

MAY 2002

Volume 37 No. 2

THE MICHIGAN
RIPARIAN



www.mi-riparian.org

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

Published Quarterly – February, May, August and November



Early Spring Trout Fishing On the Sturgeon River Near Wolverine, Cheboygan County

In this Issue:

Michigan Boat Registrations Top 1 Million
Our Attorney Writes on the Pine Lake Case
Zebra Mussels Spread to 166 Inland Lakes
Researchers Test Herbicides to Control Milfoil

"THE MICHIGAN RIPARIAN (ISSN 0279-2524) is published quarterly for \$2.00 per issue by the Michigan Riparian Inc., P.O. Box 249, Three Rivers, Michigan 49093. Periodicals postage paid at Three Rivers, Michigan and additional mailing offices."

POSTMASTER:

Send address changes to:
The Michigan Riparian
P.O. Box 249
Three Rivers, MI 49093

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

The Michigan RIPARIAN is published quarterly and is mailed to subscribers during February, May, August and November.

THE MICHIGAN RIPARIAN magazine is owned and published by the Michigan Riparian Inc., a Michigan non-profit corporation.

EDITORIAL and BUSINESS OFFICE: 124½ N. Main Street, P.O. Box 249, Three Rivers, MI 49093.

TELEPHONE: 616-273-8200

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ADVERTISING DEADLINE: No later than 10th of the month preceding month of publication.

ADVERTISING RATES: Sent upon request.

SUBSCRIPTION RATES:

Individual Subscription \$8.00
Group Rates: 10 to 49 Subscriptions \$7.00
50 or more, or all members of a Lake Association \$6.00

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An Editorial

It's Time to Protect Our Interests By Joining and Supporting the Michigan Waterfront Alliance

By William Hokanson

Recognizing the need for riparian owners to protect their interests, particularly in regard to proposed legislation and regulatory changes, the Michigan Lake and Stream Associations in 1997 created an allied organization called the Michigan Waterfront Alliance. (A separate organization was needed because ML&SA did not want to give up its non-profit status which precludes lobbying.)

Lobbying is sometimes derided as selfish or corrupt, but it serves a useful and valuable function. Legislators, even at the state level, do not have time to study and understand all the legislation that is proposed. Legislators often rely on the recommendations of others whose knowledge and opinions they trust.

In Michigan, the realtors, home builders, boat industry, farmers, agri-business, and conservation (hunting and fishing) clubs maintain particularly strong and well-financed lobbying efforts. The interests of these groups are sometimes in conflict with those of riparian property owners. To protect our interests we need to support the Michigan Waterfront Alliance. *The Riparian* has 10,000 subscribers and at least 20,000 readers. ML&SA member lake associations have 120,000 members. But fewer than a thousand have joined MWA.

If you are not a member of MWA, it's time to do your part now by sending in your name and check with the application form below. MWA needs and deserves our support.

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Minimum Annual Dues \$25.00 per Individual
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Please Affix Label or Print:

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**Top Ten States
In Boat Registrations
Year 2000**

1 Michigan	1,000,049
2 California	904,863
3 Florida	840,684
4 Minnesota	812,247
5 Texas	626,761
6 Wisconsin	573,920
7 New York	525,436
8 Ohio	416,798
9 South Carolina	383,734
10 Illinois	372,162

BOATING DEATHS- 2000
(includes drownings)

1. Texas	55
2. California	49
3. Florida	46
4. Louisiana	46
5. Michigan	32

Figure 1. Source: US Coast Guard via Boat/ US magazine

**Michigan: Land of 11,000 Lakes
and 1 Million Registered Boats!**

2001 Boat Accidents Up 50% over 2000,
But Fatalities Decline

Michigan, unlike another state beginning with M, does not boast about its 11,000 lakes, but with so many bodies of water, not to mention the longest shoreline of all states except Alaska, it continues to have more boats registered than any other state. (See Figure 1.) It passed the million mark in 2000, and the statistics for 2001 indicate the total is 1,003,947. About 10% of these are estimated to be Personal Water Craft. (The state now knows how many new boats registered are PWC's, but it doesn't know how many older registrations being renewed are PWCs). And Michigan excludes non-motorized craft under 16 ft, as well as non-motorized canoes and kayaks.

Boating accidents in 2001 were up 50% over 2000, which happened to be an abnormally safe year, but the total of 346 was well below those of the last three years of the 1990's. (See Figure 2). Accidents involving Personal Watercraft (122) were also the second lowest in the past five years. In the past three years, PWC accidents have been roughly a third of all boating accidents, although PWCs are only about 10% of all boats registered. Statistically, this means that PWCs are about three times more likely to be involved in accidents than all boats. Deaths due to boating accidents totalled 28 in 2001, four fewer than in 2000, but the same as in 1999. There were only two PWC deaths last year.

Five-Year Trend In Michigan Boat Registrations, Accidents, and Fatalities

Year	1997	1998	1999	2000	2001
Boat Registrations	960,822	980,341	989,706	1,000,049	1,003,947
Total Reported Accidents	402	514	430	231	348
PWC Accidents(% of total)	173(43%)	214(42%)	137(32%)	82(35%)	122(35%)
Accidents with Fatalities	22	21	27	27	23
Total Persons Killed	22	25	28	32	28
PWC Fatalities	1	4	3	4	2

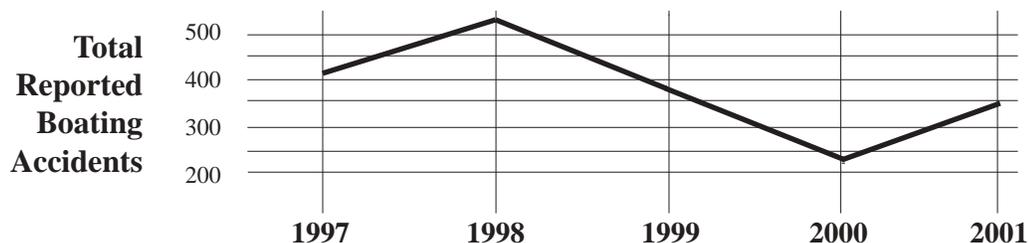


Figure 2. Data Source: Lt Lyle Belknap, Michigan DNR Law Enforcement Division

Michigan Waterfront Alliance Legislative Update

By Christian Kindsvatter, MWA Lobbyist

Proposed Rules on Lake and Shoreline Dockage and Usage

The stakeholders group of the Department of Environmental Quality (DEQ) marina rules ad hoc committee reviewed another draft of the proposed lake rules at a meeting March 28. This committee has been meeting for the past year to revise rules relating to lake and shoreline dockage and usage. As of the March 28 meeting, the committee had finished all the proposed rules but needs to meet one more time to review another final draft. The proposed rules, which affect nearly every riparian property owner in the state, have changed dramatically since the first meeting last summer when the stakeholders group was formed. MWA's position to counteract the Higgins Lake Shadyview marina problem still remains "on the front burner." MWA representatives on the stakeholders group are Ken Dennings, Ed Trautz, Dennis Zimmerman, and Chris Kindsvatter. The meetings have been encouraging to MWA, since they provide opportunities to provide input addressing many issues that have been of concern to MWA and Michigan Lake and Stream Associations on lake accessing.

Statute Proposed for Road End Access Case Law

MWA Lobbyist has secured Rep. Mike Kowall (R-Dist 44, White Lake) to sponsor legislation to put in to statute existing case law on road-end access definitions and controls. The Department of Environmental Quality and MWA have been working together with other affected groups to resolve road end problems in statute form.

Boat Noise Enforcement

MWA has been working with Representatives Andrew Richner (R, Dist 1, Grosse Pointe Park) and Paul DeWeese (R-Dist 67 Williamston) to introduce legislation (HB5579) to provide state funding, with matching dollars for research at MSU, for a reliable device to measure boat noises from a stationary position on the water. Sheriffs indicate present measuring devices do not make it possible to enforce the 90 decibel limit imposed in 1996 by PA 274.

Raft Identification

House Bill 4145 introduced by Rep. Gary Newell (R-Dist 87, Saranac) concerning the marking of rafts anchored in state waters has passed the house and is in Senate committee. MWA lobbyist was active in modifying language so that it requires name and address of owner be permanently affixed to rafts on two sides, and a reflector be affixed to all four sides of the raft. Noncompliance is a misdemeanor with fines set from \$100 to \$500.

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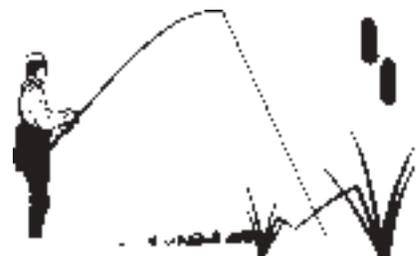
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OUR 25th YEAR

Our Attorney Writes On Riparian Rights and other legal matters of concern

By
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Were Our Fears of a Big Legal Impact from the Little Case at Pine Lake Exaggerated?

What Hath the Michigan Court of Appeals Wrought?

On February 1, 2002, one panel of the Michigan Court of Appeals decided a lake access easement case entitled *Little v Kin*, _____ Mich App _____ (2002) (hereinafter, the *Little Case*).

Many news outlets throughout the state rushed to report on this case, implying that it was either a dramatic departure from existing Michigan water law or at least it created law in an area where none had existed before. It appears that many members of the media may have rushed to judgment and have not thoroughly or properly analyzed the *Little Case*. I believe that a careful reading and close analysis of the *Little Case* will show that it is generally consistent with long-established case law in the area, although some legal experts will undoubtedly argue that it presents a slightly different view or puts a slightly different “spin” on past conventional legal analyses involving lake access easement cases.

In *Little*, a 66-foot-wide easement (i.e., the easement has 66 feet of frontage on the lake) existed across a riparian lot on Pine Lake in Oakland County. The easement benefited two nonriparian lots/backlots. The document which created the easement stated—“For access to and use of the riparian rights to Pine Lake.”

The owners of the riparian lot initiated litigation in the Oakland County Circuit Court in an attempt to define the scope of usage rights for the easement. While the riparian property owners acknowledged the existence of the easement and the right of the backlot owners to use the easement to access the lake, they asserted that the backlot owners had no right to install docks or engage in permanent boat mooring. The trial court judge agreed with the riparian property owners and summarily held that the easement involved was an access easement only—that is, it could be used for travel to and from the lake, but could not be used for dockage, permanent boat mooring, sunbathing, etc. The backlot owners appealed to the Michigan Court of Appeals.

The Michigan Court of Appeals reversed the decision of the trial court. It is important to note, however, that the Court of Appeals did not rule in favor of the backlot owners or hold that the backlot owners were entitled to dockage or boat mooring rights on the easement. Rather, the Court of Appeals returned the case to the trial court with the instruction that the trial court determine whether the language of the easement (and the

original intent behind the easement) evidences a right of dockage and boat moorage for the backlot owners. The Court of Appeals indicated that the trial court was wrong to rule in favor of the riparian property owners at an early stage in the case and before a trial (i.e., a “summary disposition”), and held that given the somewhat ambiguous wording of the easement, the matter should have proceeded to a full trial.

The Court of Appeals discussed the seemingly inconsistent nature of past rulings regarding lake access easements in general. In perhaps the key case in Michigan regarding the rights of riparian property owners, the Michigan Supreme Court in *Thompson v Enz*, 379 Mich 667, 686 (1967), stated that:

We hold that riparian rights are not alienable, severable, divisible, or assignable apart from the land which includes therein, or is bounded, by a natural water course. While riparian rights may not be conveyed or reserved—nor do they exist by virtue of being bounded by an artificial water course—easements, licenses, and the like for a right-of-way for access to a water course do

(Continued on Page 10)

exist and oft times are granted to nonriparian owners.

But what does that mean? Legal experts have been confused since the *Thompson v Enz* decision in 1967—does that decision mean that lake access easements could not be lawfully created or that there are limits on the rights that can be accorded backlot owners pursuant to lake access easements?¹

Since 1967, Michigan appellate courts have made it pretty clear that lake access easements in general can be created, even though some people have felt that such decisions are inconsistent with *Thompson v Enz*. Based upon the decision in *Little* and the other Michigan case law to date, it appears likely that riparian property owners can create easements in favor of one or more backlots with certain rights of dockage, boat moorage, sunbathing, etc., but only if the language of the easement expressly and clearly grants such rights.

Left unanswered, however, is the issue of which rights normally associated only with riparian ownership can be granted to backlot owners via easement, even with express language. For example, could a riparian property

¹Even though the Michigan courts have held that lake access easements can be created in general, there are other potential constraints upon their creation. For example, many municipal zoning ordinances preclude or severely restrict the ability to create new lake access easements. Additionally, the creation of new lake access easements can be challenged by area riparian property owners pursuant to the riparian/reasonable use doctrine.

owner lawfully grant the owners of one or more backlots what amounts to almost full riparian rights if the easement language expressly grants full rights of dockage, multiple boat moorage, shore stations, sunbathing, etc.? Or will the Michigan courts ultimately hold that lake easements (regardless of the granting language) can only lawfully grant certain limited usage rights to backlot owners? Or, is the only limit on the ability of a riparian property owner to grant easement rights the “reasonableness” doctrine? The *Little Case* does not answer these questions.

Happily, the facts in the *Little Case* can be distinguished from the overwhelming majority of lake access easement cases in Michigan. Most lake access easements simply contain access or travel language—most are typically granted for “ingress and egress,” “access to the lake,” or an “easement” or “right-of-way.” In my opinion, the Michigan courts have made it clear that where such language is utilized, the easement involved is to be utilized only for travel or access purposes and that dockage, permanent boat moorage, sunbathing, picnicking, lounging, etc., is forbidden.²

The easement language in the *Little Case* might be deemed to be a lake easement “plus.” In the *Little Case*, the document which created the easement used not only access or travel language, but also had express language which also gave the backlot owners the “use of the riparian rights to Pine Lake.” That additional language makes it a debatable point whether or not dockage, boat mooring, and sun-

bathing rights were also included with the easement.

Both the Michigan Court of Appeals in the *Little Case* and some advocates for backlot owners have cited *Cabal v Kent County Road Commission*, 72 Mich App 532 (1976), for the proposition that even an easement with simple lake access language can accord backlot owners the right to dockage and permanent boat moorage. I respectfully assert that they may be mistaken. In *Cabal*, the Michigan Court of Appeals did permit backlot owners to maintain docks (together with two boats per lot) on a simple lake access easement, but interestingly enough, also prohibited backlot owners from lounging, sunbathing or picnicking on the

²Where simple access or travel language is used, there seems to be something akin to a presumption that the easement rights do not include dockage, permanent boat mooring, sunbathing, etc. To inquire into the original intent of the creator of the easement (which is always a risky proposition) where simple access language is used in an easement could go beyond the “four corners” of the easement document, violate the Michigan Statute of Frauds, and interject unpredictability and uncertainty into real estate documents.

See *Delaney v Pond*, 350 Mich 685 (1957); *Thies v Howland*, 424 Mich 282 (1985); *Hoisington v Parkes*, (Unpublished Michigan Court of Appeals decision dated March 12, 1999 — Michigan Court of Appeals Case No. 204515); *Trustdorf v Benson*, (Unpublished Michigan Court of Appeals decision dated December 21, 1989 — Michigan Court of Appeals Case No. 103109); *Miller v Petersen*, (Unpublished Michigan Court of Appeals decision dated December 27, 1989 — Michigan Court of Appeals Case No. 111358).

easement. Quite simply, it appears that *Cabal* is an aberration and was probably wrongfully decided. Furthermore, it seemingly contradicts the Michigan Supreme Court's decisions in *Delaney v Pond*, 350 Mich 685 (1957) and *Thies v Howland*, 424 Mich 282 (1985), which was decided a decade after *Cabal*.

As everyone knows, a Michigan Supreme Court decision (i.e., *Delaney and Thies*) "trumps" a conflicting Michigan Court of Appeals decision (i.e., *Cabal*). In *Cabal*, the Michigan Court of Appeals stated that "the right of [the easement holders] to maintain docks is reasonably appurtenant to their easement to enjoy boating in the lake." *Cabal* at 536. That statement contradicts the central holdings in *Delaney*, wherein the Michigan Supreme Court stated as follows:

It does not follow that the [easement holders] have the right to sun bathe on the defendants' property, for it cannot be said that sun bathing is a use of the adjacent waters, nor can it be said that permanent mooring a boat is included in the right to fish and boat. Obviously, plaintiffs have the right to use the easement for the purpose of carrying their boats to the waters of the river and lake, but they cannot store them permanently on the easement way, nor attach them to stakes driven into the land.

Delaney at 687-88 (emphasis added).

Even if one assumes that *Cabal* was correctly decided, it should not have widespread application to other lake access easement cases, due to the uncommon factual situation involved. The easement in *Cabal* was unusual. The case involved many lots located across the street from a long access strip of land adjacent to Big Crooked Lake. The entire long strip of land located between the lake and the road was subject to an easement in favor of the lots across the road. By the time of the court challenge, most of the lot owners had utilized a portion of the strip of land across the street from their house or cottage for many years for boat mooring, dockage, etc. Each lot owner had a significant amount of frontage to utilize. This might be a prime example of the old adage, "hard cases make bad law."³

The hope of attorneys who represent riparians is that trial courts in the future will not misread or misconstrue the *Little Case*. That is, where a lake access easement contains only access or travel language, hopefully judges will continue to summarily hold (without the need for an extensive trial) that activities such as dockage, permanent boat mooring, sunbathing and lounging are prohibited. Only in cases where the access easement contains additional language indicating that something more than an access easement is intended should the courts refuse to address the issue summarily and require a full-blown trial. Whether or not this will occur, remains to be seen.

It is possible that the *Little Case* will muddy the waters (pardon the pun), such that trial judges

will feel the need to have full-blown (and expensive) trials to determine the meaning of easement language, even in "pure" access or travel easement cases. Should that happen, it would be a pity, since I believe that a careful reading of prior case law makes it clear that where simple access or travel language is used in an easement, it should normally be held as a matter of law that dockage, permanent boat moorage, and sunbathing activities are not permitted.

³Unfortunately, it appears that the Michigan Court of Appeals in the *Little Case* (as well as some trial courts) may have accepted the false premise that a lake easement without dockage and boat mooring rights would be worthless and would greatly diminish the value of the benefited backlots. Luckily, the appellate courts in *Delaney*, *Thies*, *Miller*, *Trustdorf* and *Hoisington* have recognized that fallacy. A lake access easement without dockage and permanent boat mooring rights still accords a backlot owner a considerable number of rights and opportunities to enjoy the lake, including access to the lake, swimming, fishing, ice fishing and skating, temporarily anchoring boats, temporarily pulling up boats onto the shore, etc. Easement holders are not riparian property owners (they also pay less for their lots, pay lower property taxes and have a much smaller lakefront area to use) and many believe that they should not have rights of dockage and permanent boat moorage unless the easement language expressly grants such rights on its face. Otherwise, what benefit is there to being a riparian (including the headaches of paying more for the property, paying higher real property taxes, having to maintain a large lakefront area, etc.) if easement holders can have what amounts to virtually full riparian privileges based on some "divining" of implied dockage and boat moorage rights even though that is not what the easement document says?



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OAKLAND COUNTY LAKES CONTINUE SUPPORT OF MICHIGAN LAKE AND STREAM ASSOCIATIONS

Sixty-two lakes, condominiums and subdivisions in Oakland County are members of Michigan Lake & Stream Associations. Some of these lakes were charter members when ML&SA started in 1961 and have continued their support of ML&SA for 40 years.

Oakland County ranks number one in the number of lakes of 50 acres or more in size with 94 such lakes. Ranking second to Oakland County is Iron County with 77 lakes 50 acres or more in size. The next four counties are Marquette with 73; Gogebic with 72; Schoolcraft with 61, and Livingston with 58.

Oakland County lakes are spread across the county, but the greatest numbers are found in Waterford Township with 13; West Bloomfield Township with 11, and White Lake Township with 10.

Unfortunately, Oakland County has 43 lakes with zebra mussel infestation. Numerous methods of controlling the mussel are being tried such as chlorination, heat treatment, ultraviolet light, surface coatings, etc. Hopefully, a good control method will be found in the near future.

recently in the channel leading to Bennett Lake.

All reports of new infestations in 2001 came from lakefront property owners and DNR/DEQ officials who found adult colonies of the mussels clinging to boats, docks, dams, water pumps, and other equipment. A quarter of the reports came from participants in the Brick Watch program begun in 2000 by Michigan Sea Grant, Michigan Lake and Stream Associations, and the Michigan DEQ. Lake Associations or individuals wishing to participate in the Brick Watch Program should contact Pearl Bonnell at ML&SA.

It is generally recognized that zebra mussels are spread when boaters and anglers unknowingly transport the clinging veligers (immature mussels) from infested waters via boats, trailers, and fishing equipment. Ideally, early detection should result in the placing of signs at boat launches warning of the infestation. This has been mainly left to volunteer lake association members, rather than having any serious attention paid to it by the Michigan DEQ. Boaters are asked to voluntarily wash their boats or let them dry out for several days and to not dump bait into a lake where it did not originate. Small stickers prepared by the Sea Grant program containing instructions to prevent the spread of nuisance species, including zebra mussels, are available free from the Michigan Lake and Stream Associations office. The sticker is reproduced slightly smaller than actual size in the next column.

Nowhere has the effort to prevent zebra mussel infestation been more

diligent and sustained than at Glen Lake in Lelanau County, where a program of boat washing at the DNR public access site has been carried



on from late June through Labor Day since 1994. It is sponsored by the Glen Lake Association at a cost of about \$9,000 a summer. The Association hires high school students to be on the site from 8 a.m. to 7 p.m. daily. Each boater must be asked for permission to wash prior to launching and only three or four each summer have declined. The crew power washes more than 100 boats and trailers a day during peak use periods. Despite skepticism from the DNR and others about whether such a program would be effective, so far Glen Lake has escaped infestation, unlike most other large lakes in the area.

Among many ecological impacts being studied, researchers have noted

a 68% decline of tiny shrimp-like crustaceans called diporea in Lake Michigan between 1994 and 2000 and a consequent starvation of whitefish, smelt, and chub which feed on them. While the cause of the diporea decline is not certain, it has coincided with the arrival and increase of zebra mussels.

The effects of zebra mussels on recreational uses such as swimming and boating are largely anecdotal, but there seems to be a pattern of an initial rapid population growth followed by a gradual decline.

At Eagle Lake near Edwardsburg, the first inland lake to be infested back in 1991, the impact on recreational use has been less serious than feared. Brian Claire, a salesman with Eagle Lake Marina for more than eight years, said boats removed last fall were not covered with mussels like they were four years ago and there has been no engine repair work caused by zebra mussels for several years. He said he had heard of a few instances of swimmers cutting their feet, but that the mussels have noticeably declined since reaching a high point a few years after they first appeared. The water is a lot clearer, though, he noted.

A similar recent decline of zebra mussels after an initial heavy buildup in the first several years was also reported by Jim Kollar at Diamond Lake, first infested in 1995. Five or six years ago, Diamond Harbor Marina worked on 10 - 12 boat motors a season. Last summer they had only two or three such incidents.

– William Hokanson

Inland Lakes Infested with Zebra Mussels by County

(Year Discovered in Parentheses)

Alcona County Alcona Pond (00)	Charlevoix County Walloon Lake (93)	Kalamazoo County Gull Lake (94)	Oakland County Big Lake (99)	Oceana County McLaren L. (99)
Allegan County Lake Allegan (97)	Cheboygan C'nty Burt Lake (93)	Kent County Blue Lake (99)	Brendle L. (00)	Silver Lake (98)
Alpena County Four Mile L. (98)	Mullet Lake (98)	Dean Lake (98)	Cass Lake (93)	Roscommon County
Long Lake (99)	Clare County Long Lake (99)	Lincoln Lake (99)	Cedar (Strgy) (98)	* Higgins Lake (01)
Seven Mile (98)	Windover L. (99)	Lapeer County * Neppesing L. (01)	Cedar Island (99)	L. St. Helen (94)
Antrim County * Birch Lake (01)	Dickinson County * Antoine Lake (01)	Leelanau County L. Leelanau (97)	Clear (Strgy) (98)	Houghton L. (93)
Clam Lake (00)	Eaton County Mud Lake (99)	Lenawee County Devils Lake (94)	Commerce L. (98)	St. Joseph County Klinger Lake (96)
Six Mile Lake (99)	Emmett County Crooked Lake (93)	Evans Lake (98)	* Crescent L. (01)	Van Buren County
Barry County Gun Lake (98)	Paradise Lake (93)	Sand Lake (96)	Crystal Lake (00)	Banksons (98)
Payne Lake (00)	Pickerel Lake (93)	Livingston County Chemung L. (98)	Duck Lake (98)	Cedar Lake (98)
Benzie County Bass Lake (00)	Genesee County Fenton Lake (97)	* E. Crooked L. (01)	Elizabeth L. (94)	Gravel Lake (97)
Crystal Lake (98)	Holloway Res. (95)	* Ore Lake (01)	* Greens (01)	L. o't Woods (96)
Herring (96)	Mott Lake (98)	Rush Lake (00)	Kent Lake (94)	Saddle Lake (98)
Loon Lake (00)	Lake Ponemah (00)	* Sandy Bottom (01)	* L. Angelus (01)	Washtenaw County
Otter Lake (00)	Silver Lake (00)	School Lake (01)	L. Oakland (98)	Barton Pond (94)
Platte Lake (00)	Gladwin County Second Lake (98)	Strawberry L. (97)	Lake Orion (00)	Base Line (95)
Berrien County L. Paw Paw (93)	Smallwood L. (98)	Manistee County Bear Lake (00)	Long (Strgy) (98)	Portage Lake (94)
Branch County Coldwater L (98)	Wixom Lake (97)	Tippy Dam L. (97)	Loon Lake (93)	Whitmore (94)
Craig Lake (00)	Grand Traverse Co. Arbutus Lake (00)	Mason County Ford Lake (00)	Lower Straits (99)	Wayne County
* L. o' t' Woods (01)	Duck Lake (00)	Hackert Lake (00)	Lower Trout (98)	Belleville L. (93)
Marble Lake (98)	Fife Lake (00)	Mecosta County Bergess (98)	Maceday L. (97)	
Matteson L. (00)	Green Lake (00)	Blue Lake (97)	Mid. Straits (99)	
Messenger L. (00)	Silver Lake (00)	Mecosta Lake (97)	Orchard L. (94)	
Morrison L. (00)	Hillsdale County Baw Beese L. (97)	Round Lake (97)	Otter L. (94)	
North Lake (00)	Ingham County Lake Lansing (95)	Midland County Sanford L. (98)	Oxbow Lake (99)	
Randall Lake (00)	Ionia County Morrison Lake (99)	Montcalm County Derby (98)	Pine Lake (97)	
South Lake (00)	Iosco County Cooke (98)	Whitefish L. (98)	Pontiac Lake (00)	
Union Lake (99)	Foote Pond (98)	Muskegon County * Big Blue L. (01)	Schoolhouse (96)	
Calhoun County Duck Lake (98)	* Long Lake (01)		Silver Lake (94)	
Cass County Baldwin Lake (98)	Iron County * Fortune Pond (01)		Squaw Lake (98)	
Birch Lake (00)	Jackson County Ackerson Lake (99)		Stony Cr. Imp. (95)	
Christiann L. (92)	Big Portage L. (98)		Sylvan L. (94)	
Diamond L (95)	Clark Lake (94)		Tan (Stringy) (98)	
Donnell Lake (95)	Columbia L. (97)		Union Lake (97)	
Eagle Lake (91)	Pleasant L. (95)		Upper Straits (97)	
* Finch Lake (01)	Vineyard Lake (92)		Van Norman (98)	
Indian Lake (98)	Wampler Lake (94)		Walled Lake (93)	
Juno Lake (92)			Walnut Lake (99)	
* Long Lake (01)			Watkins Lake (95)	
Magician L. (97)			White Lake (97)	
Twin L. N. (98)			Wolverine L. (99)	
Twin L. S. (98)			Woodhull L. (99)	

* Newly Confirmed
in 2001

44 Counties
166 Lakes

Source:
Michigan Sea Grant
Inland Lakes
Zebra Mussel
Infestation
Monitoring Program,
December 2001

[www.msu.msue.edu/
seagrant/zmfiles/lake
011402.html](http://www.msu.msue.edu/seagrant/zmfiles/lake011402.html)

Note: Michigan Sea Grant excludes lakes that have direct connections with or have outlets within one mile of a Great Lake. Thus lakes such as Charlevoix, Hamlin, Manistee, White and others are not listed here nor included in the count of 166 infested "Inland Lakes" although they are known to have zebra mussels.

Researchers Seek Optimum Herbicides & Doses To Selectively Control Eurasian Water Milfoil

Test Results Reported Using Triclopyr, Fluridone, Endothall

Editor's Note: The following article by Dr. Kurt Getsinger, a research biologist with 28 years experience in aquatic plant management, appears here through the courtesy of the author. It has not been previously published

Selective Control of Eurasian Water Milfoil in Northern Lakes

By Kurt D. Getsinger, PhD

U.S. Army Engineer Research and Development Center
Vicksburg, Mississippi

Introduction

The submersed plant, Eurasian water milfoil (*Myriophyllum spicatum* L.), is an invasive aquatic weed in the U.S. that typically degrades lakes, reservoirs, and rivers once it becomes firmly established. If this plant were not so aggressive in its growth, it would likely provide many of the benefits that submersed vegetation usually imparts to lake environments, such as food and cover for a variety of fish and wildlife, oxygen production, and sediment stabilization. Unfortunately, this is not the case. Environmental degradation occurs as Eurasian milfoil expands to occupy large areas of the littoral zone, choking out valuable native plants and reducing the biological diversity (plants and animals) of a system. In addition, large contiguous stands of milfoil can alter water circulation patterns, reduce light penetration, and create a negative impact on water quality by increasing water temperatures and producing large daily shifts in dissolved oxygen and pH (acidity/alkalinity). Dense milfoil stands can also negatively impact fish populations by reducing foraging and spawning success.

In many cases, riparians and lake managers have applied various techniques to control the spread and reduce the amount of Eurasian milfoil, once it has reached nuisance levels.

These management methods include mechanical harvesters, biocontrol agents (such as the milfoil weevil), and herbicides.

While all management tools have their place, this article will focus on the use of aquatic herbicides to selectively control milfoil. Selective control is important because it can remove the unwanted target plant (milfoil) and allow for the continued growth of valuable non-target native vegetation. Furthermore, selective control produces less environmental "shock" to a system, since not all of the vegetation is removed at one time. Selective control is a method based on years of scientific research, the results of which have been verified in the field.

Sponsors, Herbicides, Types of Tests Done

To improve methods for controlling Eurasian milfoil in northern tier states, investigators at the U.S. Army Engineer Research and Development Center in Vicksburg, Mississippi, have conducted a series of studies on the species-selective use of aquatic herbicides. Some of these studies were co-sponsored by the Aquatic Ecosystem Restoration Foundation -- a non-profit organization dedicated to fostering applied research on managing invasive aquatic and wetland plants. Other research partners included selected state natural resource agencies and elements from the private sector. These evaluations ranged from laboratory and greenhouse experiments to large-scale field demonstrations. They used the herbicides triclopyr, fluridone, and endothall that were applied in various concentrations and for different exposure times.

Concentration/Exposure Times Critical

Research has shown that most aquatic herbicides have distinct concentration/exposure time combinations that allow them to control a particular species of plant. Therefore, it is essential to develop precise information on such relationships for each registered herbicide product. This is important because it is the rate of herbicide application (concentration) and the length of time that the herbicide is in contact with the plant (exposure time) that determines the overall effectiveness of the treatment.

In other words, this concentration/exposure time relationship determines which plants are likely to be controlled or injured, and which plants are not. Some products have relatively short, dose-dependent contact time requirements for controlling milfoil. Endothall, triclopyr, and 2,4-D require only hours of exposure. In contrast, fluridone, and others, require many weeks of exposure.

“Selective control is important because it can remove the unwanted target plant (milfoil) and allow for the continued growth of valuable non-target native vegetation. Furthermore, selective control produces less environmental “shock” to a system, since not all of the vegetation is removed at one time.”

Understanding concentration/exposure time relationships can be the most important factor for determining success or failure when treating submersed vegetation. Unlike emergent or floating vegetation, where herbicides can be applied directly on the leaf surface, treating submersed plants involves delivering the herbicide into the water surrounding the target plant, where the herbicide is subject to the effects of bulk water movement. Once an herbicide’s active ingredient is dissolved into the water, any movement of that water away from the target plant (which could be caused by gravity flow, springs, tides, wind and thermal induced currents etc.) will impact concentration/exposure time relationships and ultimately the effectiveness of the herbicide.

Field Tests Conducted to Verify Lab Results

A number of field studies have been conducted to verify results obtained in laboratory-derived concentration/exposure time relationships for herbicides effective on Eurasian water milfoil. In these efforts, scientists have documented the effectiveness of the products on controlling milfoil as well as the ability of non-target native plants to withstand exposure to such products, both during the year of treatment and in subsequent growing seasons. By utilizing field demonstrations at different sites around the country, lake managers will have access to case histories representing a variety of environmental conditions.

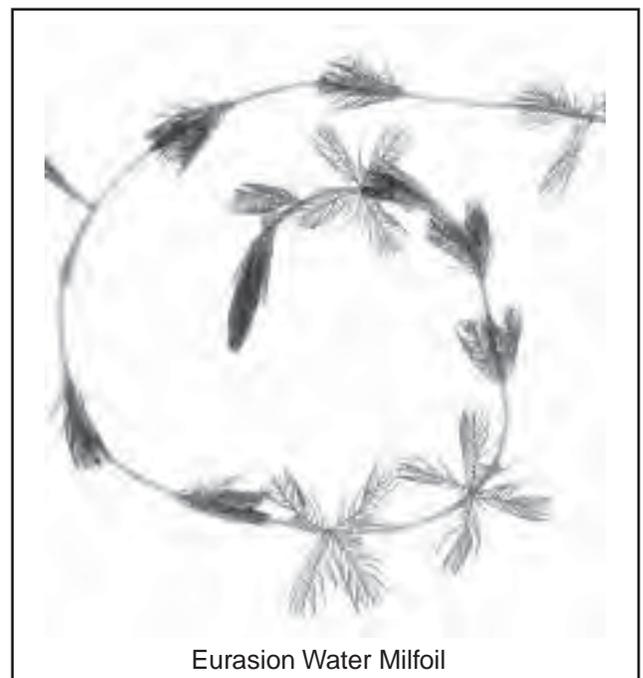
Triclopyr Field Tests in Minnesota

Trials were completed in 1998 using the herbicide triclopyr for selective control of Eurasian milfoil in Lakes Minnetonka and Minnewashta, Minnesota. In this effort, the target plant milfoil was greatly reduced in small shoreline plots of 2-3 acres, using low rates of triclopyr, while growth of native submersed species remained healthy. Earlier evaluation in 1995-95 in 16-acre plots in Lake Minnetonka using high rates of triclopyr, showed complete removal of milfoil, followed by regrowth of the native plant community. Triclopyr is currently under review by the U.S. Environmental Protection Agency for use in aquatic sites. If approved, it will prove another tool for selectively managing Eurasian water milfoil and the invasive wetland weed, purple loosestrife (*Lythrum salicaria* L.).

Fluridone Tests in Michigan

A series of treatments with the herbicide fluridone were evaluated for selective control of Eurasian water milfoil in several lakes in Michigan. As with triclopyr, these evaluations were based on small-scale concentration/exposure time studies, but focused on whole-lake applications, rather than on small-plot or partial-lake treatments. These treatments utilized low-dose technology, where application rates of 5 to 8 parts per billion (ppb) were 18 to 30 times less than the maximum dose of the product permitted by the U.S. Environmental Protection Agency. These studies also investigated the effect of season (spring versus fall) on the success of the treatments.

(Continued on Page 18)



Eurasian Water Milfoil

To maximize the control of Eurasian milfoil, while minimizing injury to non-target native plants, four lakes were treated with fluridone at 5 ppb in the early spring of 1997. These were Big Crooked, Camp, Lobdell, and Wolverine Lakes in Michigan. The initial application was followed by a booster treatment several weeks later to re-set the whole lake concentration to 5 ppb of fluridone. Laboratory and small-plot studies had shown that 5 ppb fluridone was the threshold level for milfoil control that would cause little or no damage to valuable submersed native plant species common in northern lakes.

The plant communities of each lake were documented prior to treatment and monitored through 15 months after treatment. Results showed that in three of the lakes, more than 85% of the milfoil was controlled and the native plant community did not decline, leaving 70% or more vegetative cover during the year of treatment and beyond. (Fisheries biologists recommend that 20 to 40% vegetative cover should be present in a lake to maintain a healthy sport fish population.) In the fourth lake, the native plant community remained healthy, but the milfoil removal was less than 70%, which is less than desirable.

Follow-on Trials in Michigan and Vermont

Armed with this information, a second round of low-dose, whole-lake spring applications were conducted in Lower Scott and Eagle Lakes in Michigan (1998-99) and in Lake Hortonia and Burr Pond in Vermont (1999-2001). In these trials, the initial dose of fluridone was increased to 6 ppb, followed by booster applications to maintain that level for several weeks. It was anticipated that a slightly higher rate of fluridone would give more consistent milfoil control in these lakes and still not damage the native plants. Unfortunately, warmer than normal spring temperatures in Michigan and higher water flows in the Vermont lakes during the treatment years allowed the milfoil to reach a mature growth stage which reduced the amount of control achieved. However, milfoil was reduced 70 to 85% and the native plants in all of the study lakes remained healthy and abundant.

Other trials of spring-applied, whole-lake fluridone treatments at levels of 10 to 12 ppb (still a relatively low dose) provided excellent control of Eurasian water milfoil (95 to 99%). It was found that these treatments can negatively impact some of the native plant species in the year of treatment,

but most of the injured native plants recovered the following year. There is some debate as to whether the loss of these plants in the year of treatment causes any significant problems for the sport fish community.

Clearly, more work is needed to fine-tune the threshold level of fluridone application rates required for consistent and selective control of milfoil in lake settings. Future work will determine the optimum timing of application with respect to the growth cycles of milfoil and the non-target plant community as well as the overall effect of changes in the plant community to lake fisheries.

Fall Treatments Being Tested

One approach to application timing has been to evaluate a low dose (8 to 10 ppb fluridone) treatment in the fall. Autumn treatments may have the advantage of removing the milfoil the following spring while avoiding damage to the non-target native plant community during its peak growth period. This late season approach is currently under evaluation at Perch Lake Michigan, in Hillsdale county and other lakes in the midwest. Results from these fall treatments should be available for review in the next few months.

Research Will Continue if Funding Does

Selective Eurasian milfoil control techniques using contact herbicides, such as endothall, have been evaluated in small-scale concentration/exposure time experiments with promising results. They are now being verified in field trials. If adequate funding and resources earmarked for applied research are maintained, aquatic plant scientists across the nation can continue to develop selective methods for managing invasive species, such as Eurasian water milfoil, using herbicides and other methods.

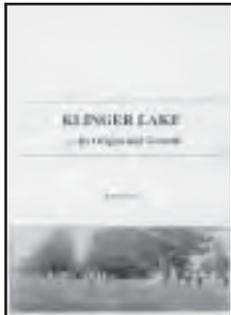
Dr. Kurt D. Getsinger is a research biologist with the U.S. Army Engineer Research and Development Center (ERDC), Waterways Experiment Station, Vicksburg, MS. He is currently the research leader for the Chemical Control and Physiological Processes Team at the ERDC and has worked in the area of aquatic plant management for 28 years. He can be contacted at: Kurt.D.Getsinger@erdc.usace.army.mil.

The Aquatic Ecosystem Restoration Foundation which co-sponsored some of these studies maintains a web site at www/aquatics.org.

Waves of Nostalgia Are Producing Historical Projects & Publications At Several Michigan Lakes

Waves of nostalgia apparently have been lapping at the shores of many Michigan lakes as lake organizations and individuals have undertaken or recently completed projects to record their histories and publish books and magazines preserving them.

The **Klinger Lake Association**, six miles west of Sturgis in St. Joseph County, recently published a history book -- *Klinger Lake . . . Its Origins and Growth* -- written by Robert E. Hair. The 142 -page book begins with a review of regional history from the native mound builders, the first land buyers, and Peter Klinger, an Indian trader for whom the lake is named. The book is available for \$50 by sending a check to Klinger Lake History Book, P.O. 176, White Pigeon, MI 49099.



The **Fisher Lake Association**, four miles northeast of Three Rivers, also in St. Joseph County, recently launched *Fishers Lake Magazine* to capture memories of the lake. (The lake goes by both Fisher and Fishers since long time residents can't confirm the precedence of one over the other.)

The first issue, edited by Dr. James L. Souers, contains 10 pages. It features an extensive interview with 90-year-old Charles H. "Chick" Boeschstein, a retired auto dealer as well as a poem, "Portrait of Fisher Lake" written in 1980 by Freeman Benne, now 90 years old. *Fishers Lake Magazine* is for sale for \$3.50 at Lowry's Books in Three Rivers or by contacting the editor at 111 E. Kelsey St, Three Rivers, MI 49093



At **Corey Lake**, five miles west of Three Rivers, long-time summer resident Lynn Minzey Cassady has collected old photographs and memoirs from numerous lake residents and is assembling them into an historical booklet.

Portage-Base-Whitewood Owners Association, covering three lakes 10 miles northwest of Ann Arbor, is forming a Historical Committee and is seeking volunteers to collect and record historical information, including video interviews with senior citizens.

One of the earliest lake histories was published in 1970 at **Diamond Lake**, on the south east side of Cassopolis, in Cass County.

The 232-page hardcover book entitled *A Diamond Sparkles: The Facets of Diamond Lake* recounts activities back to the 1870's. It was written by Lois Webster Welch. The Diamond Lake Association had the book reprinted in the early 1990s and it is currently available at \$50 a copy by calling Jim Kollar at 616-699-7552.



The Moon Lake Riparian News, in Gogebic County, in the U.P. just north of Land O' Lakes, Wisconsin, reports renewed efforts to compile historical information. Residents have been asked to provide colorful details on how they happened to locate homes on Moon Lake, along with any history they may know about their property.

At **Big Brower Lake**, eight miles north east of Grand Rapids, Deb Gryka is compiling a lake history and has asked residents to lend old photos and to identify "old timers" to be interviewed or asked to write their memoirs.

There are undoubtedly many other historical books that have been published or are in the works. *The Riparian* would be pleased to publish a listing of such books as well as where copies may be purchased.