

Aquatic Herbicides as a Restoration Tool
Summary of DNR/USACE meeting held June 20, 2006
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On June 20th, 2006, 15 WDNR aquatic plant management, lakes, and fisheries staff met with members of the US Army Corps of Engineers aquatic invasive plant control research team to hear about the Corps' latest research findings pertaining to the use of aquatic herbicides for long term management and control of Eurasian water milfoil (EWM) and curly leaf pondweed (CLP). The purpose of the meeting was to have an open discussion of the pros and cons of using herbicides as a long term restoration tool, to identify research and management needs in Wisconsin and explore opportunities for collaboration between the WDNR and the Corps.

Here are some of the messages that we took home from the meeting:

Latest research findings. The Corps reported on two studies conducted in MN involving low-dose, early season use of herbicides for long term CLP and EWM/CLP control. These studies have involved extensive pre- and post-treatment plant surveys, reference lakes, and 3-5 years of monitoring. Significant reductions in CLP and EWM biomass were documented in both studies. Percent frequencies also declined, but not as dramatically, meaning that the invasives still occurred in many areas of the lakes. Native plants increased in areal coverage, although they were already present at relatively high frequencies. Importantly, it has taken 3-4 years to see a significant response in native plant recolonization. The amount of treated area has been reduced over time (from 60-80 acres down to 12 acres the 4th spring). No adverse changes in fish population metrics, community structure or growth dynamics have been seen in the treated lakes compared to the reference lakes after 3 years of study. The likely explanation is that there have been no significant changes in plant stem density or structure – the exotic species have been replaced by natives, and so no major changes in habitat have occurred.

Benefits of early season treatments. The concept behind “early season” treatment effectiveness is to apply chemicals before CLP turion production, control invasives prior to native plant growth and when target species are smaller, and at cooler water temperatures to minimize microbial degradation. The idea is to reduce chemical use over time, through restoration of natives. However, some level of chemicals still need to be used over the long term to keep the invasive species in check.

Unknowns and uncertainties. While the early season technique looks promising, the Corps has only conducted these studies on four relatively small eutrophic lakes in urban areas of MN. In addition, much of the work on fishery and invertebrate responses are still being evaluated. There are many questions about the transferability of the results to other types of lakes, different chemical combinations, and timing issues relative to fish spawning and native plant phenology. Climate may also play a critical role. For example, untreated reference lakes exhibited EWM declines probably as a result of climatic factors.

Monitoring and evaluation of large scale, early season approaches. At minimum, a baseline (whole-lake) point-intercept plant survey is needed in the year prior to treatment, two if CLP is an issue (June and August). In addition, a PI survey should be conducted just prior to treatment, with more detailed survey points and mapping of the EWM beds in the proposed treatment areas. Biomass sampling at a subset of points in the treatment area is also a good

idea. In addition, water samples should be collected and analyzed for residues with 2,4-D and endothall treatments, as this is a critical component of evaluating success and monitoring drift to non-target areas of a lake. Microbial breakdown of herbicides is often mistakenly confused as herbicide resistance, and thus post-treatment assays are critical.

In addition, the following items were identified as short term needs and long term opportunities for collaboration between WDNR and the Corps:

1. Technical assistance on large-scale, early season techniques, particularly “best management practices” guidelines that detail the bounds and constraints of the technique, protocols for monitoring, as well as suggested treatment regimes.
2. Susceptibility tables or spreadsheets for native plants, which identify documented susceptibility to various chemicals and potential gaps in knowledge
3. Better information on the phenology of native plants and the timing of critical fish spawning and nesting activities. A better understanding of these factors would help in defining the endpoint of the spring “window of opportunity” for early season herbicide use.
4. A research “scope of work” that identifies sets of lakes where more information is needed on EWM and CLP management, and the potential for using aquatic herbicides as a long term restoration tool. This scope would include plant, water quality, and fishery evaluations as well as effectiveness for aquatic invasive control. Some possible areas for collaboration include integrated management approaches combining harvesting with herbicide applications, early treatment of pioneer infestations, and better defining the early-season concept for northern lakes.

Summary

While these larger scale, early season techniques and tools have shown some promise, through work of the Corps and others, many questions and concerns remain. Thus, we are proceeding with caution at the state level in regards to expanded or innovative use of aquatic herbicides for Eurasian water milfoil and curly leaf pondweed. Our interest is to move forward under a well-designed research and evaluation program with broad public support that will allow us to better understand and manage aquatic invasive plants. Achieving a native plant response, protecting fish and wildlife habitat, and maintaining water quality, in addition to effectively managing invasives are goals we are striving for.

We are planning to sit down with the Corps later this year to develop a statewide "research plan" that would address these issues and help us identify suitable projects that may be fundable through our grant programs. Key criteria for selecting projects would be those where 1) the goal is reducing or limiting spread of aquatic invasives, rather than only nuisance relief; 2) the effort is tied to a larger lake planning effort, and 3) results will be transferable to both our short and long-term management of aquatic invasives throughout the State.