop over more often when you live on a lake, and that's fine with me. My nieces love to come over to go swimming, and there's just something about sitting on the front porch watching the water and sipping an iced tea while gossiping with the girls. I'll never live on "dry land" again! :)



PHOTO BY JENNIFER CHURCHILL

A scenic day on Crystal Lake, Montcalm County, which is an all-sports lake with plenty of wildlife.



# NEWS FROM LAKES AROUND THE STATE

## **Pocket the butts**

**BIG BROWER LAKE IMPROVEMENT ASSOC.**

**Kent County**

*Gale Satterlee, President*

Cigarette butts are the number-one world litter problem with approximately 4.3 trillion butts being littered worldwide each year. Butts leach chemicals such as chromium, cadmium, lead and arsenic into waterways within minutes of contact with the water. The butts also contain tobacco tar, which is a carcinogen. Discarded butts have been found in the stomachs of infants, birds, animals and fish. A butt discarded on the road around Big Brower Lake eventually ends up IN Big Brower Lake. Similarly, dog waste not picked up and removed from the Brower Lake watershed washes into Brower Lake, encouraging bacteria growth. Swimming, anyone? Take care to keep butts and poop out of Big Brower Lake.

## **Spring 2007 "Walkabout"**

**CRYSTAL LAKE & WATERSHED ASSOC.**

**Benzie County**

*Bob Appleford, President*

The "Crystal Lake Walkabout" is an educational program to teach students, property owners, and visitors about the Crystal Lake Watershed using a hands-on approach of observational monitoring and environmental exploring. Participants "walk about" interpretive sites representing different parts of the Crystal Lake Watershed. The program focuses on hydrology - how water moves about the watershed - and also addresses water quality, ecology, land use, zoning, septic tanks, green belts, sustainable development, and watershed management. Each participant receives a "Walkabout" t-shirt with a colorful map of the Crystal Lake Watershed, and a copy of the interpretive manual. Since 1994, the "Walkabout" has been presented to 3,200 students, residents and visitors to the Crystal Lake Watershed.

## **Beach project needs help**

**DODGE LAKE LAKE-FRONT PROPERTY OWNERS ASSOCIATION**

**Clare County**

*Dorothy Saucier, President*

We have tried for over a year to get a grant or some help from the state to repair our beach, still to no avail. The state tells us there is no money and they have frozen

all grants. The erosion on the beach gets worse with every rain storm. We have four members who have volunteered to take on the job. They are putting together a way to re-route the rain water; add more sandy play area, and much more. The beach reflects on all of us, as it is a special part of our Dodge Lake community. We are asking for donations to help with the expense, so if you feel you would like to donate to the project, send them to our P.O. Box 805, Harrison, MI 48625.

## **Recent fish die-off**

**EAGLE LAKE BLOOMINGDALE ASSOCIATION**

**Allegan County**

*Bob Wicklander, President*

Many of us have witnessed the recent fish die-off. I, and others on the lake, have called the DNR. They came out to Eagle Lake in May and June to collect samples of dead fish. The samples were sent to a Michigan State University pathologist, which is a six- to eight-week process to produce a report and make it available to us. The report and any additional information are posted on our yahoo news group at <http://groups.yahoo.com/group/my-eaglelake>. It is important you understand that the DNR has indicated that a similar die-off is occurring at many other Michigan lakes and that there is no known health risk to humans. But they advise of common sense and to not eat obviously sick fish. They also recommend fish flesh be completely cooked to avoid the potential for parasite transmission.

## **Tips for buying your first boat**

**GRAVEL LAKE ASSOCIATION**

**Van Buren County**

*Craig DeSimone, President*

Buying a boat can be nerve-racking and overwhelming. Regardless of whether you buy a new or a used boat, it is very important to consider a number of things before making the big purchase. 1) How will you use the boat? Will it be used primarily for fishing, water sports, cruising around, taking day trips or week-long excursions? 2) When and how often will the boat be used? Do you boat seasonally or year 'round? 3) Are you going to buy a new or used boat? 4) Where will you operate the boat? In lakes, rivers or on the ocean? 5) How much can you afford to spend? Don't forget that there are

many additional fees after the initial purchase cost. Some additional fees include maintenance, insurance, registration fees, trailer fees, dock fees, taxes, fuel and oil, winter storage fees, and instruction and safety course fees. 6) Where will the boat be kept? On an anchor, at a marina, docked on a pier, or on a lift? ... When looking for a boat, you will want to consider it in terms of safety, physical condition, options and accessories, looks, performance and cost. If buying a used boat, it's a good idea to have it inspected by a qualified marine surveyor. Pretty much anyone can call themselves "qualified," but for a real qualified marine surveyor, you can contact the National Association of Marine Surveyors (NAMS) or the Society of Accredited Marine Surveyors (SAMS) and they can recommend a surveyor in your area.

## **Cut River Dam update**

**HIGGINS LAKE PROPERTY OWNERS ASSOCIATION**

**Roscommon County**

*Pat Springstead, President*

Since early 2006, Rick Meeks and Herb Weatherly, along with county commission chairman Larry Mead, served on a committee to study improvements to the Cut River Dam. The objective was to explore possible additional spillways to increase responsiveness in adjusting the water level of Higgins Lake to the legally mandated summer and winter levels. The committee determined the addition of two more flop gates would be the best option. These new gates will add 27 more feet of spillway, and will be much easier to operate (one man) than the stop logs currently used in the existing structure. Plans were drawn up, bids were received, and anticipated installation was scheduled for Oct-Nov, when the lake level would be lower and kids would not likely be playing around the dam site. However, it wasn't until January 2007 that the DEQ issued the required permit. One requirement the DEQ insisted on was a permanently open spillway five feet in width, allowing some water to always flow out into the Cut River to aid in fish reproduction. The contractor is ready to go and hopes to have the installation completed during May (NOTE: item is from the association's summer 2007 newsletter).



# NEWS FROM LAKES AROUND THE STATE

## **When smoke gets in your eyes**

INDIAN LAKE ASSOCIATION

**Kalamazoo County**

*Greg Nichols, President*

Most of us reside at Indian Lake because we enjoy its beauty. We expect clean air for the full of enjoyment of lakefront living. Unfortunately, there are many days (especially in the spring and autumn) when unhealthy smoke from open burning permeates our yards and houses. A fire causing a smoke or odor nuisance is not allowed, by law, in Michigan. Starting a fire, without creating a smoke nuisance, is nearly impossible in populated areas surrounding Indian Lake. Smoke even wafts across the lake to irritate residents on the opposite shore. The majority of fires around the lake involve the burning of yard waste. Yard waste smoke contains small particles that penetrate deep into your lungs, and research shows these particles remain there for months to years. Smoke from yard waste also contains at least seven known cancer-causing chemicals, as well as carbon dioxide. Carbon dioxide, besides adding to global warming, is especially dangerous to children, people with chronic heart conditions, and individuals with lung diseases. If you must burn, consult your township office and do so legally. A burn permit is required for all open burning around Indian Lake.

## **Boat density survey**

MAGICIAN LAKE IMPROVEMENT ASSOCIATION

**Cass and Van Buren counties**

*Charlotte Poole, President*

On August 13 and 14, a boat count and density survey was conducted by our president Charlotte Poole and her husband, Howard. It shows a total of 1,322 boats of which 1,029 are powered and the remainder of 293 without any power. Their survey shows a breakdown of how many and what types of boats by eight geographical areas, as well as the number of boats per acre to be 2.655 and boats per pier to be 2.77. See our web site at [www.magician-lake.org](http://www.magician-lake.org) for the complete results.

## **Fish kill and SONAR**

BARRON LAKE ASSOCIATION

**Emery Hirschler, President**

Our president called the Michigan DNR in June and spoke to Craig Smith, who

noted that SONAR is non-toxic to humans and fish. At least 40 lakes are reporting fish kill, mostly in shallow lakes. This is due to the lack of oxygen, which places stress on fish. If fish are already stressed, the SONAR may increase the amount of stress on the fish, but SONAR is not the cause of the fish kill.

## **Phosphorous policy report**

PENTWATER LAKE ASSOCIATION

**Oceana County**

*Jerry Saylor, President*

The final report of the Phosphorous Policy Advisory Committee, prepared for the Michigan Department of Environmental Quality in May 2007 resulted from a charge to the committee in June 2006 to identify the major sources of phosphorous loadings to Michigan's surface waters, and review and compile the voluntary and regulatory management approaches that are being or could be used to control phosphorous. The full report can be found online at [www.deq.state.mi.us/documents/deq-wb-nps-phos-stakeholder-report.pdf](http://www.deq.state.mi.us/documents/deq-wb-nps-phos-stakeholder-report.pdf). This is just a brief synopsis of the committee's findings and recommendations that relate to riparians and lakeshore communities: Education of Michigan residents is critical for a successful phosphorous reduction program. Lake associations can also play an important role in public education. There are approximately 10 million people and four million households in Michigan, many in urbanized areas experiencing water-quality problems. Urban runoff is an important source of phosphorous; best business practices are effective in minimizing phosphorous loadings from stormwater runoff. Many opportunities for reducing phosphorous loadings are connected with stormwater management. A comprehensive statewide monitoring system is important for assuring that existing and potential phosphorous impacts are identified. Land use and development patterns that create more impermeable surface area increase stormwater runoff, stream bank erosion and phosphorous loadings.

## **Envirothon team takes first**

VAN BUREN CONSERVATION DISTRICT

*Jon Mills, Chair*

Congratulations to the Lawton High School Envirothon Team for winning the state competition which was held in May in Lexington, Mich. This is the second year the Van Buren Conservation District has sponsored the Lawton High School team at the state competition and we are very proud! The team was eligible to advance to the National Canon Envirothon held July 29-Aug 4 at Hobart & William Smith Colleges in New York. For more information, visit [www.macd.org/envirothon.html](http://www.macd.org/envirothon.html).

## **Phosphorous ordinance**

WHITE LAKE ASSOCIATION

**Muskegon County**

*Phil Dakin, President*

Earlier this year, the Muskegon County Commission became the first county in Michigan to ban the sale and use of lawn fertilizer containing phosphorous. This was in response to requests from the Mona Lake Watershed and the White Lake Association. There were several exemptions to the ordinance, among them being agriculture and newly established lawns in their first growing season. The issue of the ban on sales, however, became entangled in a state law indicating that the county could not ban the sale without approval of the Michigan Department of Agriculture. Subsequently, the commission passed a resolution asking for a hearing with MDA outlining the reasons for the ban. After review, the MDA sent the resolution back with a request for more information. Ms. Steinman of the Mona Lake Watershed reviewed the situation with the MDEQ, the Attorney General's office, the MDA and even the state of Minnesota, which has a statewide ban, and was advised by all that the ban on the sale was probably a fight no one could win. Facing those odds, it appears that the sale can not be banned, but most parts of the ordinance may remain intact. Those include a ban on the use of lawn fertilizer, a ban on the display of fertilizer containing phosphorous and a sign containing the regulations must be prominently displayed where lawn fertilizers are sold. These regulations are subject to change as the county commission takes up the issue again to be in compliance with state law. — Ken Mahoney, Muskegon County Commissioner



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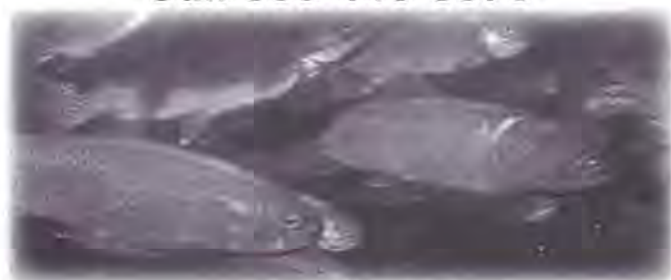
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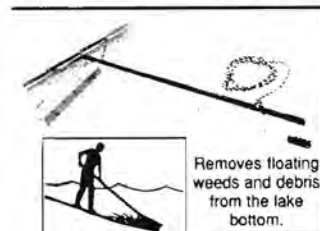


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**ACTIVITY**      **WHAT % DO THE FOLLOWING?**  
(Choose one: 25, 50, 75, 100)

**PERCENT**

1. Do not add fertilizer to lakefront. \_\_\_\_\_
2. Use only phosphorous-free fertilizer. \_\_\_\_\_
3. Do not install lawns on slopes that drain into the lake. \_\_\_\_\_
4. Maintain natural landscape with native plants. \_\_\_\_\_
5. Leave woody vegetation in nearshore areas. \_\_\_\_\_
6. Maintain a buffer strip at least 35 ft. in width. \_\_\_\_\_
7. Limit the amount of impervious area. \_\_\_\_\_
8. Installing rain gardens to help infiltrate runoff from impervious areas. \_\_\_\_\_



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