

MANAGEMENT OF INVASIVE PLANTS AND ALGAE IN AQUATIC SYSTEMS. Carole A. Lembi, Professor, Department of Botany and Plant Pathology, Purdue University, West Lafayette, IN 47907.

Aquatic habitats range from shallow wetland sites to deep water. Native aquatic plants and algae play essential roles in these habitats by providing oxygen, food, and shelter for consumer organisms. One of the first invasive plant species studied in the United States was water hyacinth, which appeared as a major problem in waterways in the southeast in the early 1900s. In the past 20 years, the introduction and spread of invasive plants and algae seems to have accelerated, with potentially negative consequences for aquatic food chains. Species that have invaded Midwestern wetland sites, such as purple loosestrife (*Lythrum salicaria*) and Phragmites (*Phragmites australis*), are managed in much the same way as invasives of terrestrial wildlands. Mechanical and physical methods can be used if soil conditions permit. Chemical treatments with glyphosate and imazapyr are usually effective, but follow up treatments are frequently needed because of seed germination in the case of purple loosestrife. Biological control agents have also been released for purple loosestrife. Native plant communities can be restored by seeding or transplanting, and a growing number of environmental companies are now providing the plant materials, labor, and expertise to do this.

In-water problems require a different set of strategies. In this talk I will report on the movement northward of two invasive species within the past few years. One is a toxic alga, *Cylindrospermopsis raciborskii*. The second is the submersed (underwater) flowering plant *Hydrilla verticillata*. Hydrilla was first reported in Indiana in August 2006 and was again found in Wisconsin in 2007. Of all the aquatic plant species, it has the greatest potential to seriously damage aquatic resources and habitats in the Midwest. Known as the “perfect weed”, it propagates by tubers, rhizomes, stolons, fragmentation, turions, and possibly seeds (in the case of the monoecious strain). Instant response on the part of state agencies is absolutely essential to eliminate initial infestations and stop the spread of this plant. The best approach at the current time is to use whole lake treatments of fluridone, which can selectively remove hydrilla from native plant communities. This approach, which is very expensive, must be repeated for at least 3-5 years in order to kill germinating tubers and turions. Intensive, follow-up surveys must be conducted to insure that no new plants have regenerated. Because of the selectivity, replanting of natives is not required. In fact, restoration of deep water sites in general is left to nature because of the difficulties of planting, monitoring, and managing plants that are difficult to see and access because they lie underwater.