

# Action Needed to Protect Michigan Lakes

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Aquatic herbicides can be used like anti-biotics or chemotherapies designed to target specific nuisance organisms or problems. They are effective agents for the suppression of undesirable plants that can dominate aquatic ecosystems and diminish ecosystem stability. There are also a variety of physical and mechanical strategies available for nuisance aquatic plant management. Mechanical and physical aquatic plant control methods can be very effective, but are much more difficult to target to specific organisms and can therefore be quite disruptive of desirable ecosystem functions. More often than not; the application of aquatic herbicides is the ecologically and environmentally responsible thing to do when dealing with a range of nuisance aquatic plant species. That doesn't mean that mechanical and physical control strategies aren't good, it just means that they may not always be the "right thing to do". Because ecological disturbance is the principal cause of lake degradation, it is logical to do everything possible to seek, develop, and deploy means and methods to control problems and cause as little disturbance to the ecosystem as possible. Aquatic herbicides are usually the best tool available for mitigating against many of the disturbances that afflict lakes, ponds, and reservoirs because they can be used in a manner that causes relatively low levels of disturbance of other components of the ecosystem. Unfortunately, the use of these tools is being threatened by the Michigan DEQ. The agency has recently drafted rules for the administration of the Aquatic Nuisance Control Act, P.A. 368 that would make it unreasonably difficult to use aquatic herbicides and add considerable and unnecessary costs to lake improvement programs. Should the proposed rules be adopted, the ecological stability, recreational and utilitarian value, and economic viability of nuisance aquatic plant management in Michigan will be impaired.

In order to understand how this predicament may have arisen, it is important to consider how misperceptions and popular or colloquial perceptions regarding pesticides has crept into the formulation of policy and proposal of rules by the MI DEQ. One of the chief statutory requirements of the MI DEQ is that the Agency "Protect the environment and natural resources of the State". This mandate has been repeatedly referenced, by agency personnel, as justification for the promulgation of rules and the application of policy that are seemingly intended to protect the environment from the inappropriate use of aquatic herbicides. The requirement to "protect" the environment is very broad order, subject to various interpretations. It does not really imply or direct the agency in the establishment of management goals. For example, there is not guidance as to how the environment should be protected, from what it should be protected, or what environmental condition should be maintained. The DEQ mission statement is perhaps only slightly more focused.

*"Our mission is to drive improvements in environmental quality for the protection of public health and natural resources to benefit current and future generations. This will be accomplished through effective administration of agency programs, providing for the use of innovative strategies, while helping to foster a strong and sustainable economy."*

-MI DEQ Mission Statement as Posted on the MI DEQ web page, [www.deq.state.mi.us](http://www.deq.state.mi.us)

The current DEQ mission statement clearly directs the Agency to adopt a proactive position in the formulation of policy and implementation of actions specifically designed to "improve" environmental quality. The Inland Lakes and Wetlands Unit has made reference to these ideals, however, rules and policies adopted by this unit appear to ignore or even contradict the ideals outlined in statute and in MI DEQ mission statement. A key

explanation for this problem may be rooted in the apparent lack of goals or no clear understanding of how aquatic ecosystems might be improved and managed through the use *innovative strategies* and in a manner that would foster a strong and sustainable economy. There may also be some reluctance among some sectors of the lake management community do anything until the ecosystem is more fully understood.

According to standard Limnology texts (See Chapter 26 of **Limnology: Lake and River Ecosystems**, Academic Press by Robert Wetzel for complete discussion) the loss of biodiversity and concurrent destabilization of aquatic ecosystems that occur as a result of cultural disturbances has been recognized as a primary impairment of aquatic ecosystems. It is unfortunate that lake managers may never be able to restore degraded aquatic ecosystems. Wetzel aptly argues (page 826) that our current understanding of aquatic ecosystems is inadequate to allow us to think that we can effectively manage or restore aquatic ecosystems any more than we might assert that we “know enough at present to control and manage human cancer and enough to restore health”. He is correct in declaring that there is tremendous need for the development of greater understanding of aquatic ecosystem function to permit better management. However, the aquatics industry, riparian property owners, and the regulatory community, in Michigan, are still faced with the challenge of doing whatever is possible to “improve” ecosystems and mitigate against the obvious consequences of cultural disturbance – even though we may lack of a more thorough understanding of aquatic ecosystem functions. The MI DEQ has adopted an overly conservative regulatory approach to lake management practices that are intended for the mitigation of impairments to Michigan’s aquatic resources. Current MI DEQ policy is inconsistent with the MI DEQ mission statement. Lake problems are usually obvious and the impacts of a variety of cultural disturbances are well known. Technologies also exist to mitigate against many of these disturbances and improve aquatic ecosystems by enhancing biodiversity and contributing to ecosystem stability. Wetzel correctly applied the metaphor in his book (page 826), “Excising an organ or irradiating cells to delay the spread of cancer are not solutions to cancer”. However, I am certain that Dr. Wetzel would never suggest that the medical community should cease to apply the best of medical technology to the treatment of cancer because we do not understand causality. This reasoning should reasonably be applied to aquatic ecosystem management and is seemingly an essential premise for the creation of the DEQ mission statement. Even if we lack a thorough understanding of aquatic ecosystem function we should not adopt policies that prevent us from mitigating against obvious impairments.

The need for lake management becomes evident when aquatic ecosystems are unable to operate in self-sustaining ways because of interference or damage that exceeds the capacity of the ecosystem for self-repair (Moss, 1999). Lake management practices should be applied when cultural disturbance exceeds or creates a cascade of conditions that occur at a rate that exceed the ability of the ecosystem to absorb or suppress the consequences of the impairment. If the need for lake management is evident, as implied by Brian Moss, the goal of management should also be evident. Despite the absence of a more complete understanding of aquatic ecosystems, it is still possible to establish goals for the practice of aquatic ecosystem management. A worthy goal for aquatic ecosystem management, and one that is consistent with the MI DEQ missions statement would be to encourage the implementation of programs and projects that have been shown to, or exhibit significant promise for the enhancement of species and habitat diversity, increase ecosystem stability and mitigate against recognized cultural impacts have those impacts that have not yet been identified. However, this goal must be considered dynamically, or within the context of ongoing and increasing cultural disturbance of aquatic ecosystems. These ongoing factors

continually destabilize and degrade aquatic ecosystems at some rate that is likely to be proportional to resource development and use (residential, recreational, utilitarian, etc.). To fail to act does not merely imply that ecosystems will not be “improved” but that they will be further degraded as actions are not implemented to mitigate against dynamic destabilization of aquatic resources. The exercise of caution does not necessarily imply that the resource is being protected.

Pollution is often glibly identified as the principal impairment to aquatic ecosystems. The colloquial definition of aquatic ecosystem pollution includes the input of culturally derived inorganic and organic compounds and sedimentary materials. Pollution of this type can destabilize aquatic ecosystems and result in the loss of habitat and species diversity. The introduction of aggressive and strongly opportunistic plants and animals has the same affect on aquatic ecosystems as do the inputs of “non-living” pollutants. Not only can they result in the loss of species richness, but perhaps even more importantly, biopollutants can seriously degrade community biodiversity. This has been demonstrated for a variety of non-endemic plants and animals. Eurasian water milfoil contributes to aquatic ecosystem degradation by creating conditions that diminish species and habitat diversity (Madsen, et al., 1991, and abundant anecdotal evidence. See also literature review in Pullman, 1993). This biopollutant continues to spread with little challenge throughout the water resources of the State of Michigan. Current “feelings” and colloquial perceptions related to aquatic pesticides (synthetic, organic, molecules and some inorganic compounds) seem to be the basis for regulation of aquatic herbicides by the MI DEQ. It is becoming increasingly apparent the DEQ is primarily focused on restricting the use of aquatic herbicides rather than restricting the destabilizing impacts of aquatic nuisances. The statutory basis for the regulation of aquatic herbicides by the MI DEQ is that the Department “supervise” the use of aquatic herbicides. Recent actions, policy, and the drafting of new administrative rules for the Aquatic Nuisance Control Act support the assertion that the Agency has become more interested in restricting tools for lake management than protecting lakes from degradation from increasing cultural disturbance. These actions limit our ability to protect lakes from the proliferation of increasing array opportunistic aquatic plants, and subsequent loss of biodiversity and ecosystem stability that occurs when they are not managed properly. The DEQ is indirectly contributing to the further degradation of aquatic resources by making it difficult to apply appropriate treatments to obvious and increasingly severe impairments. These policies and rules clearly are starkly opposed to the stated mission of the DEQ. No lake management strategy or treatment is applied without some risk or collateral impacts. However, the current DEQ mission statement, compels the Agency is to:

*“...drive improvements in environmental quality for the protection of public health and natural resources to benefit current and future generations”.*

It appears that the authors of this statement clearly understand that time is an important part of resource management. Temporal negative impacts can be inflicted by the application of aquatic herbicides, however, these must be considered in a broader context if benefits are to be derived for current and future generations. The expectation of “no” or minimum non-target impacts is completely inconsistent with good or reasonable management practices when the goal of the management practice might be attained, at some future point, as a result of the application of the management strategy. For example the MI Scientific Advisory Board concluded in their review of

the use of fluridone for Eurasian watermilfoil, that non-target impacts may be completely acceptable when there is long-term advantage derived from the application the stated technology.

*“... the option for rehabilitation of a given water body may not only be to control, but also totally eliminate Eurasian watermilfoil by the application of fluridone. Implementing this option may in the year of treatment, have a greater than minimum negative impact on native aquatic plants. Eliminating, by administrative rule, the option to eradicate Eurasian watermilfoil, when conclusive data to condemn or promote this particular approach are not yet available, may be premature. “*

Michigan Environmental Review Board, 1999

The MI DEQ must establish realistic goals for aquatic nuisance management that recognize the ecological consequences of the proliferation of nuisance organisms in Michigan's aquatic resources, the effectiveness of a variety of management strategies, and a realistic consideration of the risks and benefits associated with mitigation strategies. Technologies exist to suppress the production of opportunistic plant species, that may be unusually benefited by cultural disturbance and which may proliferate to a degree that biological and habitat diversity is impaired. The management of aquatic nuisances in Michigan can no longer be guided by colloquial perceptions of aquatic herbicides but must be based on a clear understanding of how lakes can be improved using currently available technologies.

The MI DEQ has imposed greater regulatory burdens, and economic disincentives for the protection of the lakes of Michigan from cultural disturbances related to the proliferation and production of undesirable plant species and communities. Furthermore, agency activities, adopted since 1993, have impeded the rate at which the aquatic's industry has sought to create, develop, and innovate better means of lake vegetation management. The rationale for these actions has reportedly been based on a desire to err on the side of conservatism and a desire to protect the resource. However, obstructive regulatory activities and inactivity by the Agency has contributed to the further degradation of aquatic resources by making it more difficult for the lake management community to apply technologies known to mitigate against the impacts related to proliferation of disturbance tolerant plant communities. Agency obstructionism has been particularly evident in regard to the use of fluridone aquatic herbicide. This herbicide has proven to provide consistent control and suppression of the production of Eurasian watermilfoil, and in a few cases, other opportunistic aquatic species that are known to contribute to the loss of biodiversity and ecosystem stability if they were not properly managed. Agency imposed “low-dose rate restrictions” have recently resulted in unsatisfactory treatments and can lead to development of tolerant populations of target plants. This has already been documented for target species in Florida (MacDonald, et al., 2001). Continued use, at low rates may contribute to the development of fluridone tolerant nuisance species in a manner that is similar to anti-biotic misuse in human medicine. The agency has justified this action by stating that it wishes to see virtually no non-target impacts with the use of this important management agent during the year of treatment. This is totally unrealistic and restricts that ability of lake managers to provide for the long-term improvement of aquatic resources. Monitoring requirements have placed an arguably, unnecessary burden and lake front

communities, forcing them to abandon the use of the important lake management agent due to economic considerations. Furthermore, reasonable management strategies that include the use of fluridone have been abandoned for fear of not meeting plant control objectives because of restrictions placed on the selection of dose rates. Other restrictions on the use of other herbicides such as the set-back requirements associated with the use of 2,4-D and zone restrictions on the use of diquat dibromide combine to make the management of Eurasian watermilfoil ever more difficult and the protection of Michigan's lakes potentially less attainable. Agency actions, unjustified conservatism, and inaction, contribute to the degradation of the lakes of the State of Michigan, by restricting the use of tools necessary to mitigate against the impacts of increasing development and cultural disturbance. It is critically important that all lake front property owners make their state representatives aware of how herbicides have improved their lakes – not only for recreation, but how they have provided for greater biodiversity and ecosystem stability. Make your State Representative aware of how the MI DEQ is proposing rules that would restrict the use of aquatic herbicides to such an extent that it will be impossible to continue to protect the lake from the impact of exotic plants at the level that has been possible for the past several years. These restrictions will also limit your ability to mitigate against the loss of ecosystem stability by the proliferation of native plant species that grow out of control as a result of cultural disturbance. Your representatives need to know that you are concerned that the DEQ may adopt policies and rules that will result in the degradation of your lake. Ask your representatives in the State House and Senate to oppose any proposed rules or policies that would further restrict lake managers from protecting and improving lakes in Michigan. You must do this!!!!

Industry professionals are working to provide legislators with statutes that will protect you lake. Encourage you representatives to support these efforts. For more information, please to the following website: [www.milpc.org](http://www.milpc.org)

#### References

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- Pullman, G.D. 1993. *The Management of Eurasian Watermilfoil in Michigan*. Midwest Aquatic Plant Management Society. 64 pp.
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## Legislative Action Items

- Item:** Create Industry Policy and Grievance Review Board (IPGRB) to establish operating policies for the MI DEQ and review grievances brought to the board by professional lake managers and lake management groups. Those groups or persons that bring grievances for consideration would be those that have primary responsibility for the management of aquatic nuisances in Michigan lakes.
- Structure:** This board shall be comprised of one representative of the MI DEQ, one representative of the MI Dept. of Agriculture, and one industry representative. Decisions made by this board shall be binding upon the IL&WU. Decisions shall be by majority vote.
- Rationale:** The MI DEQ is placed in the unenviable position of responding to divergent opinions offered by a variety of concerned groups or stakeholders. Unfortunately, many of the opinions expressed by these various groups are not rooted in a valid understanding of pest management practices. MI DEQ evaluations are also constrained by the timing of fieldwork and these limitations can lead to improper conclusions. The proposed IPGRB could help to put the Aquatic Nuisance Control Program on track and help it to focus on predetermined goals.
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- Item:** Considerable emphasis has been placed on the importance of the watershed as a determinant of water quality. There has also been increasing attention on the development of watershed management plans that would help to protect water quality. Unfortunately, watershed management practices will generally do little to protect lakes from the proliferation of opportunistic or nuisance species. The suggestion that watershed management studies be conducted as a part of the permit application process is illogical. Such studies are important for other reasons, and may be considered as a part of other statutes, such as under the implementation of Phase II of the Federal Clean Water Act.
- Action:** Watershed considerations should be supported, but not as a part of the Aquatic Nuisance Control Program. The State of Michigan may benefit from programs that address the broader issue of lake management.

## Lake Advocate Action Items

Please become a Michigan Lake Advocate. Your State Representatives needs to know that your are concerned about the future of aquatic nuisance management in Michigan. Your representative will be vote on critical new legislation that will determine the fate of aquatic resources in Michigan There are several ways that your voice can be heard. You can:

Contact your State Representatives and express your concerns about the DEQ and aquatic nuisance management in a hand written letter. Emails and form letters do not carry the weight or have near the same level of impact that can be accomplished with a hand-written note. Please state clearly, that you do not wish to receive a response from the DEQ. Otherwise, Inland Lake and Wetland Management Unit staff could be required to create a written response to your letter and this would divert their attention from reviewing and issuing permits for the 2002 lake management season. These are a few of the topics that you might cover in your letter.

1. "Aquatic herbicides have been used in my lake to improve recreation and enhance property values. They have also been used to stabilize or increase biodiversity and ecosystem stability. As a result, the lake is protected from blooms of undesirable vegetation and the fishery is being protected."
2. The responsibility for the management of aquatic nuisance species in Michigan's inland lakes is the sole responsibility of riparian property owners. These responsibilities include the development of management plans and all costs associated with lake improvements. There is no agency, grant, or aid program, in the State of Michigan that provides assistance to these groups. Rather, the State of Michigan has become increasingly adversarial. The MI DEQ has adopted policies and is proposing rule changes to the Aquatic Nuisance Control Act that would unnecessarily and unreasonably restrict the ability of lake communities to effectively manage exotic and aggressive nuisance plant growth. Proposed MI DEQ action will contribute to degradation of the lake by imposing use restrictions and costly disincentives to the use of herbicides in lakes.
3. The MI DEQ must establish realistic lake management goals and put the agency mission statement into practice by formulating policy and rules for the supervision of aquatic herbicide applications in the State of Michigan that will improve conditions in lakes by facilitating the prudent management of aquatic nuisance species and enhancement of conditions that promote stability in aquatic ecosystems. DEQ "conservatism" and unrealistic management expectations do not necessarily protect the resource for use by current and future generations.
4. The MI DEQ must be guided by a reasonably long-term vision for lake improvement and protection and not be distracted by "popular" or "colloquial" understanding or perceptions regarding aquatic pesticides.
5. If action is not taken, Michigan's lakes will suffer. And those groups of people who must bear the cost and responsibility for lake improvements and protection will also suffer by being unnecessarily burdened with unreasonable cost and regulatory burdens. Given this challenge, people will be increasingly inclined to "take matters into their own hands" and conduct surreptitious or illicit lake treatments that could potentially damage aquatic resources if conducted without proper supervision.