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THE MICHIGAN RIPARIAN

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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in
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The Michigan Riparian

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FROM THE PUBLISHER

EXPLORE THE UP



Here we are in the midst of another beautiful fall season in Michigan. The vibrant colors and the fragrance of autumn can take our breath away. The air and the sky are crisp, the clouds seem brighter, and the activity of summer folds rather softly into a different pace. For some of our readers, the summer has been rather disappointing—a bit too short, cool, and rainy. Luckily for us, fall always gives us some wonderful surprises!

In this issue of The Michigan Riparian, our front page feature showcases one of the most beautiful spots to travel in the Upper Peninsula—The Black River Harbor in Ottawa National Forest. It is an ideal area for a road trip and color tour. Discover the treasures here, including waterfalls, hiking trails, the view from high bluffs and the serenity of quiet woods.

Cliff Bloom tackles the age-old question about the definition of a Riparian. Refer to page 11, the Attorney Writes feature, to get an in-depth answer. Lake management or lake restoration? Read which option is best for your lake on page 22. Don't miss Those Darn Weeds—What Good are They? on page 13 from MLSA's Executive Director, Scott Brown. A special memorial dedicated to a long-time friend, life-time volunteer and valuable member of Michigan Lake and Streams, Sue Vomish is found on page 14.

Keep contacting us and sharing your stories, questions and pictures. We love to hear from you!

Get outside and enjoy a little more boating, fishing and the beauty of our waters... fall is the perfect time to capture the gift that nature keeps sharing with us.

-publisher, Sharon Wagner
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BLACK RIVER HARBOR

in

OTTAWA NATIONAL FOREST

The following article was taken, in part, from superiortrails.com, thewildsofmichigan.com and fs.usda.gov websites.

BLACK RIVER HARBOR is the only Great Lakes harbor administered by the USDA Forest Service. The harbor has services for day and transient boaters, including several dock-side picnic tables. The scenic hiking trails through an old-growth hardwood forest that includes five waterfalls make this a favorite scenic stop around Lake Superior. The waterfalls are as spectacular in the fall as they are in late spring.

Black River Harbor and Recreation Area is located 15 miles north of Bessemer, Michigan via County Road 513 ~ the Black River Scenic Byway. In 1904, this was a wagon road from Bessemer to Lake Superior. In 1924 Gogebic County began construction of the harbor park, and later transferred it to the USDA Forest Service. The park includes a vending machine kiosk, picnic area, playground, pavilion, campground and a sandy beach.

The National Forest Campground has 40 nicely maintained and spaced wooded campsites on a bluff overlooking Lake Superior. While no campsite electric service is available, there is a dump station and fresh water. The bathrooms, while not offering

showers, are nicely maintained and have flush toilets, running water, and electric service. Hiking trails lead to the harbor park and to a secluded beach offering lots of picking for rock hounds and a secluded peaceful stroll along the lake for relaxing exercise.



(Continued on page 6)

BLACK RIVER HARBOR

(Continued from page 5)



Stairways lead down to viewing platforms by each waterfall

HIKING TRAILS AND WATERFALLS ALONG THE BLACK RIVER NATIONAL SCENIC BYWAY

Along the last two-mile stretch before the Black River empties into Lake Superior, there are five waterfalls (Rainbow, Sandstone, Conglomerate, Gorge and Potawatomi), each of which has a trailhead parking area and a trail leading to the falls.

The North Country Trail runs adjacent to the river and crosses the suspension bridge near the mouth of the river. The trail goes by the eastern side of Rainbow Falls before turning east towards Porcupine Mountains State Park.

The trail to Potawatomi Falls is barrier free, providing an opportunity for people with disabilities to see the falls. Large, old growth hemlock, white pine, and other forest hardwoods add to the area's beauty. There is a suspension bridge that crosses the river and leads to the beach. There is also a trail

that leads to other side of Rainbow Falls.

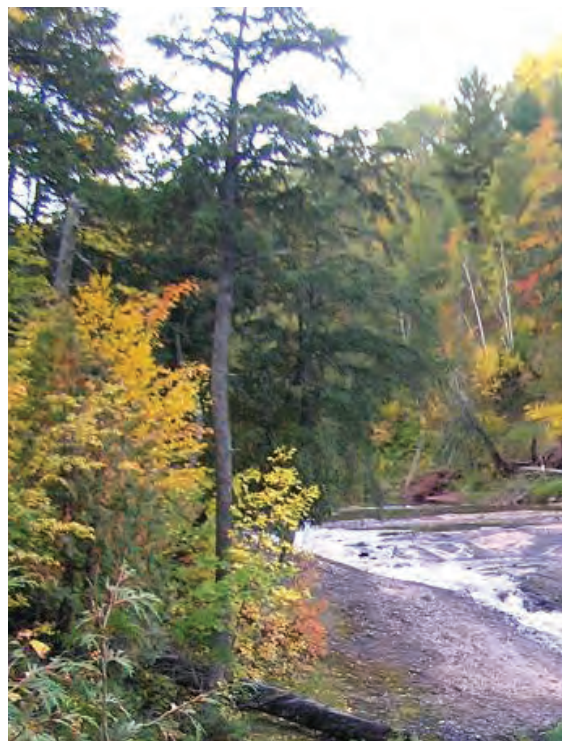
The road from Black River Harbor to Little Girls Point goes through a mature oak and maple forest that provides some outstanding color.

Little Girls Point Campground closes October 1st. While you will find the picnic area vacant, Little Girls Point is perhaps best known as having one of the best rock picking and agate hunting beaches in the Upper Peninsula.

Black River Harbor Pavilion sits within the Black Harbor Recreation Area on a bluff above Lake Superior, near Black River Harbor, which has services for day and transient boaters. Visitors enjoy boating, fishing, hiking and viewing waterfalls.



Black River Harbor Pavilion



Little Girls Point Campground





Scenic Fall Color Drive -
Black River Harbor
Scenic Byway, Michigan 513

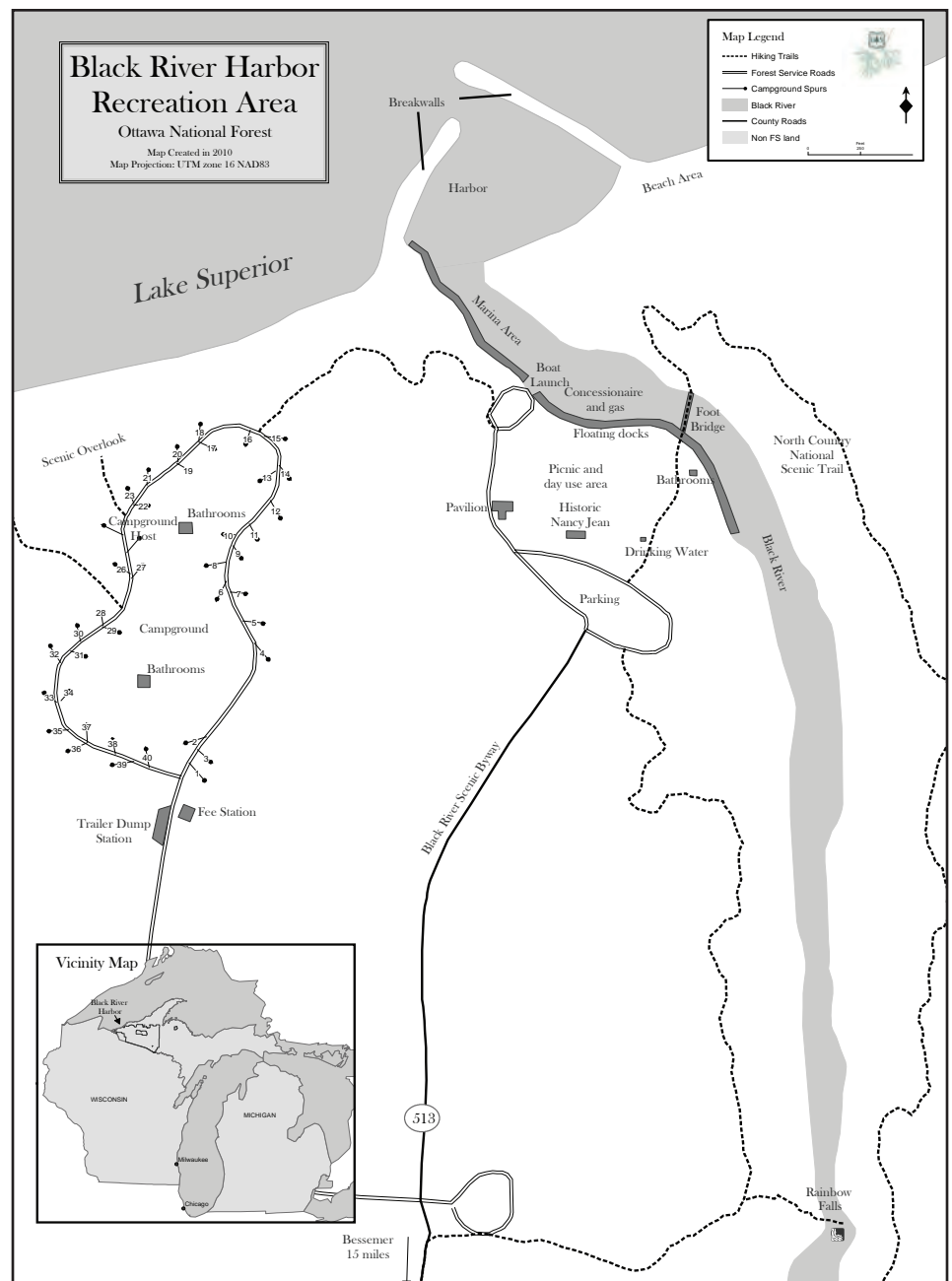


Rainbow River

NATURAL FEATURES

The recreation area is situated among hemlock and pine trees at an elevation of 840 feet. The grounds have a scenic overlook of Lake Superior's Apostle Islands. The Ottawa National Forest encompasses nearly 1 million acres on the west side of Michigan's Upper Peninsula. The forest extends from the south shore of Lake Superior to the Wisconsin border. It is distinguished by rolling hills dotted with lakes, rivers and waterfalls.

The recommendation of experienced travelers is to go directly to the harbor first to see the maps of hiking trails and waterfalls that are on the wall in the pavilion to plan your hikes and decide which falls you want to visit. ●●●●





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Dear MWA Members,

I would like to thank the members of the Michigan Waterfront Alliance Board of Directors for their dedication to the organization. They are not compensated for the hours they work or the miles they drive to attend board meetings and other related functions! They volunteer their time to compose and send quarterly newsletters, send reminders for dues, take meeting minutes, keep the books, attend congressional hearings and board meetings and serve in many other capacities. They are committed because they believe that the results are worth it to protect Michigan's inland lakes and streams. I dare say I know of very few others willing to put

MICHIGAN WATERFRONT ALLIANCE

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forth as much time, talent and treasure as the board of directors of the Michigan Waterfront Alliance.

Two of our board members who have served on the board for a long time have resigned this past summer. Bill Sharp and Tom Murphy will both be greatly missed. Their dedication to the organization has been exemplary. Both of these men have served on numerous community and lake organizations and have added great value in every capacity.

I would like to thank Senator Casperson for following up on

additional legislation concerning the funding needed to fight against invasive species. When the bill is introduced, all members and supporters who have signed up for the MWA email action alert (go to www.mwai.org) will be sent an email regarding who to contact to help get this very important legislation passed. Please sign in if you have not done so already.

Sincerely,

Bob Frye, President

Michigan Waterfront Alliance

FRIEND

Sandie Robell

PASSES AWAY



Sandie Robell - Volunteer of Michigan Lake and Stream Associations

Sandra "Sandie" Robell (Sherk); passed away July 30, 2014. Sandie was born January 29, 1933 in Grand Rapids, Michigan. She spent her childhood in Grand Haven, Michigan and graduated from Grand Haven High School in 1950. She graduated from Hillsdale College

in 1954 with a Bachelor's Degree in Elementary Education and Sociology. While attending Hillsdale College, she met her future husband, Arthur "Art" Robell 61 years ago. They married on June 23, 1956. They were happily married for 58 years.

After Art's graduation from Hillsdale, they lived for a short time in Litchfield, Michigan, where Sandie taught elementary school, then they moved to Wyandotte, Michigan and in 1960 they moved to Lincoln Park, Michigan where they raised their three sons, Richard, James and Matthew. She was blessed with 12 grandchildren. In 1992, they moved to Leroy, Michigan.

The couple loved enjoyed traveling. They took many trips out west to visit their kids. Over the years both Art and Sandie spent their time serving their favorite organizations; Michigan Lake and Stream Associations, the Michigan Riparian as well as their lake association. "Sandie enjoyed the friendliness, camaraderie and knowledge she received being part

of MLSA," Art shared. She really loved the years she spent with MLSA's annual conference as well as other parts of the organization.

What a great role model you were Sandie, for marriage, family, community and volunteerism. We thank you for your countless hours of service to MLSA.



ASK THE EXPERTS

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
Mail: The Michigan Riparian
300 N. State St., Suite A,
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Question: I serve on a lake board and have had a number of property owners who are residents of nearby states ask me if there's anything that can be done to reduce the out-of-state fishing license cost for property owners. Quite a number have chosen not to get licenses this year because of the huge price jump. Has anyone else brought up the issue? I appreciate your suggestions.

Answer: I agree with you that non-resident fishing licenses have become unreasonably expensive. Fishing is one of the most important activities that folks enjoy when they visit our state as tourists. Fishing is a critical component of the "Pure Michigan" outdoor experience, it seems to me that the Michigan Department of Natural Resources would work to do everything in their power to make fishing in Michigan accessible to everyone, and this includes establishing reasonable non-resident fishing license fees.

I would suggest writing a letter to both Governor Snyder and Michigan Department of Natural Resources Fisheries Division Chief Jim Dexter.

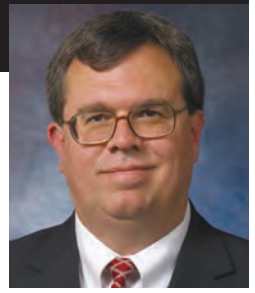
Governor Rick Snyder
PO Box 30013
Lansing, MI 48909

Department of Natural Resources
Attn: Jim Dexter, Chief
Fisheries Division
PO Box 30446
Lansing, MI 48909

Scott Brown, ML&SA Executive Director

* * * * *

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.



By: Clifford H. Bloom, Esq.
Bloom Sluggett Morgan, PC
Grand Rapids, Michigan
www.bsmlawpc.com

What is “Riparian”?

The words “riparian” and “riparianism” are used frequently, not only by this magazine, me and the courts, but also by many lay people. This month’s column is a basic primer of what the word “riparian” really means.

Technically, in Michigan, a property that touches or has frontage on a lake (whether an inland lake or one of the Great Lakes) is “littoral.” Properties touching or having frontage on a flowing body of water, such as a river, creek, or stream, are “riparian.” Nevertheless, the word “riparian” has been commonly used for many years to refer to any property fronting on or touching any body of water (whether a lake, stream, river, or creek, but not a wetland or pond), such that even the Michigan courts typically refer to all such properties as “riparian.”¹ See *Glass v Goeckel*, 473 Mich 667; 703 NW2d 58 (2005); *Thies v Howland*, 424 Mich 282; 380 NW2d 463 (1985); *Thompson v Enz*, 379 Mich 667; 154 NW2d 473 (1967). “Riparian” is sometimes also used to refer to the owner of a riparian or waterfront property.

In Michigan, property that touches or fronts on a body of water is riparian. See *Thies v Howland*, 424 Mich 282; 380 NW2d 463 (1985); *Rice v Naimish*, 8 Mich App 698; 155 NW2d 370 (1967); *Hall v Wantz*, 336 Mich 112; 57 NW2d 462 (1953); *Hess v West Bloomfield Twp*, 439 Mich 550; 486 NW2d 628 (1992). Conversely, property that does not touch or front on a body of water is usually not riparian. See *Thompson v Enz*, 379 Mich 667; 154 NW2d 473 (1967), and *Little v Kin*, 249 Mich App 502; 644 NW2d 375 (2002); *aff’d in part and reversed in part*, 468 Mich 699; 664 NW2d 749 (2003). Unfortunately, that simple concept is often misunderstood. Non-riparian properties (often referred to as off water properties or “backlots”) can have access to a body of water pursuant to a number of lake access devices such as private easements across riparian properties, road

ends, parks, outlots, walks, alleys, and community beaches. Sometimes, those lake access devices are “public” (whereby any member of the public can utilize the lake access device, not just nearby backlot property owners), while other lake access devices are “private” (limited to the use of certain or all backlot property owners). In either case, those backlots are not “riparian” simply because they have access to a nearby lake, river, or stream. Even in those cases where an easement accords a backlot express written enumerated rights almost equal to those of a riparian property owner, the backlot property owner still is not a riparian. See *Little v Kin*, 249 Mich App 502; 644 NW2d 375 (2002); *aff’d in part and reversed in part*, 468 Mich 699; 664 NW2d 749 (2003); *Dyball v Lennox*, 260 Mich App 698; 680 NW2d 522 (2004); *Thies v Howland*, 424 Mich 282; 380 NW2d 463 (1985).

For properties adjacent to the waterfront, isn’t it easy to ascertain whether or not a particular property is “riparian” simply by reviewing the legal description, the original plat (if it is a platted lot), or a survey? Unfortunately, it is not always that simple. In some cases, the property appears to be waterfront (or at least an apparently unencumbered waterfront), only to have it turn out later that there is a property “gap” between the parcel or lot involved and the water that is owned by someone else. Or, situations arise where there is a platted road, walk, park, or land strip located between the body of water and the lot or parcel involved. It is not uncommon for a person who purchased what they believed to be an unencumbered waterfront property to have a rude awakening later when a shoreline “gap” is discovered or members of the public or backlot owners in the plat involved start utilizing the shoreline of the property with the full support of Michigan law due to the presence of a previously-forgotten dedicated easement, road right-of-way, walk, park, or alley located between

the purchaser’s new lot and the water.

Such waterfront problems tend to fall into one of two categories. First, situations arise where the lot or property involved does not actually extend to the water’s edge (and, as such, is usually not riparian). There is a “land gap” between the lot and the water. If the land gap is relatively large, the nearby lot or parcel that does not touch the water is normally not riparian or waterfront. That is true regardless of whether the land gap is owned by someone else (due to a reservation in an earlier deed) or even if it is unclear who owns the land gap.

However, there is a limited exception to the rule that all riparian property must touch a body of water. In some cases where the land gap is relatively small, no other party has claimed the property comprising the land gap for many years, and the first tier lot or parcel owners have treated the land gap as their own, the Michigan appellate courts have indicated that they will disregard an insignificant land strip and will treat the first tier lots or parcels as being riparian. See *Sands v Gambs*, 106 Mich 62 (1895) and *Kranz v Terrill* (unpublished decision by the Michigan Court of Appeals dated September 20, 2012; Case No. 305198).

The second situation involves the above-mentioned so-called “parallel” easements or lake access devices benefitting the public or other lot owners within the plat such as an easement, road right-of-way, park, walkway, or alley. These items often run along the waterfront. The parcel or lot may still be riparian or waterfront, but subject to the usage rights of others.

In Michigan, legal descriptions for waterfront properties almost never expressly extend beyond the water’s edge or shoreline and rarely describe the bottomlands of a body of water.² In fact, legal descriptions for waterfront property

(Continued on page 12)

What is "Riparian"?

(Continued from page 11)

in Michigan almost never expressly state that the property involved is riparian. In almost all cases, however, where a *bona fide* legal description in the chain of title for a particular property describes the property as "extending to the water's edge," "ending at the water's edge," "going to the water's edge," "extending along the water's edge," "running along the shore," "going to the lake (or river)," or similar language, it means that the property is riparian. Furthermore, Michigan courts generally interpret that language on inland lakes as meaning that the bottomlands adjacent to that property are also included within the legal description, even though the legal description indicates or implies that the property "ends" at the water's edge. See *Hilt v Weber*, 252 Mich 198; 233 NW 159 (1930); *Mumaugh v McCarley*, 219 Mich App 641; 558 NW2d 433 (1996); *Bauman v Barendregt*, 251 Mich 67; 231 NW 70 (1930). Of course, such language does not rule out the presence of an easement, road

right-of-way, etc., along the waterfront that must be ferreted out by the due diligence of a prospective purchaser.

What is a "meander line"? Despite popular misconceptions, it is generally not a boundary line or an indication of specifically where a lakefront lot ends or the water was located when the lot or parcel was created. A meander line is often defined as a traverse of the margin of a permanent natural body of water. The original government surveys for properties in Michigan (from 150 years ago or even earlier) often used meander lines to ascertain the amount of dry land remaining after separating out the water area. Normally, the lake, river, or stream itself determines boundary lines, not meander lines.

What is a "traverse line"? A traverse line is a technique used by surveyors to describe an area along a lake or shoreline, without having to actually survey every nook

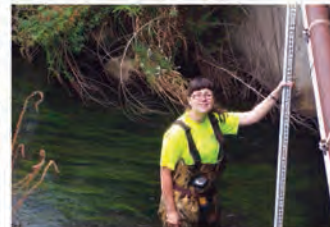
and cranny along an irregular shoreline. Typically, a surveyor will legally describe a traverse line that is slightly landward of the body of water, and then indicate that the legal description for the lot or parcel also includes all property located between the traverse line and the body of water.

These are some of the basics of riparianism.

¹ Ponds and some artificial lakes may not have riparian rights. See *Holton v Ward*, 303 Mich App 718 (2014), *Persell v Wertz*, 287 Mich App 576 (2010); In *Re Martiny Lakes Project*, 381 Mich 180; 160 NW2d 909 (1968); *Thompson v Enz*, 379 Mich 667; 154 NW2d 473 (1967).

² And, in fact, this can create a real problem regarding the apportionment of bottomlands — that is, which waterfront property owner owns which bottomlands. ●●●

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Those Darn Lake Weeds – What Good Are They?

By Scott Brown
ML&SA Executive Director

One of the most frequently asked questions we receive from lakefront property owners is “how to get rid of those pesky native lake weeds”? The fact is “those weeds” are native aquatic plants that play an extremely important role in keeping your lake healthy and in ecological balance. They should be removed only after consulting a lake professional or aquatic biologist and after gaining approval from the Michigan Department of Environmental Quality.

Inland lakes exist in one of two distinct stable states: Either green algae dominated with poor water transparency or aquatic plant dominated with good water transparency. Which type of lake would you prefer to live on? Would you care to guess which type of lake hosts lakefront homes with the greatest property values? How about good fishing? Which type of lake supports the best opportunity to catch a trophy largemouth bass or northern pike? If you guessed the aquatic plant dominated lake, than you are absolutely correct!

Native aquatic plants serve as effective integrators of ecological conditions within your lake and react slowly and progressively to changes in nutrient levels and are recognized as valuable long-term indicators of overall water quality. Aquatic plants are reinforced by and exert influence on many important aspects of your lake's ecology including sediment stability, water transparency, the establishment and maintenance of moderate biological productivity levels and the promotion and sustainability of plant and animal life. Aquatic plant communities also provide critical nesting areas and organic building materials as well as food for an abundance of inland lake fish, amphibians, reptiles, and birds. In addition, aquatic plant-borne micro-organisms living on plant material form an important food base for macro-invertebrates that, in turn, directly support other lake-dwelling species through a diverse and complex food web. Moreover,

emergent and floating aquatic plants serve to protect inland lake shoreline habitat from the erosive affects of wave action. Submerged aquatic plants play a particularly important role in aquatic ecosystems due to their numerous critical functions associated with nutrient and organic matter turnover, the provision of shallow water complexity and variability, shelter from predation, food, and fish spawning areas. Submerged aquatic plants also provide numerous mechanisms that foster and sustain high quality, clear water conditions by significantly reducing turbidity, increasing sedimentation rates, suppressing fine and coarse organic particulate re-suspension, uptake of vital limiting nutrients, and the provision of complex shelter for phytoplankton grazers.

Due to their vital importance in supporting and sustaining healthy freshwater fish communities, overall aquatic ecosystem biodiversity and in contributing to the stability of high quality, moderately productive inland lakes, ecologists from Michigan Department of Natural Resources have strongly recommended that native aquatic plants not be removed or reduced under any circumstances. So, please, be a good lake steward and consult a lake manager or aquatic biologist before removing native aquatic plants from around your dock or from your lakefront shoreline - the health of your lake and the value of your lakefront property depends on it!



White Water Lily

A TRIBUTE TO

Sondra “Sue” Vomish

SERVED AS ML&SA PRESIDENT FROM SEPTEMBER 2008 TO JUNE 2014

JULY 19TH, 1937 - JUNE 29TH, 2014

by Scott Brown
ML&SA Executive Director



For Sondra “Sue” Vomish, there was never any question—the path to a meaningful life was found through faith and by dedicating herself to the people and causes she loved. A lifelong volunteer beginning as a Girl Scout leader in her home town of Calumet, Illinois, Sue brought meaning and purpose into each phase of her life by devoting considerable time and energy to her family and by serving her community. Even in the decades preceding her retirement, volunteering had become a significant part of who she was as a person. Sue Vomish was inspired by the notion that as individuals, we all possess the power to make a real difference in the lives of family and friends as well as within the community. Whether serving the Parent-Teacher Association, the Girl Scouts or her church, Sue dedicated much of her life to serving others. Sue’s retirement and the subsequent family move to Twin Lake (Dowagiac, Cass County) provided her with an even greater opportunity to contribute to her community as a pro-active member of the Board of Directors of two regional power cooperatives

as well as to her church, the Federated Covenant Church, in Dowagiac. It was also in these years that Sue discovered her love for Michigan’s inland lakes ~ a passion that soon evolved into yet another highly successful volunteer career with Michigan Lake and Stream Associations.

Sue’s hard work and steadfast commitment to working with lake associations and stakeholders in the region allowed her to build one of the most successful regions within the organization. “A more dedicated person would be hard to find”, explained Dick Morey, ML&SA Vice-President, “Sue was very passionate about serving the lake associations in southwest Michigan and throughout Michigan as President of Michigan Lake and Stream Associations. She took care of her lakes like they were family.” Sondra “Sue” Vomish lived an extraordinary life blessed with uncommon generosity, love and passion for people and nature—we should all be so lucky. Thank you for everything Sue, your life has provided a wonderful example for us all, rest in peace....

*“Those who can, do.
Those who can do more, volunteer.”
– Author Unknown*

Tribute to Sue Vomish

Jennifer L. Jermalowicz-Jones, PhD Candidate
Water Resources Director
Restorative Lake Sciences

Sue was an excellent leader for MLSA and had a wonderful sense of humor. She would comfort anyone in need and offered sound advice for dealing with controversial issues. I was impressed by how well she could lead a meeting and have an open mind with even the most difficult issues. Each fall she held a regional MLSA education seminar that was always well-attended, and the riparians adored and respected her. She will be missed so much.



Long-Time Friend

My husband and I first met Sondra "Sue" Vomish and her husband Jerry, 23 years ago at a Michigan Lake and Stream Conference (ML&SA). Sue was a people person; she had a way of making you feel like a long-time friend, even though you just met. Sue and Jerry were always together, and her family was the source of their greatest pride. Sue remained at her current position even after the passing of her beloved husband.

The many lake association organizations in her region were a great source of pride for Sue. Any project or enterprise Sue undertook was managed with passion and vigor. It was with this mindset that she encouraged new membership while working tirelessly to retain existing members within those organizations, as she did with her other projects like the church, co-op, etc.

Three years after meeting Sue, we became members of the Board of Directors for ML&SA. Being a board member, I was asked to assume the responsibility of registering participants at the annual conference. I knew I could count on Sue for any assistance to get me through this challenging period. After a few years of registration duties, Sue took on the additional responsibilities of decorating the conference room with her special touch. Sue was always available to lend a hand in any respect and did so with her usual flair.

I know her lake association family will miss her; however, their foundation is much stronger due to Sue's influence. I have lost a valued friend and coworker, and she will be sorely missed.

Cecile Kortier
Regional Representative
Regions 10 & 11

Remembering Sue

The Michigan State University Extension water team members express heartfelt sympathies to the Vomish family for the loss of their loved one, Sue. We are also saddened for the loss to the Michigan Lake and Stream Associations of a valued leader and tireless protector of Michigan's inland lakes. We have had the privilege of partnering with Sue on various educational projects and programs for many years. Sue was a knowledgeable resource and great supporter of our work. She was always an energetic, cheerful and kind hostess to MSU Extension.

We recall one time in particular in 2009; Jane Herbert was scheduled to speak at Region 3's fall meeting but had recently suffered a broken leg. Sue took the extra step to care for the speaker's needs - making sure a tall stool was placed at the front of the meeting room allowing Jane to sit down during her presentation but still interact with attendees. It's many times that the little things that count. We will miss her and remember her for those many little things.

By Jane Herbert
Senior Extension Educator, Water Resources
Michigan State University Extension

Driving Miss Daisy

When I retired and moved to Magician Lake, I got involved in our lake issues and lake board. Next, Sue got me involved in MLSA, helping her in Region 3 and serving on the MLSA Board with her. A more dedicated person would be hard to find-very passionate in serving the lakes in Southwest Michigan. She took care of her lakes like they were family.

Speaking of family, Sue loved her kids and especially her grandkids. They were always going places, cooking, and working on projects together.

As we attended MLSA Board Meetings together, I would always drive. I would kid her that it was like "Driving Miss Daisy." We had a lot of great discussions about MLSA and our families. Many, many great memories. Sue will be missed by anyone who knew her.

Dick Morey, Vice President
Michigan Lake & Stream Associations

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POROUS PAVEMENT:

A not-so-new low-impact design technique

Posted on
November 17, 2013
by Terry Gibb,
Michigan State University
Extension Website

That childhood saying “when it rains, it pours” may be getting an update to “when it rains, it’s porous.” Using low-impact design techniques can reduce stormwater runoff and protect local water resources.

In many urban and suburban communities, buildings, roads and sidewalks are replacing open land where storm water used to soak into the ground. To replace this natural infiltration, communities have built storm sewers. The sewers collect the runoff; channel it into underground pipes where it gathers speed as it moves to the local stream, river or lake. This fast-moving water empties out of the pipe eroding stream banks and damaging aquatic habitat. In addition, this storm water may carry sediment, chemical pollutants and higher water temperatures.

Many communities are looking at porous pavement as a compromise between nature and development. Porous pavement is a special type of pavement that allows rain and snowmelt to pass through it, thereby reducing the runoff from a site into surrounding areas. In addition, well-maintained porous pavement filters pollutants as it soaks in.

This technique has been around since the mid-1970s, but it is now being looked at as a way to assist with new storm water regulations. The porous pavement provides a place for the storm water to go rather than allowing it to run off. Porous pavement is made up of two layers. The surface layer looks like traditional asphalt but actually is made without the “fine” materials that close all the pores in the asphalt. This change provides pore space in the pavement which allows water infiltration. Below the pavement, there is a stone bed layer. This layer is typically 18 to 36 inches deep depending on the use for the pavement. The stone bed layer must be deep enough to ensure that the water level never rises up back into the asphalt. As the water drains through the pores in the pavement, it soaks through the stone

layer into the soil beneath cleaning it. This infiltration recharges local groundwater resources.

According to Michigan State University Extension, some benefits of using porous pavement in developed areas are reduced runoff into local waterways, increased base flows of waterways, less pollution of local water resources, increased groundwater recharge, reduced flooding and less land needed for detention ponds.

The main challenge in using porous pavement is location. This pavement is best-suited to low traffic areas. However, many areas have used this pavement successfully, including at the Ford Rouge Plant in Dearborn, Michigan. Porous pavement should not be used in areas that may generate contaminated runoff, nor should it be used near drinking water well

supply areas. Finally, road salt and sand should not be used on these surfaces. The salt will soak into the soil below and the sand will clog the pore space, reducing the porosity.

The initial cost of porous pavement is usually higher than traditional asphalt; but when the cost of land for detention ponds needed in traditional pavement is factored in, porous pavement can be significantly less. Longevity of porous pavement when properly constructed and maintained can be twenty years or more.

This article was published by Michigan State University Extension. For more information, visit <http://www.msue.msu.edu>. To contact an expert in your area, visit <http://expert.msue.msu.edu>, or call 888-MSUE4MI (888-678-3464). ●●●





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The Alcona Fall Color Tour is About More Than Fall Colors

Outside of the spectacular color landscape and beautiful autumn weather, bus tour participants were offered an inside view of their community from a unique perspective – their finite water system.

Posted on October 13, 2013

by Yvonne (Bonnie) Wichtner-Zoia,
Michigan State University Extension Website

The Alcona Fall Color Tour occurs once a year in October with two identical back-to-back eight-hour trips. Each year the tour theme remains a secret within the planning committee until the participants board the school bus to parts unknown. Tickets are sold the day after Labor Day, when a line forms outside of the local Michigan State University Extension office up to three hours before the doors open.

Brainstorming a theme is the first order of business when the tour planners begin meeting in February. The 2014 theme was "A Drop of Water." On October 3 & 4, 2013, ticketholders had the opportunity to learn about the importance of water in our world, its uses and the necessity for a wide array of water systems. Local educators, representing a variety of organizations, provided research-based knowledge and led hands-on visits to municipal and industrial water systems and public water usage facilities. They even learned how important water is to the efficiency and overall survival of the human body. Additional stops included a closer look at the area aquifers, artesian wells and watersheds, as well as private and public lakes and streams. The history of the region was included when speakers shared the effect of early lumbering on many of the local lakes, filling them with sawdust. Current conservation efforts were also described. Lunch included fresh Lake Huron whitefish filets, harvested by the Legends of the Lake cooperative, which 'processes some of the finest fish in Michigan'.

There really is power in looking at your community in a new way. Planners left the participants with one final thought:



Photo: Louis Campbell, Harrisville City worker explains how the water pumping station works.

all the water we have now is all the water we will ever have.

At the end of the day, as passengers disembarked, their comments indicated how much they had learned about the importance of water in their lives and their communities!

To learn more about the annual Alcona County bus tour, contact the Alcona Michigan State University Extension office. Furthermore, a quick internet search will provide additional information about how other communities across the state, as well as internationally, have used a similar concept to help people become tourists in their own communities.

This article was published by Michigan State University Extension. For more information, visit <http://www.msue.msu.edu>. To contact an expert in your area, visit <http://expert.msue.msu.edu>, or call 888-MSUE4MI (888-678-3464).

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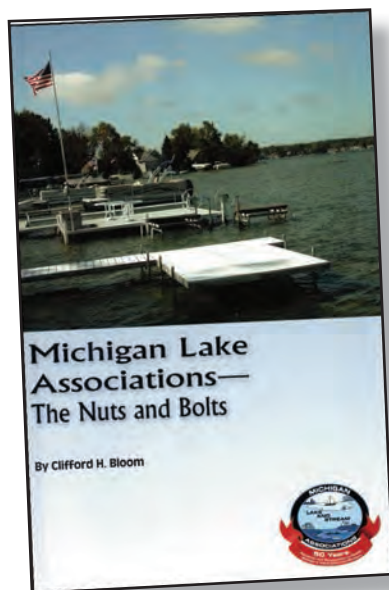
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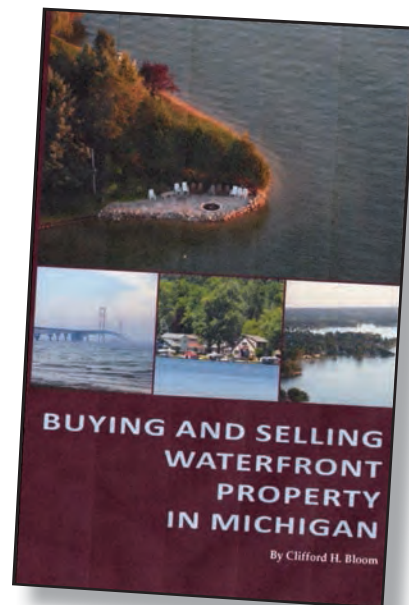
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SUMMER FUN on BYRAM LAKE

Editor's note: This article is printed with permission from the Byram Lake Association April 2013 newsletter.

Jax McDonald and Ethan Hutchings pose with an extreme catch!! This turtle's shell measured more than 20". They released the turtle, so be on the lookout.



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Lake Management or Lake Restoration

Which Approach is Best for Your Lake?

By: Jennifer L. Jermalowicz-Jones, PhD Candidate
Water Resources Director, Restorative Lake Sciences



Introduction

Our inland lakes are under a great deal of stressors in modern times due to the development of land surrounding them, the introduction of invasive species which threaten the native biodiversity, and overuse by a growing population, among other factors. The EPA Office of Water conducted a National Lakes Assessment in 2007 of over 1,028 inland lakes in the United States to determine the overall condition of them as a whole. Some of their key findings show that 30% of the studied lakes possess poor shoreline habitat and 20% had elevated nutrient (primarily nitrogen and phosphorus) levels that were associated with negative biological impacts. These percentages would likely be significantly higher if the same sample size of lakes was studied in Michigan or other states with a heavy agriculture and urbanization presence. Carpenter and Lathrop (1999) emphasize the critical need for a balance between lake use and conservation measures to ensure that lakes remain sustainable over time.

There are two dominant paradigms that exist to counter the negative impacts of

these stressors—lake management and lake restoration. The purpose of this article is to discuss the key differences between the two areas of practice and to offer some practical insight to guide riparians toward a decision that is most beneficial for their unique lake ecosystem. Useful definitions for both lake management and restoration are as follows: lake management pertains to a “reactive” approach that aims to either prevent the lake from further ecological damage or to sustain the lake in its current state. Improvements here are limited to more prescriptive methods that have a goal of maintenance. Examples of lake management methods include the application of aquatic herbicides for nuisance aquatic plant control, the application of biological control vectors to organically control another nuisance species, mechanical harvesting of nuisance aquatic vegetation, utilization of benthic barriers or benthic mechanical devices for weed growth suppression, and lake drawdown.

Alternatively, lake restoration may be referred to as a “pro-active” approach that aims to bring the lake back to its original state or prevent it from entering another

There are two dominant paradigms that exist to counter the negative impacts of these stressors—lake management and lake restoration.

less desirable trophic state. Or, alternatively stated, to prevent a mesotrophic (moderate in nutrients) lake from becoming eutrophic (high in nutrients) or to transition a lake from the eutrophic state to a mesotrophic one, a pro-active approach is logical. With this approach, the implemented strategy is often long-term and may lead to a change in trophic (classification) status back to a desired state. Examples of lake restoration include planting beneficial native aquatic plants to increase biodiversity within the littoral (shallow) zone, food web manipulation, and laminar flow aeration with bioaugmentation to biodegrade organic muck on lake bottoms, among other methods. The restorative approach aims toward sustainability so that the lake ecosystem can eventually remain at an improved state with less maintenance.

How to Decide if Management is Enough or if Restoration is Needed

Some lakes experience infestations of invasive, exotic aquatic plants such as Eurasian or hybridized Watermilfoil which can cause substantial impairments with navigation, recreation, and also decrease waterfront property values. If the lake in question contains at least moderately clear water, is moderate in nutrients, has a robust fishery, and does not experience nuisance algal blooms which create scums on the surface and emit strong odors, then the best and most cost-effective approach may be to

control or manage the invasive milfoil with the use of aquatic herbicides, biological control, or spot-removal with suction harvesting.

The decision of what management method to use is just as philosophical as it is economical or biological. Some lake communities refuse to use aquatic herbicides and there are other approaches that have been successfully used on these lakes to manage invasive aquatic vegetation both short and long term. Figure 1 shows a northern Michigan lake that once contained nearly 300 acres of invasive milfoil but is now inventoried multiple times per season and any new growth is treated upon discovery. To date, the lake remains milfoil-free and has otherwise healthy water quality and a thriving lake fishery.

Lakes that are high in nutrients, low in water clarity, low in dissolved oxygen, and contain an impaired fishery due to these factors along with nuisance algal blooms are ideal candidates for lake restoration methods. Figure 2 shows a lake in west Michigan that experiences dissolved oxygen depletion and consequential phosphorus release, loading of nutrients from tributaries, ample runoff of pollutants and nutrients from the land during heavy rains, fish kills, toxic blue-green algal blooms, and invasive aquatic vegetation overgrowth. If the dissolved oxygen depletion is not addressed, then the phosphorus will continue to be released into the water column and lead to continued algal blooms which will continue to decrease dissolved oxygen in the upper

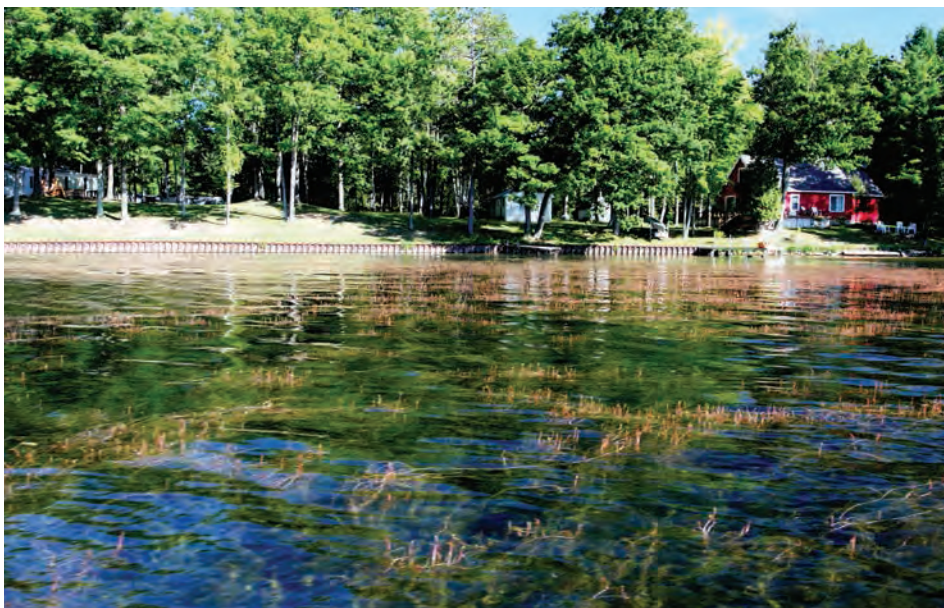


Figure 1: A thick canopy of Eurasian Watermilfoil in an inland Michigan lake (RLS, 2010).



Figure 2. An inland lake in west Michigan that experiences heavy toxic blue-green algae blooms (RLS, 2010).

water column upon decay. Alternatively stated, if the “root of the problems” is not addressed, then the lake will continue in what is referred to as an “alternate state” that is not necessarily favorable. When these sets of characteristics are observed on an inland lake, it is time to consider restoration over ordinary management. Another good example can be seen in Figure 3 which shows a shallow, hyper-eutrophic inland lake that requires continuous aquatic vegetation treatments but could also benefit from sediment removal, constructed wetlands to reduce incoming nutrient loads, among other methods. The management of the lake aquatic vegetation with herbicides and mechanical removal will allow for navigation within the lake; however, if long-term use of the lake is desired, more substantial restoration efforts will be necessary.

Restorative Methods: Food Web Manipulation

Vadeboncoeur et al., (2002) emphasize the importance of the benthic (bottom) portion of a lake since it interacts with the

(Continued on page 24)

Lake Management or Lake Restoration

(Continued from page 23)



Figure 3. A shallow, hyper-eutrophic inland Michigan lake that requires annual management but would benefit from restorative efforts (RLS, 2007).

water column (pelagic zones) for food web dynamics. Thus if food web manipulation is used to restore a lake fishery, detailed studies of both the sediment and lake water components (living and non-living) are essential. In fact, Wetzel (1990) noted that the majority of inland lakes contain a substantially larger littoral (shallow) zone with large benthic cover than pelagic area. Despite the differences in the relative size of these zones, a thorough understanding of the living and non-living components within them is critical for making functional restorative changes to the lake ecosystem. In the water column for example, the daily migration of zooplankton throughout the water column and co-existence of

phytoplankton (algae) there are pivotal for the survival of the fish communities. Mills and Schiavone (1982) found that there is a strong correlation between the size of zooplankton and the growth and size structure of fish communities in many inland lakes dominated by warm-water fish species. Furthermore, the existence of both the zooplankton and phytoplankton are critical for feeding the benthic macroinvertebrates which are also consumed by bottom-dwelling fish and other higher organisms.

There is strong evidence that the diversity of submersed aquatic plants can greatly influence the diversity of macroinvertebrates

associated with aquatic plants of different structural shapes (Parsons and Matthews, 1995). Therefore, it is possible that declines in the biodiversity and abundance of submersed aquatic plant species and associated macroinvertebrates, could negatively impact the fisheries of inland lakes. Cautious food web manipulation will not only consider the food reserves in the water column and sediment but also those attached to other life such as submersed or floating-leaved aquatic vegetation. Thus, the coupling of both habitats must be considered when conducting food web manipulations (changes) in a lake ecosystem that is being restored. This area of study is far from being an exact science and requires frequent trials to acquire the proper sustainable balance for the lake.

Nutrient Shifts and Reduction

The control of nutrients from a surrounding watershed or catchment to any lake is a proven necessity for long-term nutrient reduction. Although nutrients are a necessity for the primary production of algae and aquatic plants in a lake ecosystem, an overabundance of nutrients causes substantial problems as noted above. Lakes that lie within an agricultural watershed may experience acute and chronic influx of sediments, nutrients, and bacteria, among other pollutants. Those within urbanized watersheds face other stressors that include nutrient pollution but also influx of metals, dissolved solids, among other pollutants. In many areas, however, the watershed reduction approach is limited and restorative measures must begin within the lake basin. Annadotter et al., (1999) noted that even years after a sewage treatment plant was built along the shores of Lake Finjasjön (Sweden), the lake trophic status continued to decline. This was due to the existence of sediments that continuously leaked phosphorus into the overlying waters. A combination of intensive lake restoration methods was needed to significantly improve the water quality and consisted of sediment removal, constructed wetlands for watershed nutrient removal, and food web manipulation to improve the fishery. Their study proved that in cases of extreme water quality degradation, multiple techniques are often needed to bring a marked balance back to the lake ecosystem. In other words, one solution may not be enough to accomplish restoration.

Aeration and Bioaugmentation

The use of aeration to increase dissolved oxygen throughout a water column and reduce phosphorus release from sediments has been used for decades. This technology has also been used to decompose organic matter on the lake bottom which is a large fraction of “muck” in many lakes. In general, higher percentages of organic matter in lake sediments are associated with more effective removal by aeration systems. If the lake sediments contain an adequate population of sediment aerobic bacteria, then supplementation with additional microbes may not be necessary. The aerobic bacteria are the primary consumers of sediment organic matter but require adequate oxygen to increase their population size. Recently, the use of this technology using a custom design for the lake basin and supplemental microbes (bioaugmentation) has proven effective on inland lakes with the reduction of nuisance blue-green algal blooms (Jermalowicz-Jones et al., 2010), reduction of water column nutrients, and denitrification of lake sediments (Jermalowicz-Jones, 2014), among other measured benefits. Aeration is being widely used across the globe to accomplish lake restoration objectives. Birch and McCaskie (1999) noted that aerators placed throughout the bottom of Batterson Park Lake (London) halted further fish kills and reduced anoxic muds at the lake bottom which contributed phosphorus to the lake water. Although this area of research is not new, the understanding of functional mechanisms is not clearly understood and is a topic of intense study among lake scholars.

Conclusions:

Carpenter and Lathrop (1999) emphasize the critical need for the collaboration among project scientists and partners so that common objectives are co-created and the scope of the project is universally accepted. Furthermore, they state that determination of the efficacy of a restoration regime can only be attained if pre and post restoration parameters are studied for a significant length of time. It is also important to consider that any ecological restoration effort should mimic the natural system as much as possible to increase the probability of long-term success (Dobson et al., 1997). If watershed inputs are considered for the reduction of nutrients to a lake, then it is also critical to know how that specific watershed functions to prescribe appropriate successful reduction strategies (Johnes, 1999). One final note is that both political and economic forces often determine the fate of both lake restoration and lake management programs. It is often not practical to pursue restoration efforts that depend upon single granting opportunities or that are not compatible with the economic status of the local community. This is why so many lake projects today are involved with lake management and not restoration. Additionally, it is critical for influential policy makers to understand both the needs of the lake ecosystem and those of the riparian communities. These two factions are not mutually exclusive if lake ecosystem sustainability is desired. ●●●



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