

Aquatic Weeds – Applying Technology in a Growing Market
Report from a research needs workshop on Eurasian Milfoil
Sponsored by the Adirondack Research Consortium

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Introduction and Summary: New York has some 1200 lakes that are being reduced in value for the families that enjoy them. No region is as dependent on its lakes as the Adirondacks. Eurasian Milfoil is a major example of an invader that can explode, not so much because it thrives in the wastes of those who use the lakes, as because the foreigner finds so few of the organisms that keep in check back home. Management, and the public and private enterprises that can offer management to shore owners individually and their Lake Associations, has been inhibited by a lack of cost effective technological options.

Manual “harvesting” has been the most reliable if never fully effective technique. Various cutters and loaders have been developed. And for some key infestations entering the water and hand removal are a basic, if expensive, approach. Chemical controls appear to be at hand that may pass the rigors of regulation but their effectiveness and the subtleties of their application need more work. On occasion their application appears to have had little effect. But it may never be true that all shore owners will be comfortable and be willing to pay for the extensive use of chemicals near the play areas of their grand children. Luckily several biological controls, moths and beetles that attack the milfoil for example, may be on the verge of proven effectiveness and safety. They seem to occur where ever milfoil is found but it is not understood why in some lakes they appear to provide effective control and in most they do not. More attention must be given to how they are to be managed, beyond simple implantation. Likewise the long run cycles of the invaders must be better understood and thus their vulnerabilities identified. The promise is for the development of mixed short run tactics built around a sound sense of long run strategies. Several hundred jobs in the next few years are at stake as well as the value of shore line property and the satisfaction of all lake users.

Much basic research has been done providing the necessary base for that which is needed. The needed problem solving research should be tied to working closely with the slowly growing number of practitioners to develop the strategies and tactics that work and the diagnostics needed to design the best suite of controls for any particular lake. At the same time as attention is given to the supply side of services and products, attention must be given to the demand side. How do property owners work together with the public and private service providers to achieve the most cost effective controls? Obviously this is a classic case of the need to organize beneficiaries to find fair and equitable ways to share the costs commensurate with the distribution of the benefits. Communication, education, and association organization and decision making should be explored and designed for the service providers to offer and/or facilitate. Public tax districts may have their place. Town special improvement districts may make the most sense as most heavily infested areas and in most cases the whole lakes are at the town scale. Voluntary neighbor to neighbor collections perhaps through a lake association or simple charges to town general funds may serve.

Rick Hoffman (NYS DoS), an Alternate Commissioner of the Adirondack Park Agency, and representatives of the NYSDEC suggested to Jon Erickson, President of the Adirondack Research Consortium that ARC hold one or more workshops to clarify the research needs in the control of the invasive aquatic, Eurasian Milfoil. David Allee, Vice President of ARC, was asked to moderate the first workshop and prepared these notes. ARC members and participants are a mixture of basic and applied researchers, represent outreach capability in each county and at the state level, people who are proven performers in linking this kind of technology development with the problem solving programming, with the value and job creation potential.

Hopefully from this process proposals would be prepared for likely funders; perhaps it will even lay a better basis for State and/or Federal funding of the needed work. The first workshop, as the following will show, defined a number of needed areas of work and past efforts to identify resources. A beginning was made on setting priorities. But it remains for a follow-up session to rough out research project concepts and assign the writing tasks, etc., that might lead to fundable proposals and the needed multi-disciplinary program they should represent. Such a session will be scheduled in the near future.

Some Institutional Histories – Building Capacity for Problem Solving.

Many of the participants reported on their prior activities relevant to the problem of Milfoil infestations. These are summarized here to indicate the growth and direction of institutional capacity to manage these and other resource problems. Proposals that can show how the work proposed fits into a problem solving network should be given priority.

The meeting was held at the The Darrin Freshwater Institute of RPI, Bolton Landing NY, on Lake George since 1967, at this site since 1980, with a major building addition in 1995. Chuck Boylen reported that monitoring and management of exotics in cooperation with the Lake George Assn has proceeded from the beginning. Trends in National Science Foundation and other funders for ecosystem studies have varied over time in terms of how much attention can be given to the topic of exotics. But the Institute has followed the rise and fall of the water chestnut and, since the mid 80's, milfoil and its environment in the littoral zone. Zebra mussels are also a current interest. A half dozen faculty are involved at any one time, six staff and 18 summer interns.

Note that a number of Universities maintain such facilities and have such capacity both in and out of the region. A relevant example are the experimental ponds reported on by Bob Johnson. The ponds were installed at Cornell in 1964 to help deal with aquatics – started with Findley Lake's interest in using Diquat. Worked on Rodeo and Sonar in recent years. Since the late 80's on harvesting options, moth and weevil. Done 70 lake surveys with a wide range of situations. Either moth and weevil found in all, wide range of density and mix. Don't understand why or what difference it makes to add them in the open lake or otherwise. Competition?

The Lake George Assn has been led by Mary Arthur Beebe in its response to Milfoil. It has been a controversial topic and not as fact driven as she would have liked. When Chuck Boylen verified it in '85 they sought help in developing a program. The Coalition of Lakes Against Milfoil was one result. Other states provided models for such a program. For example other states fund this work by adding to the fee for boat registrations. Objections from Long Island Sound discouraged that approach. An integrated plan would have a variety of controls to fit the variety of locations with a matrix for assessment and diagnostics indicating the approach – hand pulling, suction dredge, mats, a chemical application, what have you. Ken Wagner (ENSER) of Boston was helpful utilizing the Institute data.

The past president of the Federation of Lake Associations, John Miller, reported on efforts to interest Congressman Boehlert – a major force in environmental matters in the House whose district is on the south side of the region (Utica). A test program that would focus on Lake George and Eagle Lake was coordinated with staff at NYSDEC for \$400,000 a year for three years. It would demonstrate the chemical Sonar and biological controls, create a priority list of all lakes in the state bringing existing data together in a GIS format, support work at the Cornell Experimental Ponds by Bob Johnson on the weevil grubs and the moth caterpillars, carryout field work on lakes and start an implementation support program. This produced some interested responses from State and Federal officials. For example US EPA suggested that such funding should only be provided where the lakes in question were fully served by a pollution control program. The management of septic systems with their likely discharge of Phosphorus in a highly available form was a special concern. A leading role by NYS agencies may also provide a vehicle for Federal funding through one of the many programs that now work thorough State agencies.

The NYS Department of Environmental Conservation overall is a client agency of the USEPA as well as the US Fish and Wildlife Service. Habitat values have traditionally been a concern of the biologists at NYS Division for Fish and Game. Engineers of the Division for Water have, like its significant funder EPA, put the emphasis on chemical contaminants in designation of impairment classifications of stream and lake segments. All have increased the emphasis on whole watershed programming. But now EPA is also suggesting the broadening of the standards for “303” priority waterbody lists to include nuisance species. For example all the lower Hudson might be considered additionally impaired due to Waterchestnut. Such changes should facilitate clarification of lead responsibility for Milfoil. Note that Tim Sinnott reported that DEC had just completed the first statewide Nuisance Species Plan in the US.

The Residents' Committee for the Adirondacks is an other example of the many active citizen's organizations that take an interest in environmental resource management particularly in the North Country. They have worked with Senator Stafford to support a bill that would allow towns to require boat washing building on the model of recently passed authority for towns to regulate jet skis. How effective this would be in controlling the transfer of Milfoil among other nuisance species was one of the concerns identified.

Similarly the Nature Conservancy, including its Adirondack chapter, has targeted ecological integrity as a guide to policy and has encouraged cooperative public/private programs on species such as Loosestrife, Knotweed and Garlic Mustard. Careful study and the application of well developed protocols is needed to avoid unintended consequences of biological or chemical controls.

Other Comments on Research Needs

Link the biology of the invasive species to the management tools?

To the actions of landowners? Other confounding factors?

Evaluate and supplement GIS and mapping of factors

Aquatic herbicides

- factors in determining effectiveness
- guidance in use
- achieving balance with other means
- habitat effects for other species

Insect control

- factors in determining effectiveness
- guidance in use
- achieving balance with other means

Evaluate the experience of FL-LOWPA counties (24)

- Value of county capacity building ala Fred Anderson.
- Funded by the State for a decade and a half – weeds kicked it off
- Experimentation and understanding sought
- Including land use and stream monitoring
- Value of links between funded county offices and lake associations

Why did Cayuga Lake change? Moth and weevil? Others?

Finding the balance between enforcement and education – what are the increments to make them effective.

Potential for good housekeeping behaviors? Eg., boat cleaning at launch sites

Next Steps - Link to APA Review

The Adirondack Park Agency is a response by New York to the very high proportion of private land in a park equal in size to the five largest mainland parks in the Federal system. It is charged with providing regulatory guidance to a variety of activities such as about thirty permits for plant control since 1983. Seventeen were for Milfoil – many to local governments. They have found that there are many frustrated citizens, including control of native species, who often don't understand the complexity seen by scientists. Professional advice is needed. From such understanding, organized support for funding can be expected. The Agency Board has asked for a review of this problem utilizing lake

survey staff with emphasis on the values and functions of wetlands. How can we achieve a holistic approach, getting past the treatment of symptoms? For example Minerva lake and Lincoln Pond have great nutrient sources – perhaps their natural state is to have a high level of aquatic plants. A report has just been mailed to the Board for its review and response covering at least the following points, all of which could be strengthened by an expanded research base:

- Early and rapid response detection and prevention
- Part of watershed programming
- Packages of information more available – eg., use web more
- Variety of tools to fit diagnostics for management needed and wanted
- How do lakes respond and why
 - Eg., herbivores such as grass carp
 - Eg., herbicides such as Sonar
- Understand links to wetland functions & management role
- Where is it OK to have aquatic weeds and why
- Efficient and less expensive regulatory process – reaction to proposals
- Diagnostics included in tools

Suggested that we react to the APA staff work at our next meeting and complete the agenda Select a manageable set of research objectives and prepare first cut research plans. – Explore funding options and organize proposal teams.

Meet after the first of the year.

Attendance:

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