

SUMMER  
2015



Vol. 50 No. 3

# THE MICHIGAN RIPARIAN

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

RIPARIAN (ri-'pair-ee-en) 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.

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THE MICHIGAN RIPARIAN magazine is published quarterly and is mailed to subscribers in the Winter, Spring, Summer, and Fall each year.

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## FROM THE PUBLISHER

# Thank You for 50 Years!



There's a saying, "If you're lucky enough to live on a lake, you're lucky enough." As we begin another summer season, I am filled with a deep sense of gratitude. I am thankful to be surrounded by so many beautiful and amazing bodies of water in our great state. There are over 11,000 inland lakes in our state and more than 300 rivers. If you are blessed enough to live on or near one of Michigan's beautiful bodies of water, I'm betting that you share the same feeling. I have been blessed to live on a lake half of my life and to grow up near Lake Michigan the other half. It doesn't get better than that.

We hope you join in our celebration of 50 years and read about the magazine's beginnings and its history on page 5. Turn to pages 18 and 19 to see more front page covers from the past. You may recognize some of them from years gone by. If you see any that you may have missed, it is never too late to add that issue to your collection.

This issue is filled with a variety of topics ranging from lake water quality on page 23 to the growing scene of golf carts roaming around our lakes on page 34. We receive more emails and questions on Starry stonewort than any other subject, so you will be pleased to find Scott Brown's comprehensive article (complete with pictures) on page 27.

The Michigan Lake and Stream Associations had another successful annual conference this spring. See conference highlights on page 20. Cliff Bloom will weigh in on owners' rights on artificial lakes on page 13.

We want to extend a heartfelt thank you to all of the past and current publishers, editors, advertisers and contributors of The Michigan Riparian Magazine. We want to thank Michigan Lake and Stream Associations for its continued partnership. And we want to thank you, the readers, for sharing your stories, ideas and supporting us, over the years.

Here's to 50 more.....!

Cheers,  
Sharon Wagner

-publisher, Sharon Wagner  
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# The Michigan Riparian Magazine Turns 50!

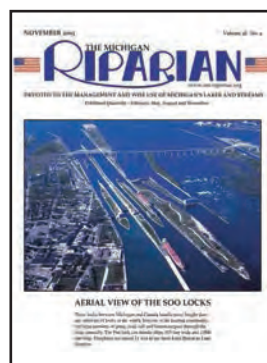
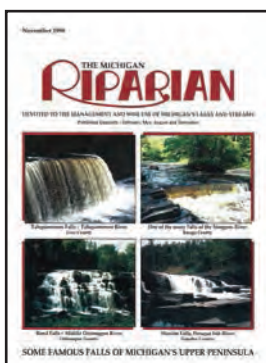
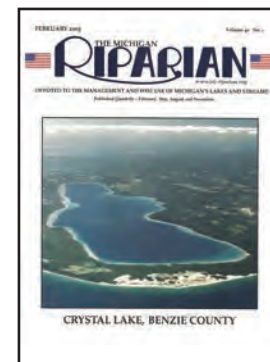
You know you've reached a significant milestone when you hit 50. Here's the story of how we got started and some of the principle people involved. It's a story about vision, shared concerns, cooperation and strategic partnerships. The Michigan Riparian is the only quarterly publication devoted exclusively to protecting the water resources of Michigan and the property rights of riparian property owners.

With the emergence of Michigan Lake and Stream Associations, Inc., the seeds were planted for the future of *The Michigan Riparian* magazine. In 1961, a professor of resource development at Michigan State University brought together approximately 40 representatives of lake associations and state and federal agencies to discuss the problems regarding inland lakes. A consensus was reached that the top five challenges are aquatic plant control, water quality, lake level control, beach improvement and poor fishing.

The group agreed that success stories, if publicized, would help other associations. Through meetings with lake association members and partnerships with like-minded state and federal agencies, combined with great leadership, membership grew and ML&SA flourished. Effective communication and sound education are critical to good decision-making. What better way to do both than through a good publication?

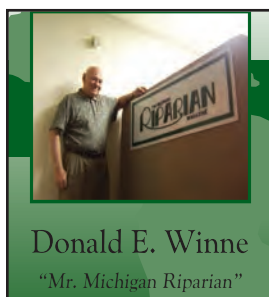
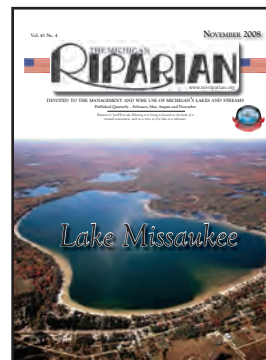
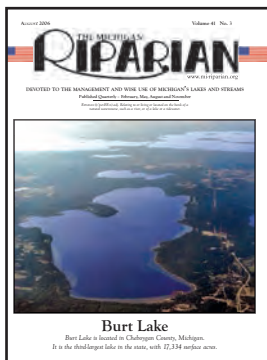
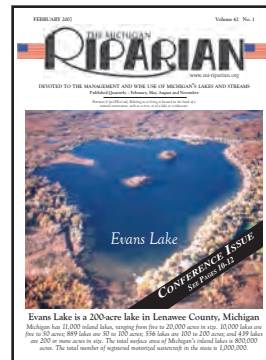
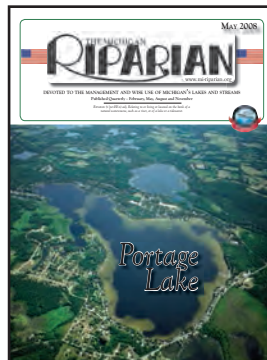
The Michigan Riparian took shape, providing important information from lakefront associations, the state and local government as well as state and federal natural resources agencies such as the Michigan Department of Natural Resources.

*(Continued on page 6)*





# The Michigan Riparian Magazine Turns 50!



Don Winne Publisher  
1979-2008

## THE MICHIGAN RIPARIAN 50 YEAR ANNIVERSARY

The Michigan Riparian magazine has a rich history of promoting and supporting water quality and riparian rights for waterfront property owners. We have continuously published important and critical issues affecting our most precious natural resource, Michigan's lakes and streams. Equally important has been our role of informing readers of legal issues that negatively impact waterfront property owners.

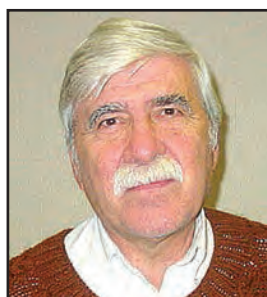
The Michigan Riparian is the only magazine devoted exclusively to the protection, preservation and improvement of Michigan waters and the rights of riparian owners to enjoy their waterfront property.

Throughout our years of publication, we have strived to provide historical and nostalgic stories, analyses of critical legal issues and useful information related to maintaining and improving the quality of our lakes and streams.

Along the journey many important and cherished partnerships have been developed. Our appreciation is extended to the hundreds of volunteers, contributing writers and organizations who have worked tirelessly to protect our fragile resource. Our readers also have been paramount to providing information related to important water issues.

We pledge our continuing commitment to providing quality and useful information for our readers.

John M. Hood, President  
Michigan Lakes and Streams Foundation  
The Michigan Riparian Magazine



Franz Mogdis  
Publisher 2009-2012



Cliff Bloom-Attorney Writes  
columnist 1996-present

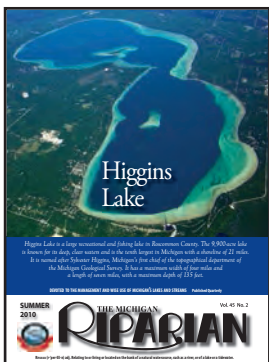
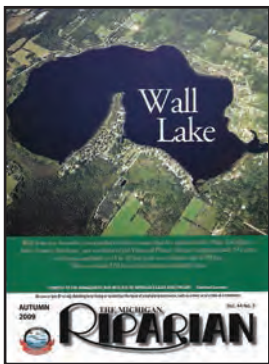
(Continued from page 5)

The first issue of The Michigan Riparian magazine was published in 1965-66, and was introduced as follows:

*"This is our first issue of The Michigan Riparian. It has taken a long time to give birth to a publication which is suited to the needs of waterfront organizations and individual riparian owners, alike. We think we have taken a giant step toward our goal. Much time has been spent in the development of a basic format and in the selection of balanced news items of interest to the many riparian interests around the state.*

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



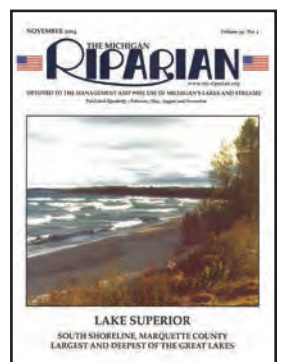
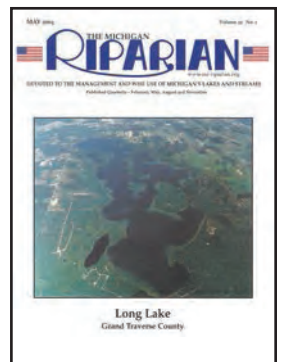
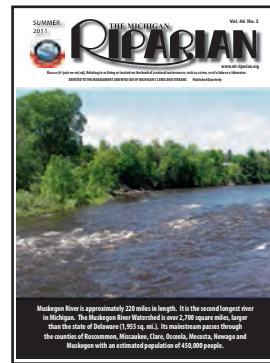


The continuous publication of The Michigan Riparian magazine as the official publication of Michigan Lake & Stream Associations, Inc. during the next seven years (1965-1972), played a significant role in the growth in membership in ML&SA. In 1972, the magazine was incorporated as a separate non-profit corporation, The Michigan Riparian, Inc. The goals of both non-profit corporations are similar, and they work together to promote each other.

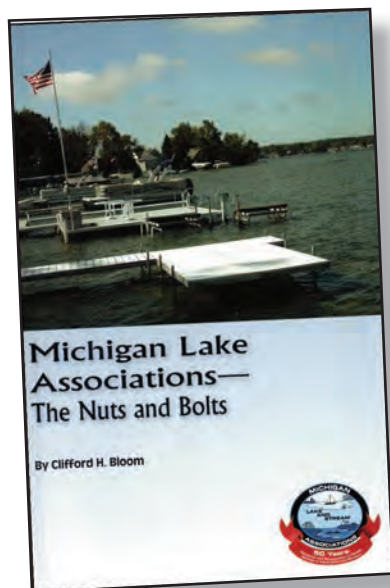
Henry Westerville of Portage, Michigan became the managing editor of The Michigan Riparian magazine in 1966 and served in that capacity for the next ten years. Robert Charles of Coldwater, and owner of Eagle Printing Company of Coldwater, became the editor and publisher of the Riparian in 1977 and continued until his retirement in 1979. In November 1979, the Riparian Board appointed Don Winne as editor and publisher. In 1992, the Board named Mr. Winne to the newly created office of Chief Executive Officer. The editing, printing, and circulation of the magazine became the responsibility of the CEO.

The magazine experienced rapid growth in the number of subscribers during the ten-year period of 1972-1982 when Cecile Harbour served as Circulation Manager of

(Continued on page 9)



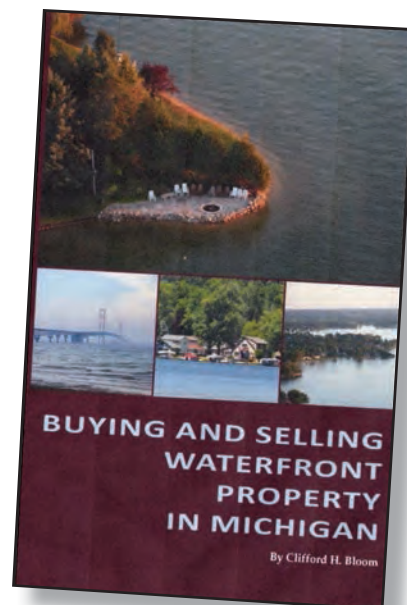
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# The Michigan Riparian Magazine Turns 50!

(Continued from page 7)

the magazine. At the present time, 10,000 copies of the magazine are printed quarterly and mailed to members of 250 lake associations and over 300 individuals. Don Winne remained publisher from November, 1979, until his retirement in March, 2009. Franz Mogdis, with his journalism background and shared passion and experience of lake living, stepped forward as publisher in March, 2009. He remained publisher until his retirement in January, 2012. The current publisher of the magazine, Sharon Wagner, worked closely with Mogdis for three years prior to his retirement. It was a natural transition and one she relishes. Like Mogdis, she enjoys lake living, connecting with lake enthusiasts, sharing their stories from around the state and providing information for good stewardship. For 30 years, *The Michigan Riparian* Magazine and Michigan Lake and Stream Associations offices were located in private homes of the president or executive director. Following the closure of the Three Rivers office in January 2009, ML&SA and The Michigan Riparian opened a new joint central office in Stanton, Michigan (Montcalm County).

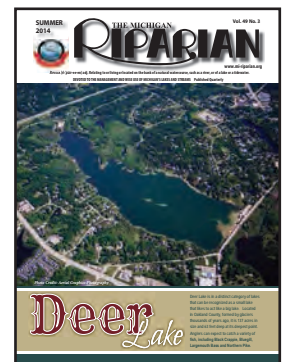
*The Michigan Riparian* has showcased many Michigan lakes and streams on its front cover, and we have also featured loons, swans, ducks and fish. The magazine takes pride in its collection of historical stories and the famous people who once graced our Michigan inland lakes. We have covered everything from past presidents to the glaciers that formed our lakes, and ordinary people doing extraordinary things to preserve and protect their lakes. Our readers are what make the magazine special, relevant and valuable.

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Subscription Coordinator  
& Assistant Editor



Michigan Lake and Stream Associations is proud of our close affiliation with The Michigan Riparian Magazine – since the summer of 1965, this unique and informative magazine has served as our primary means of communicating with our members throughout Michigan. Celebrating fifty continuous years of publication, the magazine's historical archive portrays a rich chronicle detailing the life and times of the people, politics, science and issues that have defined Michigan's storied waterfronts for nearly half a century. Michigan Lake and Stream Associations congratulates the Publisher, staff and Board of Directors of the Michigan Lakes and Streams Foundation on the 50th anniversary of this wonderful magazine that is entirely dedicated to preserving and protecting our legacy of freshwater resources for future generations.

Scott Brown- ML&SA Executive Director



# MSU Extension to Offer Lake Ecology and Management Education Online.

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Jane Herbert, Senior Water Resource Educator  
Michigan State University Extension

Michigan State University Extension is pleased to announce the return of the ever-popular *Introduction to Lakes* program. Updated, reformatted and better than ever, the new *Introduction to Lakes Online Course* is a six-unit series specially designed for lakefront property owners, lake association members, lake improvement board members, local government officials, natural resource professionals, K-12 educators and others.

Readers may remember the former program that was taught face-to-face around the state. With the new *Introduction to Lakes Online Course* you will, in the comfort of your home or office, have week-by-week, 24/7 access to six online units ~ complete with lectures, activities, resources, discussion forums and live chat sessions. Through this convenient format you can increase your knowledge and understanding of the following topics:

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6. Citizen involvement in lake management

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1) your classmates through weekly, topical discussion forums, and  
2) your course instructors through pre-scheduled live chat sessions.  
To receive a certificate of completion, you must complete all of the weekly assignments ~ including quizzes.

Course instructors are all MSU Extension educators or specialists. They include Bindu Bhakta, Terry Gibb, Jane Herbert, Dr. Jo Latimore and Dr. Lois Wolfson.

The fall 2015 offering of *Introduction to Lakes Online Course* begins at Noon on Tuesday, October 6 and ends at Noon on

Tuesday, November 17th with a special introductory price of \$60.00 per person for Early Bird registration and \$75.00 for normal registration. For registration details please visit the MSUExtension web page at [www.msue.anr.msu.edu](http://www.msue.anr.msu.edu) and search on "Introduction to Lakes."

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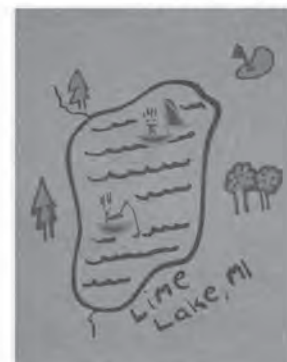
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# What's Happening Upstream?

Article by Kevin Cronk, Director of Monitoring & Research  
Tip of the Mitt Watershed Council

## Results from an intensive two-year assessment of Lake Charlevoix tributaries.

Lake Charlevoix is one of Michigan's premier inland lakes. With a surface area of over 17,200 acres, it is the third largest lake in Michigan. The beauty of Lake Charlevoix has attracted visitors for more than a century with its clean water, scenic shoreline, and superb fishing.

Lake Charlevoix collects water from a 214,400-acre watershed, of which 70% is predominately forest and wetlands, and is home to nearly 10,000 residents and countless vacationers. Although this watershed is predominantly forested, development is occurring at a rapid pace reducing the amount of forests, agricultural lands, and wetlands. Like many watersheds throughout Michigan, the Lake Charlevoix Watershed has been subjected to numerous stressors, including high loads of chloride and sediments, nitrogen and bacterial contamination and climate change.



Kevin Cronk monitoring a tributary of Lake Charlevoix



Photo- Courtesy of Tip of the Mitt Watershed Council

Lake Charlevoix

With funding from a DEQ Clean Water Fund grant, the Watershed Council monitored water quality in all of the major rivers and creeks flowing into Lake Charlevoix over the course of two years. Thirteen sites were monitored on 12 occasions in Horton Creek, the Boyne River (three sites), Porter Creek, the Jordan River (two sites), Brown Creek, Birney Creek, Deer Creek, Monroe Creek, Loeb Creek, and Stover Creek. Using these data, as well as archive data, the Watershed Council evaluated the tributaries individually, in relation to one another, and in terms of impacts on Lake Charlevoix.

*Continued on page 12*

Here are a few of the interesting findings from the Lake Charlevoix Tributary Monitoring Project:

- Horton Creek has higher nitrogen concentrations than any of the other major tributaries that flow into Lake Charlevoix.
- Stover Creek contributes a disproportionately high load of chloride and sediments to Lake Charlevoix.
- Birney Creek is contaminating the Jordan River with nitrogen, sediments, and bacteria
- E. coli concentrations were highest in Birney Creek, followed by Loeb, Horton, and Monroe Creeks. DEQ Waters Quality Standards were exceeded multiple times.
- High nitrogen concentrations were found in the Jordan River and South Branch of the Boyne River, which may be due to agriculture in the Mancelona Plains.
- Water temperatures were lowest in Horton Creek and highest in the Boyne River. Dams and impoundment dams on the Boyne River elevate water temperatures, which were found to exceed standards several times, threatening the river's coldwater fishery.
- Among all the tributaries monitored, the Jordan River contributed 60% of the discharge (volume per unit time, e.g. gallons per minute) to Lake Charlevoix on average, while the Boyne contributed 25%.
- Dissolved organic carbon loads were high in Loeb, Monroe, Porter and Stover Creeks, which is likely a result of extensive wetland areas in their watersheds. The wetlands are believed to have helped reduce nitrogen pollution associated with agriculture due to uptake, settling, and denitrification.
- Stover Creek had the highest phosphorus, nitrogen, chloride, and conductivity levels, which we attribute to extensive agricultural (40%) and urban land cover (10%) in the watershed.
- Annual contributions to Lake Charlevoix from the tributaries are enormous, totaling nearly 10,000 pounds of phosphorus and 12,000,000 pounds of sediments. Although most data show high water quality in Lake Charlevoix, nitrogen concentrations are higher than other large lakes in Northern Michigan. Excessive nitrogen inputs can cause shifts in the aquatic food web and there is evidence that high nitrogen levels drive invasion by non-native species.



# What's Happening Upstream?

(Continued from page 11)

Tip of the Mitt Watershed Council is now in the process of sharing this wealth of information with Lake Charlevoix Watershed Plan Advisory Committee and other stakeholders. Working with myriad partners, the Watershed Council plans to utilize information gathered during this project to identify specific sources of nonpoint source pollution in the tributary watersheds and pursue remediation. This project is yet another example of how the Watershed Council uses the watershed management planning process to reduce nonpoint source pollution and protect our cherished water resources, one implementation step at a time.

For more information about the Lake Charlevoix Tributary Study, please contact Kevin Cronk, Director of Monitoring and Research at 231-347-1181 or [kevin@watershedcouncil.org](mailto:kevin@watershedcouncil.org). Additional information about the Tip of the Mitt Watershed Council can be found at [www.watershedcouncil.org](http://www.watershedcouncil.org). ●●●



## REPRINTING Articles from the Magazine

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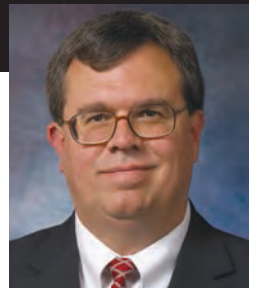
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## "Artificial or Real?"

While many areas of water law in Michigan are well established by the courts, the property rights of lakefront owners on an artificial lake are uncertain due to two recent decisions of the Michigan Court of Appeals. Within the last five years, the Court of Appeals held that artificial lakes in Michigan do not have riparian rights in *Persell v. Wertz*, 287 Mich App 576 (2010) and *Holton v. Ward*, 303 Mich App 718 (2014). Please see my earlier articles on these cases in the Summer 2010 and Spring 2014 issues of *The Michigan Riparian* magazine.

These two Court of Appeals cases potentially present a huge problem for lakefront owners on artificial lakes. Why? With a natural lake, lakefront property owners have over 175 years of Michigan common law that spells out, in significant detail, what specific rights riparian property owners have. For example, the courts have long held that riparian owners have exclusive rights of dockage, seasonal boat moorage, water drawing privileges and similar rights on and over their lakeshore and lake bottomlands. Riparian owners also have the right to fish, swim, hunt water fowl and engage in a variety of different recreational uses and activities with regards to their water frontage.

However, by declaring that artificial bodies of water do not have riparian rights in *Persell v. Wertz* and *Holton v. Ward*, the Court of Appeals has created a vacuum regarding the rights of waterfront property owners on an artificial body of water. Can they install and utilize docks, boat hoists and swim rafts? Do they own or control any of the bottomlands adjacent to their waterfront lots? Can waterfront property owners on artificial lakes permanently and seasonally moor, anchor or dock boats along their water frontage? Can they use the entire surface of the artificial body of water for fishing, water skiing and sailing? Unfortunately, the Michigan appellate courts have not really addressed any of these issues with regard to artificial bodies of water.

Over a year ago, one of the waterfront property owners in *Holton v. Ward* attempted to appeal the decision by the Michigan Court of Appeals to the Michigan Supreme Court. The Michigan Lake & Stream Associations, Inc. ("MLSA") filed an amicus brief with the Michigan Supreme Court in favor of the appealing party. MLSA requested the Supreme Court to not only hear the appeal but to also hold that, over time, artificial bodies of water could effectively become conventional lakes with riparian rights. Interestingly, the Illinois courts have adopted that view. Although the appellate courts in Illinois have held (like Michigan) that artificial bodies of water do not have riparian rights, the Illinois courts also recognize the "artificial-becomes-natural" rule. That is, if an artificial body of water has been utilized similarly to a natural lake over a period of time, it will be deemed to be a lake with riparian rights. MLSA asked the Michigan Supreme Court to adopt the same view. In *Holton v. Ward*, the Michigan Court of Appeals appeared to reject the Illinois rule that an artificial lake could become a riparian lake.

See *Holton v. Ward* at footnote 12. The Illinois approach is discussed in more detail below.

Regrettably, on March 31, 2015, the Michigan Supreme Court decided not to hear the appeal in *Holton v. Ward*. As a result, the Court will not substantively consider the position advocated by MLSA (at least, not at this time). Typically, the Michigan Supreme Court tends to accept less than five percent of the cases that are submitted to it for appeal.

The main justification for treating artificial lakes differently (and not according them riparian rights) appears to be the notion that because the original owner or developer of the entire lake maintains "control" over the lake, there is no need (or it would be unfair) to apply the riparian rights doctrine to an artificial lake. However, in most real world situations in Michigan, that justification is illusory or even false. For the overwhelming majority of artificial lakes in Michigan (whereby lots or parcels have been purchased by third parties), there are no deed restrictions, restrictive covenants or similar recorded documents that indicate how lot owners can use the artificial lake (let alone specifying whether individual lot owners own the bottomlands adjacent to their lot, can utilize docks, boat hoists and similar items, can use the entire surface of the lake for general recreation, etc.). Even where one common owner, developer or platter has imposed deed restrictions, restrictive covenants or the equivalent on an artificial lake or individual lake front lots or parcels before selling them to third parties, rarely do such restrictions indicate whether or not the lake is to be treated as a natural or artificial lake, and such restrictions almost never indicate whether lot owners can use the entire surface of the lake for general recreation, install and use docks or engage in similar lake usage. In fact, it has been the experience of MLSA that purchasers of lots or parcels on most artificial lakes believe that their rights of usage to the lake itself are the same as a natural riparian lake.

To the extent that the Court of Appeals has now held that lot owners on artificial lakes do not have riparian rights, there is no current legal guidance on the nature and scope of the rights of lot owners on artificial lakes. For example, do the decisions in *Persell v. Wertz* and *Holton v. Ward* mean that lot owners on artificial lakes:

- Do not own or control the bottomlands adjacent to their lots?
- Cannot install or use a dock, boat hoist or swim raft?
- Cannot permanently or seasonally moor, anchor or store boats or watercraft?
- Cannot use the entire surface of the artificial lake?
- Cannot fish or hunt water fowl on the lake?
- Cannot go on the ice in the winter?
- Cannot draw water from the lake for consumptive uses?
- Cannot engage in general boating on the lake's surface?
- Cannot swim or recreate in general on or in the lake?

(Continued on page 15)

# Michigan Waterfront Alliance

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## MICHIGAN WATERFRONT ALLIANCE

P.O. Box 369  
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[www.mwai.org](http://www.mwai.org)



Dear MWA Lake Association Members, MWA Individual Members and Michigan Riparians,

The Senate is currently considering land use legislation that will affect every lakefront property owner in Michigan, especially riparians in northern Michigan. Senate Bills 39 and 40 would require the DNR to develop a statewide land management plan that must win legislative approval in order to purchase any additional land in northern Michigan, as defined by a horizontal border between Mason County on the western side of the state and Arenac County on the

eastern side of the state. Senate Bills 39 and 40 impact all recreational and industrial usage of all state land in Michigan, and would require input from local units of government in DNR land use decisions. MWA has been asked by Senators Casperson and Booher to participate in the workgroup process with respect to proposed changes to this legislation, and we are making the concerns of riparians heard.

We encourage all of our members to participate in this process, and to contact your respective legislators to ensure that they are aware of any concerns you may have with respect

to state land and water use policies, as this legislation will serve as a blueprint for state policymaking going forward.

Information and resources for contacting your legislator can be found at [www.house.mi.gov](http://www.house.mi.gov) and [www.senate.michigan.gov](http://www.senate.michigan.gov).

Sincerely,  
Bob Frye, President  
Michigan Waterfront Alliance



# "Artificial or Real?"

(Continued from page 13)

If artificial lakes in Michigan do not (and cannot) have riparian rights, then presumably individual lot owners around such lakes must treat them as ponds or wetlands and can engage in the following disruptive uses and activities:

- Install a fence across their respective portions of the lake.
- Keep others from using the water/lake above the bottomlands that they own.
- Keep others from using the ice above the bottomlands that they own.

One example of the potential chaos created by *Persell v. Wertz* and *Holton v. Ward* involves the allocation of bottomlands ownership. In Michigan, it is rare for a survey or legal description for a lakefront or waterfront lot or parcel on a natural lake to include a legal description of the lake bottomlands attributable to that lot or parcel. In other words, legal descriptions rarely extend under the water into or along the bottomlands of an inland lake. Instead, the Michigan appellate case law has long held that where a legal description utilizes language such as "extends to the water's edge", "to the lake", "along the shore" or similar wording, the parcel or lot is deemed to be waterfront by operation of law and the bottomlands attributable to that lot or parcel extend to the center of the lake. See *Hilt v. Weber*, 252 Mich 198; 233 NW 159 (1930); *Mumaugh v. McCarley*, 219 Mich App 641; 558 NW2d 433 (1996) and *Bauman v. Barendregt*, 251 Mich 67; 231 NW 70 (1930). At what angle the riparian boundary lines for a particular lot or parcel on an inland lake radiate or extend to the center of the lake is a question of fact, which can be determined by circuit courts. See *Heeringa v. Petroelje*, 279 Mich App 444; 760 NW2d 538 (2008). For some artificial lakes in Michigan, the legal description for a particular waterfront lot or parcel does extend out and into (or under) the artificial body of water involved. However, it has been the experience of MLSA that for the overwhelming majority of artificial lakes in Michigan, the legal descriptions for waterfront parcels or lots generally extend only to the water's edge (and not into the lake or bottomlands), just as is true with almost all lots or parcels on natural lakes. Therefore, if artificial lakes do not have riparian rights and the deeds or legal descriptions for lots or parcels on a particular artificial lake end at the water's edge, how would the bottomlands be allocated? Could the owners of such waterfront lots or parcels even utilize the bottomlands adjacent to their lots or parcels for docks, boat moorage, etc.? Implementation of a broad general rule that artificial lakes do not have (and cannot have) riparian rights creates a severe problem with regard to lake bottomlands allocation, usage and ownership on artificial lakes.

In addition, neither *Persell v. Wertz* nor *Holton v. Ward* defines what constitutes an artificial lake versus a natural lake for purposes of having riparian rights. In some situations, it would be easy to define what constitutes an artificial lake. For example, large lakes created out of former gravel pits or quarries are almost certainly artificial lakes. However, in other cases, it is difficult to ascertain whether a lake is "artificial" for legal purposes. As another example, what about the situation where a natural lake existed, but its lake level or area has been increased significantly (and artificially) due to non-natural augmentation such as a new dam, augmentation well or massive dredging? Are such enhanced lakes "natural" or "artificial"?

What about the case where a creek, stream or river existed (with riparian rights), but a new dam created an artificial lake? Is the resulting artificial lake riparian because the earlier flowing bodies of water were riparian? What about a lake created by the manipulation or damming up of underground springs? The Court of Appeals has not addressed these definitional issues.

Many artificial lakes throughout Michigan resemble natural lakes. That is, likely dozens (if not hundreds) of artificial lakes around Michigan have been used for half a century or more as if they were natural lakes. Many artificial lakes are quite large. Lakefront property owners on many artificial lakes have installed and utilized docks, boat hoists, swim rafts, seawalls and similar structures for decades. They have permanently or seasonally moored, anchored, stored or kept boats and watercraft along their lakefront as well as moored to their docks, piers, boat cradles and similar structures. They have boated, water skied and recreated over the surface of the entire lake on numerous occasions. They have drawn water from the lake to water their lawns, as well as used the frozen surface of the lake during the winter for ice fishing. In other words, the lakefront lot owners on many artificial lakes have treated their lake for many years as if it were "natural". Why should that type of artificial lake be treated any differently from a natural lake for purposes of recognizing and exercising riparian rights?

(Continued on page 17)

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# ASK THE EXPERTS

## "LIMNOLOGIST"

*If you have a question about water related issues, riparian rights, and/or lakes and streams, etc., let us know by email or snail mail.*

Email: [info@mi-riparian.org](mailto:info@mi-riparian.org)

Mail: The Michigan Riparian

300 N. State St., Suite A,  
Stanton, MI 48888

**Question:** I have a question for the limnologist. What causes the blue-green scum you see on lakes?

**Answer:** Algae are an important part of the food chain; however "blue-green" algae are largely inedible to aquatic organisms and therefore can take over an environment easily. Blue-green algae are actually photosynthetic bacteria and can form blooms in lakes that have large amounts of nutrients in them, such as phosphorus and nitrogen. Nuisance algae blooms look like blue or green paint and release noxious odors as the algae decomposes. These blooms can become more pronounced in warm water on hot, calm summer days. Blue-green algae have been known to produce toxins which can irritate swimmers' skin, and in some cases, have killed animals that have consumed infested water.

As a general rule, it is advised to avoid swimming in areas where it appears blue-green algae is located until the bloom has cleared. Keep animals out of water, as well. Blue-green algae is an inherent part of the overall algal community and therefore cannot be eradicated. To control blooms and the amount of blue-green algae, it is best to reduce the amount of nutrients entering a lake. Common sources of nutrients include lawn fertilizers and runoff from cities, cultivated farm fields, feedlots and construction sites. For more information on the topic, visit <http://dnr.wi.gov/lakes/bluegreenalgae/>.

Source: Paige Filice, Michigan State University Department of Fisheries and Wildlife

\* \* \* \* \*

Our experts include our riparian attorney, a biologist, a limnologist, an engineer, a college professor and a state agency official. They look forward to responding to your question.

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## Cedar Lake — Boat Parade

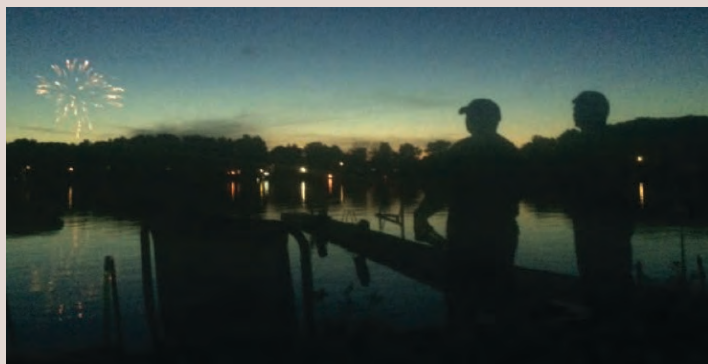
Cedar Lake Recreation Association, Inc.

Located in Van Buren County

Pictured below is the Cedar Lake boat parade held over the 4th of July weekend last summer. There were pontoon boats, ski boats, wave runners and even a kayaker taking part in the parade.



Cedar Lake Boat Parade



Fireworks on Cedar Lake

Many lake associations share this same wonderful patriotic tradition. Please send us your boat parade pictures. We want to see how your lake celebrates the 4th of July and proudly displays our country's red, white and blue colors on your lake!

Send your pictures to: [info@mi-riparian.org](mailto:info@mi-riparian.org).



# "Artificial or Real?"

(Continued from page 15)

Rather than have the courts attempt to craft non-riparian-type rights for artificial lakes pursuant to a future decades-long case by case approach, MLSA has urged a practical current solution. If an artificial lake has been used and treated as a natural lake for some period of time, then riparian rights should attach to that artificial body of water. For example, if an artificial lake has been used by the lot owners around the lake for a number of years for dockage, boat moorage, fishing, swimming, general recreation, etc., then the artificial lake should become or be deemed to be a "riparian" lake.

Michigan courts can look to the neighboring state of Illinois for that type of practical solution to the problem that artificial lakes may not have riparian rights (at least not when such lakes are initially created). In general, the Illinois common law, like Michigan law, holds that riparian rights do not typically extend to artificial bodies of water when they are created. *Nottolini v. LaSalle National Bank*, 335 Ill. App. 3d 1015; 270 Ill. Dec 423; 782 NE 2d 980 (2003).

However, the Illinois courts have recognized that:

"[I]t is apparent that man-made bodies of water can come to be treated as natural bodies of water and that private riparian rights can be acquired on man-made bodies of water as well". *Alderson v. Fatlan*, 231 Ill. 2d 311, 322; 898 NE2d 595 (2008).

In *Alderson v. Fatlan*, the Illinois Supreme Court recognized and adopted the "artificial-becomes-natural" rule. The Illinois Supreme Court recognized the difficulties that can arise in trying to distinguish an artificial lake from a natural lake, particularly with the passage of significant periods of time. The Court also noted:

More fundamentally,...the artificial-becomes-natural rule is justified by principles of fairness and equity. Simply put, in some cases, where the usage of the artificial body of water has long been subtle, it may be appropriate to treat the artificial body as a legal equivalent as a natural one. *Alderson* at p. 322.

What would the appropriate period of time be in Michigan for treating an artificial lake as a riparian lake based on overall lake usage? Michigan courts could use the general residuary statute of limitations in Michigan of six years (MCL 600.5813). Or, Michigan courts could use the longest statute of limitations for real property in Michigan of 15 years (MCL 600.5801).

Until the Michigan appellate courts begin to address these issues, the rights of property owners on artificial lakes in Michigan will remain in a legal limbo. ■■■



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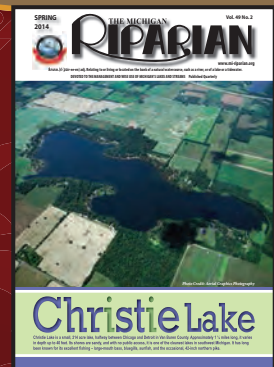
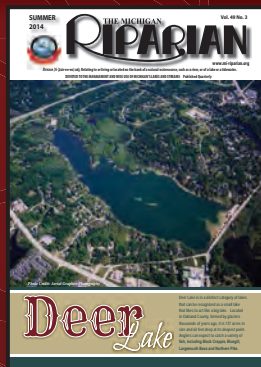
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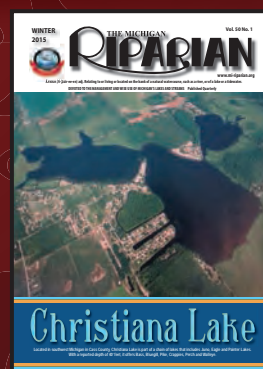
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# MICHIGAN LAKE & STREAM ASSOCIATIONS, INC.

## ML&SA NEWSLETTER



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## ML&SA 54th Annual Conference

### A Resounding Success –

## Thank You!

Since 1961, Michigan Lake & Stream Associations has conducted 54 consecutive annual conferences, each with a theme dedicated to learning more about becoming better stewards of our vast treasure of inland waters. On Friday and Saturday, May 1st and 2nd, 2015, we were again pleased to welcome over 270 folks who made the trek to Boyne Country to learn more about “Managing Aquatic Invasive Species in Inland Lakes”. This year’s annual conference featured many outstanding presentations that ranged in topics from organizing a “Clean Boats, Clean Waters” event to creating a community-based “lake protection” group as well as exploring the importance of collaborative partnerships and the latest science and technology based strategies for the control and management of aquatic invasive plants and animals.

A heart-felt thank you is extended from ML&SA to each of our outstanding speakers and exhibitors who devoted considerable time and effort to the success of our annual conference – your support is greatly appreciated!

The Friday night annual banquet featured a colorful and informative presentation by Archibald Jones (as portrayed by Dr. Stacy Daniels of the Crystal Lake and Watershed Association). We greatly appreciate Stacy’s entertaining and informative contribution to our annual banquet – his enthusiasm and storytelling ability are unrivaled! Thank you, Stacy, for your unique contribution to the success of our 54th annual conference!

We were also proud to have conferred the ML&SA Master’s Jacket award to each of our long-time proactive volunteers Beth and Randy Cook of Morley, Michigan. Beth and Randy have selflessly contributed thousands of hours of their exceptional organizational skills and hard work to improving our organization and our ability to serve the needs of our statewide membership. Thank you, Beth and Randy, – your contributions to ML&SA are appreciated more than you will ever know!

ML&SA is pleased to announce that our 2015 “Riparian of the Year” commendation was awarded



Tom Alwin of the MI Department of Environmental Quality Aquatic Invasive Species Program, talks about state agency programs and efforts to minimize the impact of aquatic invasive species in Michigan inland lakes during the opening plenary session of the 54th Annual Conference.



The ML&SA 54th Annual Conference banquet featured an appearance by Archibald Jones, aka Dr. Stacy Daniels, who provided an entertaining and informative look at the history of lake levels on Crystal Lake.

# MICHIGAN LAKE & STREAM ASSOCIATIONS, INC.

## ML&SA NEWSLETTER



to Lon Nordeen, Vice-President of the Pleasant Lake Property Owners Association (Washtenaw County) at this year's annual banquet. Lon's dedication and hard work while successfully engaging and educating his lake community about the need to work together in assembling the critical social, financial and scientific resources required to preserve and protect Pleasant Lake in the face of an onslaught of aquatic invasive species provides a successful model for other lake associations to emulate. Thank you, Lon, for your outstanding leadership!

We were also honored to have presented a very special "thank you award" and plaque to Jane Herbert of Michigan State University Extension in recognition of her many years of enthusiastically supporting Michigan Lake and Stream Associations programs and events. Jane will be concluding her time with MSU Extension in February, 2016, following a highly successful career dedicated to pro-actively supporting the preservation of Michigan's freshwater legacy. Thank you, Jane, for all you have done for our lakes and streams and for Michigan Lake and Stream Associations! Good luck and happy travels!

The entire ML&SA family would like to provide a hearty "thank you" to all who generously contributed to the success of our 54th Annual Conference!

Please "Save the Dates" of Thursday, Friday and Saturday, April 28th, 29th & 30th, 2016 to attend the 2nd Michigan Inland Lakes Convention to be held at Boyne Mountain Resort. More information regarding next year's Inland Lakes Convention will become available later this year, so stay "tuned" to [www.mymlsa.org](http://www.mymlsa.org).



*Jill Ryan, Executive Director of Freshwater Future, discusses gathering the necessary tools for effectively combating aquatic invasive species in Michigan inland lakes during the open plenary session of the 54th Annual Conference.*



*Syndell Parks of Grand Valley State University, explores the difference in growth patterns and distribution of pure versus hybrid Eurasian Water Milfoil at the 54th Annual Conference.*

**Thank You to our  
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## Freshwater Future Offering Three Grant Awards to ML&SA Lake Association Members

Jill Ryan, Freshwater Future Executive Director



Ensuring the Healthy Future of Our Waters

Freshwater Future Executive Director, Jill Ryan, was pleased to present a talk at the recent Michigan Lake and Stream Association Annual Conference about the importance of collaboration, especially in order to control aquatic invasive species. Due to the enthusiasm that was shown during the conference for protecting water resources and utilizing collaborations in order to succeed, Freshwater Future is now offering up to three grants to ML&SA members for Freshwater Future's services. Services could include projects to develop a strategic plan, train your board on financial management, develop a fundraising plan, and more! Through a grant, we'll bring 75% of the cost of our services, you simply add a 25% match. If you have a great organization, but want to increase your effectiveness, give us a call to see if our services can help: 231.348.8200 or check out our website at [www.freshwaterfuture.org](http://www.freshwaterfuture.org) and click on services.

Although our staff team has over 60 years of experience in protecting rivers, lakes and wetlands, we think the best evidence of our impact comes from our past clients:

*"Working with Freshwater Future has helped our group immensely. We are putting all of our financial and fundraising affairs in order, which will help us focus on the project work of protecting the Salmon Trout and Yellow Dog Rivers from a proposed sulfide mine."*

Emily Whittaker, Yellow Dog Watershed Preserve.

*"The ideas and advice we've received from Freshwater Future have helped revive a flagging membership and donor cultivation effort within our organization. We're working on new and innovative programs that are already starting to pay off in new members, and with Freshwater Future's help we have been plugged into valuable technical support resources that will help us build a long-term membership development and retention system."*

Rebecca Fedewa, Flint River Watershed Coalition.

*"If we could have had Freshwater Future staff help us with strategy assistance in the beginning, we would have saved much time and better anticipated future hurdles."*

Mary Jo Cullen, Gravel Watch Ontario.

## ML&SA Releases Invasive Aquatic Plant Control and Management Guide

By Alisha Davidson, Ph.D.

ML&SA Research and Development Coordinator

While aquatic plants are an important component of healthy lakes and streams, some species form overly large, dense populations. While these nuisance plants are often non-native species such as Eurasian milfoil, native plants can also grow to excess when exposed to high nutrient levels. When plant populations reach levels that impair recreation and ecosystem functioning (for example, decreased fish and bird habitat), control efforts are often warranted. However, there are many options for such efforts, from using predatory insects to machine harvesters, each with advantages and disadvantages. It can be difficult to choose a control option and develop the associated management plan that maximizes efficiency and minimizes cost.

To help Michigan Lake and Stream Associations (ML&SA) members with these decisions, ML&SA has put together the "Invasive aquatic

plant control and management guide: a summary of management options and service providers."

This guide is intended to serve as a resource for ML&SA members who are considering management of invasive aquatic plants. The guide provides a summary of current knowledge and options for management, as well as a list of Michigan businesses that can provide guidance and/or perform management services. Michigan Lake and Stream Associations encourages supporting businesses that are ML&SA commercial members due to their support for the organization and its goals. The guide can be found on the ML&SA website: <http://www.mymlsa.org/wp-content/uploads/2015/05/Invasive-Plant-Control-and-Management-Guide.pdf>

# Lake Water Quality: Are We Winning the War?

By: Tony Groves and Pam Tynning  
Water Resources Group, Progressive AE

With this being the 50-year commemorative issue of *The Michigan Riparian*, it seems like a good time to ask the question, “Are we winning the war to preserve the quality of our lakes?” While this is a reasonable question, it is difficult to answer. Michigan has over 10,000 lakes greater than five acres, and collecting data from all of these waterbodies would be a formidable task. However, there are a number of sampling initiatives being coordinated at the federal, state, and local levels that make a general assessment of the condition of Michigan’s lakes possible.

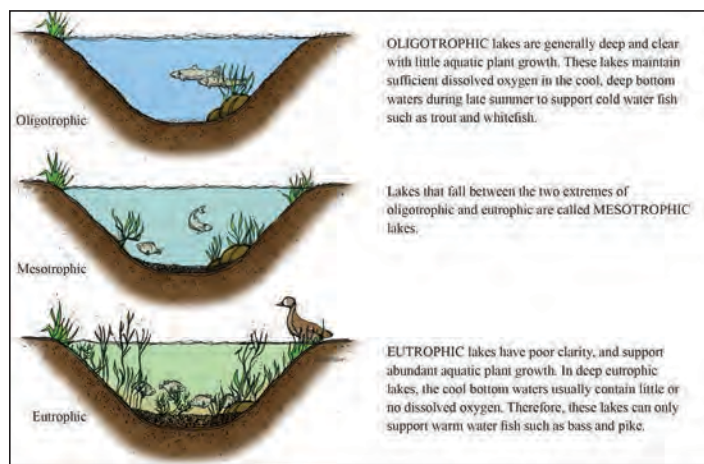
## Lake Trophic Classification

One goal in assessing the condition of lakes is to classify lakes by “trophic state.” Trophic state is a classification system based on a lake’s ability to support plant and animal life. When classifying lakes, scientists use the broad categories “**oligotrophic**,” “**mesotrophic**,” or “**eutrophic**.”

Under natural conditions, most lakes will ultimately evolve to a eutrophic state as they gradually fill with sediment and organic matter transported to the lake from the surrounding watershed. As the lake becomes shallower, the process accelerates. An increase in aquatic plant abundance also contributes to the lake filling in as sediment and decaying plant matter accumulate on the lake bottom. Eventually, terrestrial plants become established and the lake is transformed to a marshland. The natural lake aging process takes many thousands of years, but can be greatly accelerated if excessive amounts of sediment and nutrients (which stimulate aquatic plant growth) enter the lake from the surrounding watershed. Because these added inputs are usually associated with human activity, this accelerated lake aging process is sometimes referred to as “cultural eutrophication.”

Key parameters used to classify lakes and to evaluate water quality include total phosphorus, chlorophyll-a, and Secchi transparency.

**Phosphorus** is the nutrient that most often stimulates aquatic plant growth and the rate at which a lake ages and becomes more eutrophic. By measuring phosphorus levels, it is possible to gauge the overall health of a lake.



**Chlorophyll-a** is a pigment that imparts the green color to plants and algae. A rough estimate of the quantity of algae present in the water column can be made by measuring the amount of chlorophyll-a in the water column.

A **Secchi disk** is a round, black and white, 8-inch disk that is used to estimate water clarity. Generally, plants can grow to a depth of about twice the Secchi disk transparency.



## Trophic Characteristics of Michigan Lakes

A recent scientific report published by the United States Geological Survey (USGS) entitled *Water Quality Characteristics of Michigan’s Inland Lakes, 2001-10* (Fuller and Taricska 2012), provides an excellent overview of historical and recent sampling programs in Michigan. In this report, trophic classifications of 445 lakes sampled by the Michigan Department of Natural Resources and Environment between 1974 and 1984 were compared with a more recent data set derived from 729 lakes sampled by MDEQ and USGS between 2001 and 2010.

By examining phosphorus, chlorophyll-a, and Secchi disk transparency data, USGS determined that historic and recent lake trophic classifications were similar, with about 82 percent of lakes in the recent data set classified as mesotrophic or oligotrophic compared to about 79 percent of the lakes in the historic data set. Roughly speaking, about half of the lakes did not change trophic state; about one-quarter were more oligotrophic; and about one-quarter were more eutrophic. Thus, the bulk of Michigan lakes have good (mesotrophic) to excellent (oligotrophic) water quality, and water quality is largely unchanged today compared to historic data.

## The Value of Water Quality Data

Michigan’s water quality data presented in the USGS 2012 report are encouraging. There does not appear to be an overall shift toward degraded water quality statewide when comparing historical and more recent water quality data. Apparently, we are “holding our own.” However, while some lakes showed improvement, others showed a shift to a more eutrophic state, which suggests that excessive nutrient loading is a problem on some lakes. Further, in many Michigan lakes, there is not sufficient data to discern long-term water quality trends on a “lake-specific” basis.

It is important to recognize that changes in lake water quality are often subtle and difficult to detect. There can be significant natural variability in lake water quality daily, seasonally and year-to-year. Because of this natural variability, it can be difficult to detect subtle changes or trends in water quality over time. In fact, it may take many years of regular sampling in a given lake to detect a statistically significant trend in water quality. This is why programs such as the Cooperative Lakes Monitoring Program are valuable (see Sampling Programs on page 25). By sampling an individual lake in a systematic manner over an extended period of time, it may be possible to detect subtle changes in water quality.

(Continued on page 25)





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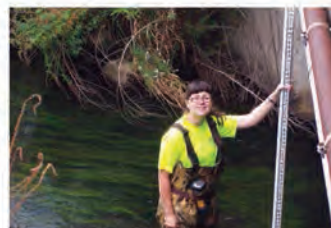
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# Lake Water Quality: Are We Winning the War?

Another consideration in attempting to measure changes in water quality is the concept of “response time.” Lakes often do not respond immediately to a reduction in nutrient inputs. For lakes of average size and average water replenishment time, recovery may require 2-10 years (Wetzel 2001). If, for example, a sewer system is constructed around a lake, the improvement in water quality may not be immediately apparent and recovery may require several years. Again, this highlights the importance of collecting data over an extended time-period in order to document changes in water quality.

Recognizing the role of phosphorus in accelerating the lake eutrophication process, Michigan has placed limits on phosphorus in laundry and dishwasher detergents and lawn fertilizer. Over time, these limits may help to slow cultural eutrophication. The various monitoring programs and protocols that are now being implemented at the state and federal level are helpful in evaluating general water quality characteristics across Michigan. Hopefully, these types of programs will continue and, as additional data become available, we will be better able to evaluate long-term trends in water quality. However, funding for lake monitoring at the federal and state level is limited, and while overall statewide assessments of water quality may be possible, discerning water quality trends on a lake-specific basis will often require that a long-term monitoring program be implemented at the local level.

Water quality data is essential to understanding a lake and in making sound management decisions. If your lake is not currently being sampled, it might be time to start. With this being the 50th year of The Michigan Riparian, we are reminded to ask “What will the trophic state of our lakes be 50 years from now?” In the absence of water quality data, we will not know.

## Sampling Programs

The 2001-2010 data set previously discussed was collected as part of Michigan’s Lake Water Quality Assessment (LWQA) monitoring program in which all lakes greater than 25 acres with developed public boat launches were monitored. The LWQA is a joint monitoring program between the MDEQ and the USGS. With this program, lakes are monitored on a 5-year rotational basis across Michigan’s 45 watershed management units. Each year, 7 to 10 of the major watershed units are monitored.

In addition to Michigan’s LWQA monitoring program, there are several other sampling initiatives in Michigan. Michigan’s Cooperative Lakes Monitoring Program (CLMP) is the second-longest-running volunteer monitoring program in the country. CLMP began in 1974, and data is currently being collected annually from about 250 lakes state-wide. CLMP volunteers monitor Secchi transparency, total phosphorus, chlorophyll-a, dissolved oxygen and temperature, and aquatic plants. These data are used to document baseline water quality conditions and long-term trends in water quality in individual lakes. The CLMP is administered jointly by the Michigan Lake and Stream Associations, Inc. and the Michigan Department of Environmental Quality. Key partners in CLMP include the Great Lakes Commission, the Huron River Watershed Council, and Michigan State University’s Department of Fisheries and Wildlife. Customized reports of long-term trends are prepared for individual lakes enrolled in the program.

Another important monitoring effort is the Environmental Protection Agency (EPA) National Lakes Assessment (NLA). The first-ever NLA was conducted in 2007 and included a total of 1,028 lakes across the lower 48 states, including 50 lakes in Michigan (U.S. Environmental Protection Agency 2010). The NLA used a statistical survey design in

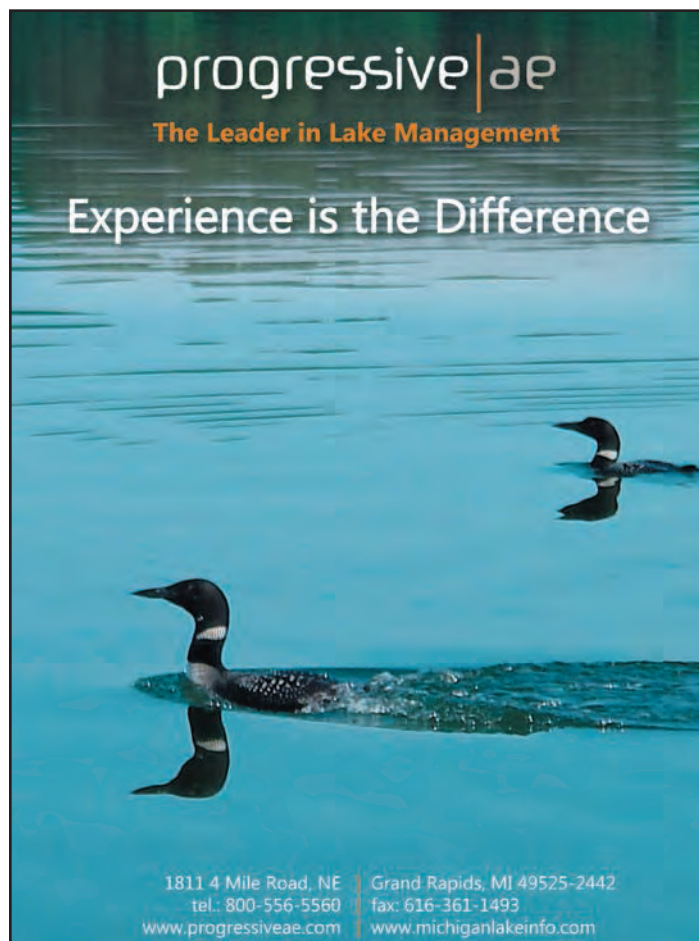
which lakes were randomly selected to represent the conditions of the larger population of lakes across the lower 48 states. Uniform sampling techniques were used in the assessment so that comparisons could be made between different regions of the country. A separate analysis on Michigan NLA data was prepared (Bednarz 2011). In terms of trophic classification, over 80 percent of Michigan lakes were oligotrophic or mesotrophic (Bednarz 2011). These findings were comparable to the larger 2001-2010 data set collected as part of Michigan’s LWQA. Compared to lakes nationally, Michigan had a higher percentage of oligotrophic and mesotrophic lakes and fewer eutrophic lakes. The EPA conducted a second NLA in 2012 that included 904 lakes in the lower 48 states. The results of the second assessment are pending.

In 2002, the Michigan Department of Natural Resources Fisheries Division implemented the Status and Trends Program (STP). This program is designed to help address statewide fisheries management needs and to evaluate the status of aquatic habitat and fisheries communities across the state. As part of the STP, baseline water quality data are being collected from a number of lakes.

## What You Can Do

Phosphorus is the nutrient that most often stimulates excessive growth of aquatic plants and algae, leading to a variety of problems collectively known as eutrophication. Of the major nutrient pollutants, phosphorus is most amenable to control through management practices. The cumulative impact of shoreline development is likely the major driving force in how quickly many lakes are aging and becoming more eutrophic. What can you do? Curtail the use of fertilizers (especially fertilizers containing phosphorus), and establish and maintain as much natural shoreline on your property as possible.

(Continued on page 26)



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# Lake Water Quality: Are We Winning the War?

(Continued from page 25)

With phosphorus, an ounce of prevention is worth a pound of cure. ●●●●

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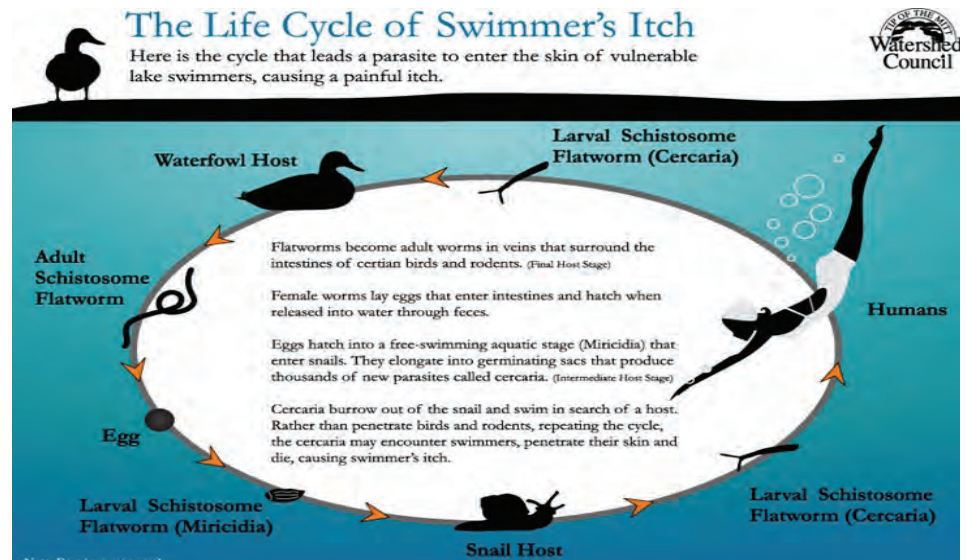
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# Swimmer's Itch Research Project

Madelyn Messner, Graduate Research Assistant  
Thomas R. Raffel, PhD, Assistant Professor



Life Cycle of Swimmers Itch - Watershed Council

Swimmer's itch is a nasty rash caused by parasitic flatworms in the family Schistosomatidae, which normally infect aquatic snails and water birds at various stages of their life cycle. Humans are exposed when infected host snails release tens of thousands of cercariae (larval parasites) which swim through the water to find and penetrate the skin of a definitive host. The cercariae mistakenly burrow into human skin, causing itchy lesions. Many lakes across Michigan are facing the consequences of swimmer's itch which causes intense discomfort, discourages recreational water use, and has economic impacts for regions that rely heavily on lake tourism.

Madelyn Messner is a graduate student in Dr. Thomas Raffel's ecology lab at Oakland University, and will be conducting her thesis work on the environmental variables that drive swimmer's itch exposure in Michigan. Plans for the project involve tracking snail population densities and cercariae abundance eight lakes to better understand and predict the daily fluctuations of cercariae exposure. The lab also hopes to use a DNA detection technique called quantitative PCR to quantify cercariae abundance in water samples. Messner will also measure other variables that may be important predictors of swimmer's itch such as nutrient levels, water temperature, pollutant levels, algae and aquatic vegetation, on-shore wind velocity, bird visitation, and other habitat assessment parameters. After receiving widespread interest in the project from lakes across the state, it may be possible to expand the study to include a comprehensive spatial survey in future years. This type of statewide data could be extremely valuable in understanding and managing the variables that drive swimmer's itch exposure.

Currently the Raffel Lab is supporting this research through limited internal funds and has not secured an external source of funding to cover the costs of reagents, supplies, travel, and personnel for a statewide survey. The lab will be receiving financial support from lake associations to offset the costs of survey work and sample analyses at several lakes in Benzie and Leelanau counties including Crystal Lake, Glen Lake, Lake Leelanau, and Platte Lake; other sites may include Higgins (Roscommon County), Little Traverse, Lime, and Walloon Lakes. Expanding the survey to additional lakes will depend on local support for the project from lake associations, conservation groups, volunteers, and researchers. Outcomes of the project will include statistical analyses and reports, publications in scientific journals, and presentations at relevant conferences, all of which will benefit management and control efforts.

Please contact us if you or your lake have questions about this project or would like to make a donation to offset the costs of swimmer's itch research in the Raffel Ecology Lab.

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# Starry stonewort:

## Essential Information for Lakefront Property Owners

Article and Photos by Scott Brown  
ML&SA Executive Director



Starry stonewort (scientific name: *Nitellopsis obtusa*), a member of the Characeae family, considered a highly beneficial, though increasingly rare “connoisseur of clean waters” (Lambert, 2009; Stewart, 1996) within its native range of Europe and Asia, was first observed as an aquatic invasive species within the North American waters of the St. Lawrence Seaway in 1978, and was later discovered in the St. Clair-Detroit River system during the summer of 1983 (Geis, 1980; Geis *et al.*, 1981; Schloesser *et al.*, 1986; Nichols *et al.*, 1988). First detected in Michigan inland lakes in February of 2006 (Pullman and Crawford, 2010), successful colonization of over two hundred inland lakes had been confirmed by the Michigan Department of Environmental Quality by the spring of 2014.

Due to the repeatedly observed ability of invasive Starry stonewort to degrade ecologically sensitive areas of critical shallow water habitat within colonized inland lakes, federal and state government agencies, including the United States Aquatic Nuisance Species Task Force and the Michigan Department of Environmental Quality, have classified Starry stonewort as a highly invasive aquatic species.

Michigan Lake and Stream Associations frequently receives questions from lakefront property owners about the dense meadows of invasive Starry stonewort that may have suddenly appeared near their docks or shorelines. This article was written to address the commonly asked questions we have received regarding the biology and ecology of this unique and interesting, though highly invasive ancient plant that has inhabited the freshwaters of Europe and Asia for well over fifty million years.

### Why is invasive Starry stonewort so harmful to our inland lake ecosystems?



Invasive Starry stonewort is capable of rapidly producing dense aquatic meadows that have been observed in Michigan inland lakes extending from near shore areas or canals in water depths of less than one foot to the outer most edges of the littoral zone in depths of up to 29 feet, completely engulfing the most ecologically sensitive of areas within colonized inland lakes. Meadows of invasive Starry stonewort often form dense benthic barriers of up to eight feet thick that prevent the growth of an important array of native submerged aquatic plants. In colonized inland lakes, it is not uncommon to observe littoral areas that once supported diverse native

aquatic plant communities now entirely dominated by vast Starry stonewort meadows and completely devoid of native submerged aquatic plants. Dense aquatic meadows possess the ability to significantly alter and/or destroy submerged native aquatic plant communities (Schultz and Dibble, 2012). Native submerged aquatic plant communities play a vital role in inland lake ecosystems by contributing to sediment stability, water transparency, moderate biological productivity levels and the promotion and sustainability of plant and animal biodiversity (O’Neal & Soulliere, 2006). Investigators Pullman and Crawford (2010) also observed that successful Starry stonewort colonies often form dense aquatic meadows that exact their greatest physical, biological and chemical influences on the most ecologically sensitive areas of inland lake littoral zones. In addition to their negative impact on native



# Starry stonewort

(Continued from page 27)

aquatic plant communities, dense aquatic meadows of Starry stonewort often prevent fish from accessing spawning beds and areas hosting coarse woody habitat that provide optimal growth conditions and refuge for the hatchlings and juveniles of a myriad of important fish species (Schultz and Dibble, 2012). Severe degradation and/or loss of native submerged aquatic plant communities and areas critical to fish reproduction represent a significant threat to the immense ecological, recreational and economic value of Michigan's inland lakes.

## Why has invasive Starry stonewort been so successful in colonizing Michigan inland lakes?



*Freshwater biological invasions*

The history of freshwater biological invasions reveals that the exotic plant and animals most likely to succeed are those that possess physiological requirements that closely align with the ecological characteristics of recipient aquatic ecosystems (Gherardi,

2007; Ren and Zhang, 2009). Many of Michigan's inland lakes feature high quality aquatic ecosystems that are capable of supporting the basic physiological needs of Starry stonewort which are identified in existing scientific literature as follows:

- minimum Secchi disk (water) transparency of  $\geq 3$  feet;
- water temperatures ranging from 39° - 75° F;
- moderate levels of inorganic phosphorus;
- aquatic plant dominated, stable state freshwater ecosystems;
- hard water lakes possessing pH levels of  $\geq 8$ ;
- the presence of marl formations (which provide a supply of calcium carbonate);
- $\geq 25$  mg/l calcium carbonate levels

Moreover, the results of a study conducted by this author revealed that inland lakes in Michigan most vulnerable to successful colonization by invasive Starry stonewort were largely oligo-mesotrophic to mesotrophic, with the likelihood of successful colonization by Starry stonewort rapidly declining when trophic state conditions were significantly above or below this range. Oligo-mesotrophic and mesotrophic conditions closely align with the majority of the inland lakes sampled in Michigan (Fuller and Minnerick, 2008; Fuller and Taricska, 2011). Based on the potentially large number and surface area of inland lakes known to possess trophic state conditions, calcium carbonate producing marl formations and basin characteristics capable of supporting expansive Starry stonewort meadows, Michigan may currently be hosting colonies that are comparable in area to the largest known colonies of the ancient plant that are located in the marl lakes of southern Scandinavia, northwestern Russia and northeastern Poland (Soulie-Marsche et al., 2002).

## Why does Starry stonewort grow to such great lengths and high densities in Michigan inland lakes?



Investigators Kufel & Kufel (2002) have identified calcium carbonate usually associated with the presence of marl formations within the lake's basin as the primary factor in determining the growth rates and density of Starry stonewort. Their research results also determined that minimum calcium carbonate concentrations of 25 mg/l are required for the establishment of Starry stonewort. During periods of intense photosynthesis (the warm summer months) Starry stonewort is often observed precipitating calcium carbonate (Kufel & Kufel, 2002). Calcium carbonate levels in many Michigan inland lakes often exceed the minimum concentrations established for growth of the species by seven times (Fuller and Minnerick, 2008; Pullman and Crawford, 2010) – high concentrations that are capable of fueling explosive growth rates that often allow the plant to grow to eight feet in length and to form dense aquatic meadows over relatively large areas.

## How does Starry stonewort reproduce?

Although Starry stonewort is capable of reproducing sexually through the production and fertilization of oospores, colonies of invasive Starry stonewort now widely distributed throughout many of the inland lakes of Michigan and upstate New York consist of all male plants (Soulie-Marsche et al, 2002), thus making the entire population of the invasive species in North America dependent upon vegetative bulbil reproduction and fragmentation. In the late fall, winter and early



spring, the translucent lower inter-node of Starry stonewort are frequently observed to host one or more distinctive star shaped vegetative bulbils, a unique characteristic that inspired the origin of the common nomenclature for the species, Starry stonewort (Bharathan, 1983; Soulie-Marsche et al., 2002). Ranging in size from 2 to 6 mm in diameter, the jewel-like star shaped bulbils of Starry stonewort are cream colored and possess five or six distinctive points (Bharathan, 1983; Naz et al, 2010). The star shaped vegetative bulbils of Starry stonewort are capable of remaining viable within the upper substrate layer of inland lakes for periods of up to several months, thus enabling an effective over-wintering reproductive strategy within northern temperate and boreal inland lakes.

## Is Starry stonewort capable of affecting the trophic state conditions of colonized lakes?

Rapidly growing meadows of Starry stonewort may significantly influence the trophic state of colonized inland lakes by acting to increase water clarity by drastically reducing the re-suspension of coarse and fine particulate matter, by releasing substances that suppress phytoplankton production as well as the growth of undesirable algal species and by significantly reducing levels of available total phosphorus in the water column by acting as an effective nutrient sink (Gross, 2003; Kufel & Kufel, 2002; Van Donk & Van de Bund, 2002). Primary biological production levels in Starry stonewort dominated inland lake aquatic ecosystems may thus be constrained, directly resulting in enhanced water clarity due to significantly reduced chlorophyll-a concentrations (Kufel & Kufel, 2002; Van den Berg et al., 1998).

## Are Starry stonewort growth patterns affected by the seasons?



In the uniformly cold water temperature and ambient light profiles that occur during northern temperate spring and autumn seasons, Starry stonewort frequently produces dense meadows that have been observed extending from near shore areas in depths of less than one foot to the outer most edges of the littoral zone in depths of up to 29 feet, thus engulfing the entire littoral area of colonized inland lakes. However, during the air temperature peak that usually occurs in Michigan during July

or early August and water temperatures near the surface and in shallow areas of the lakes basin reach levels approaching 85° F, dense Starry stonewort meadows may completely collapse. Pullman and Crawford (2010) have hypothesized that bio-accumulation of volatile fatty acids and other toxins produced by dense meadows of Starry stonewort in shallow waters may interact with high water temperatures in inducing an abrupt and complete collapse. Following the collapse of dense Starry stonewort in shallow waters, less dense, though still actively growing meadows of Starry stonewort

(Continued on page 30)

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# Starry stonewort

(Continued from page 29)

often continue to inhabit preferred cooler waters in a temperature and light defined zonation pattern that ends abruptly at the deeper outer edges of the littoral slope (Chambers & Kalff, 1985; Schwarz et al. 2002). Starry stonewort meadows occupying deeper portions of the basin are capable of successfully overwintering, producing relatively abundant new growth via starry bulbils in near complete darkness induced by seasonal ice cover.

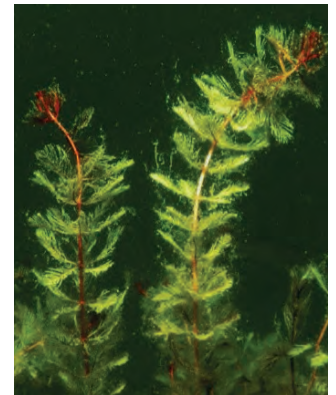
## What factors determine how much of an inland lakes basin may be colonized by Starry stonewort?

In inland lakes possessing naturally shallow basins, highly irregular shorelines, shallow bays, gradually sloping basins and/or complex bottom contours, the total area of the basin capable of hosting Starry stonewort and other submerged aquatic plants may approach 100% (O'Neal & Soulliere, 2006). The degree to which Starry stonewort is capable of forming meadows in deeper areas of the lakes basin is dependent upon water transparency – that is, greater water transparency equates to the ability of the species to form meadows at increased depths. Starry stonewort also possesses the unique ability to grow in depths of up to three times the Secchi disk transparency (Duarte & Kalff, 1986) and is often found at substantially greater

depths and lower light conditions than are tolerated by most native submerged aquatic plant species (Chambers & Kalff, 1985).

## Does invasive Starry stonewort have a competitor in Michigan inland lakes?

Eurasian water milfoil, a perennial submerged aquatic invasive plant first detected in Michigan in the late 1940s, and present in thousands of Michigan's inland lakes, was observed in 88% of the 120 inland lakes initially reported by the Michigan Department of Environmental Quality as hosting colonies of Starry stonewort as of 2012. The frequent co-occurrence of invasive Eurasian water milfoil and Starry stonewort in Michigan's inland lakes is primarily due to the fact that both of these highly invasive aquatic plant species evolved together in their native distribution range which constitutes most of the Eurasian continent and possess comparable ecological



(Continued on page 33)



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## Loon Nesting Project

Little Platte Lake website posted 4/22/15

Little Platte Lake is located in Benzie County and its lake association was founded in 2003. Following is an excerpt from a May 9, 2007, posting on their website about the Loon Nesting Project and its current results.

### Loon Platform Installed

[It was announced that] the Board had authorized the Loon Committee to go forward with the construction and installation of an artificial nesting island for our loons. Such a platform is recommended for a lake where loons have historically nested and where there have been nesting failures for at least two years. I built the platform over the winter in accordance with specifications provided by committee member Jan Glatzer, who is also LPL's Loon Ranger. The raft (the 1st photo) was covered with natural debris by Gretchen Staub and Paul Badura (the 2nd photo), with help from Char Ester. Pursuant to a DNR permit, the raft was installed by Gretchen, Paul and Seth Daigger (the 3rd photo). It was launched from Miller's Hideaway with the gracious permission of Dave and Chris Packer. The required information buoy (4th photo) was subsequently installed near the platform. On May 8th Dave Packer reported that the loons were on the platform! There are no guarantees, but keep your fingers crossed!

-John Ester



## Here's the rest of the story...

### Loon Alert!

#### LOON NEST AND CHICKS NEARBY

This is one of the few lakes in Michigan where the Common Loon is known to nest and raise chicks. Loons are a threatened species in Michigan. There are fewer than 300 nesting pairs in our state. Loons usually raise one or two chicks per year. **DO YOUR PART - PLEASE KEEP YOUR DISTANCE.** Any disturbance can cause these birds to desert their nest of chicks, meaning the loss of the young. Loons are protected under the Michigan Endangered Species Act and the Federal Migrant Bird Treaty Act.

Report any harassment of Loons to the local Department of Natural Resources Office or to the DNR's POACHING HOTLINE (1-800-292-7800 FREE)





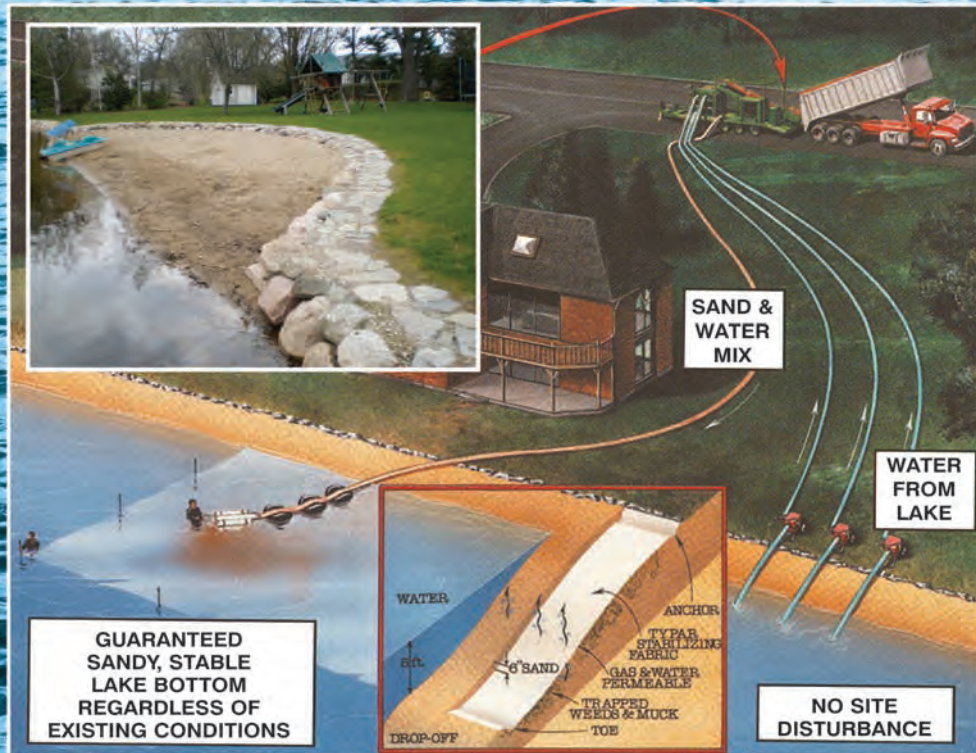
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# Starry stonewort

(Continued from page 30)

prerequisites that are found in oligo-mesotrophic and mesotrophic inland lakes – that is, within inland lakes hosting moderately productive, stable state aquatic plant dominated ecosystems with moderate phosphorus levels and good water transparency. In the spring of the year in particular, Eurasian water milfoil and Starry stonewort compete for dominance in the shallow productive areas of infected lakes. However, rapidly growing meadows of Starry stonewort ultimately overcome areas inhabited by Eurasian water milfoil by late spring or summer.

## How can you help prevent the spread of Starry stonewort within Michigan inland lakes?

The evidence that Starry stonewort has now successfully colonized several hundred Michigan inland lakes continues to mount. It is important that lakefront property owners, recreational boaters, the fishing community and inland lake users in general learn to identify Starry stonewort. Early detection and rapid response in managing the rapidly growing invasive plant is critical to sparing your inland lake or favorite fishing spot from the ecological ravages of this unprecedented biological invasion. ■■■

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## Golf Cart News

By: Clifford H. Bloom, Esq.

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Depending upon one's point of view, the use of golf carts on public roads (golf carts have not traditionally been "street legal" in Michigan in the past) can be either a boon or a curse. Such vehicles often help seniors, individuals with handicaps and people with mobility problems get around easily in neighborhoods, lake areas and rural communities. Children and teenagers love to drive golf carts (which can be a special reason for going to grandmother's cottage at the lake)! Others simply use golf carts away from the golf course for fun and recreation. Unfortunately, the use of golf carts on public roads has many drawbacks. Children and teenagers often do not realize that golf carts can weigh 600 pounds or more and can easily cause property damage, personal injury or even death. Around lake neighborhoods, the careless use of golf carts can present safety hazards, tear up lawns and landscaping and stoke tempers. Drivers of cars and trucks often believe that many golf carts "hog" the road.

Last year, the Michigan Legislature gave a nod of approval to expanded use of golf carts on public roads with the enactment of Michigan Public Act No. 491 of 2014. That legislation became effective on January 1, 2015 and is now known as MCL 257.657a.

The new legislation allows cities, villages and townships to authorize the use of golf carts on public roads and streets under certain circumstances by passage of a resolution. In townships, the local county road commission can ban golf carts on county public roads even where a township consents.

The new legislation contains a number of regulations and limitations that are applicable, even where a city, village or township authorizes golf cart use. For example, the legislation only authorizes golf carts to utilize public roads, not similar vehicles. The operator of such a golf cart must be at least 16 years old and licensed to operate a motor vehicle. Certain signal requirements apply to golf carts used on public roads. Anyone operating a golf cart on a public road must ride as near to the right side of the roadway as practicable, exercising due care when passing a stopped vehicle or one proceeding in the same direction. A golf cart cannot be operated on a sidewalk

constructed for the use of pedestrians. The legislation imposes speed limits for golf carts on public roads. A golf cart cannot be operated on a public street or road during the time period from one-half hour before sunset to one-half hour after sunrise. Additional restrictions also apply under the new legislation. Although MCL 257.657a is not clear on the matter, it is likely that a city, village or township could limit golf cart use to only certain roads or streets or portions thereof.

If you or your lake association are interested in potentially pursuing a resolution allowing golf carts to operate on public streets or roads in lake neighborhoods or rural areas, you should contact officials for your local city, village or township. A municipality's legislative body will have to adopt a formal resolution authorizing such usage by golf carts within the municipality.

**"The operator of such a golf cart must be at least 16 years old and licensed to operate a motor vehicle."**

For the property owner or renter who owns a golf cart, make sure that you have good liability insurance in effect for its use. You should also determine whether such liability insurance will cover drivers other than yourself, and if so, which drivers. If a grandparent allows his or her teenage grandchild to drive the golf cart alone or with friends and someone is injured or killed by the golf cart, it is highly likely that the grandparent will face significant personal liability. Adequate liability insurance will help protect the owners of golf carts and their assets. ●●●

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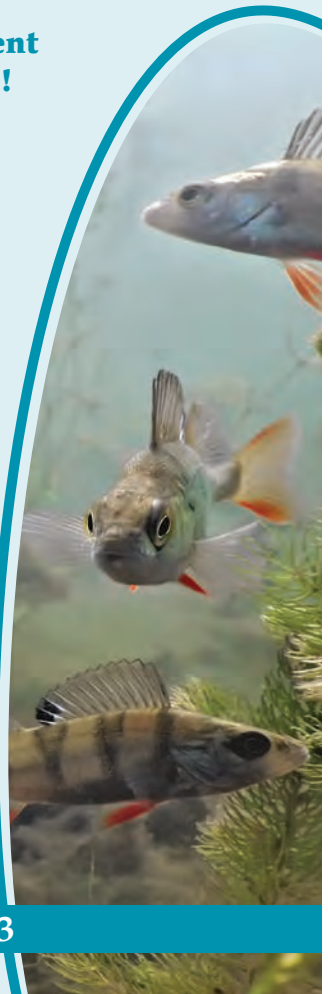


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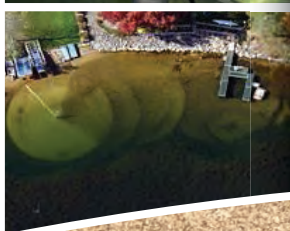
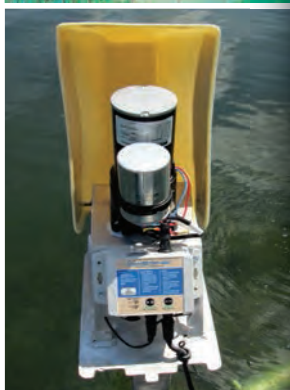


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